Corran Ferry Infrastructure Improvement Scheme Scoping Report

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Contents

1 Introduction

The Highland Council (THC) are proposing to construct new ferry service infrastructure at the Corran Narrows under the Corran Ferry Infrastructure Improvement Scheme (hereafter referred to as 'CFIIS' or 'the scheme'). The scheme will involve the construction of new infrastructure in the village of Ardgour, and just north of the 'Corran' settlement in the region of Nether Lochaber, to facilitate the introduction of a new electric vessel (NEV) for the ferry service and improve facilities for users and operators of the Corran Ferry. The NEV, commissioned specifically for this crossing, will improve the resilience of the service and reduce long-term carbon emissions (refer Section 2.3: Project Need and Section 3: Development Description for details).

The development will involve both marine construction and dredging works below Mean High Water Springs (MHWS), as well as construction works above Mean Low Water Springs (MLWS). Subsequently, the works will be subject to licensing under the Marine (Scotland) Act 2010 and planning permission under the Town and Country Planning (Scotland) Act 1997 (as amended).

An Environmental Impact Assessment (EIA) Screening Opinion was requested from THC Planning on 25th July 2023, for which a positive Screening Opinion was received on 16th August 2023 that an EIA would be required to support the planning application. In consideration of THC's Screening Opinion and managing the risks of the project, the CFIIS project team have elected to undertake and submit a single EIA that addresses both terrestrial and marine elements of the scheme. Refer Section 4.1.3: Environmental Impact Assessment for more information.

Formal Scoping Opinions are therefore sought from THC and the Scottish Marine Directorate-Licensing and Operations Team (MD-LOT) under Regulations 17 and 14 respectively of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended, and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended. The opinions will be used to inform the scope of the EIA that is required in support of the Planning Permission and Marine Licence applications.

1.1 Report Purpose

The purpose of this Scoping Report is to ensure that the relevant potentially significant environmental impacts of the proposed development are taken forward for assessment and inclusion within the Environmental Impact Assessment Report (EIAR). The aim of this Scoping Report is therefore to provide sufficient information to allow THC's Planning Department and the MD-LOT, including their respective consultees, to confirm the potential environmental impacts of the proposed development that are to be considered within the EIAR. This approach has been designed to result in a proportionate and efficient EIA, with effort focussed onto topics which could be significant and require further consideration to understand their effects. This approach will facilitate the minimisation of any negative effects, as far as practicable, and the maximisation of beneficial effects.

1.2 Scoping Methodology

The scope of the CFIIS consent applications will include the construction and operations of the new ferry service infrastructure over its lifetime. The vessels (i.e., NEV and existing ferries) and their operation do not require planning or marine licence consent, however, where aspects of vessel operation may cause impacts, these will be considered as part of this Scoping Report (and the subsequent EIA) to provide a holistic assessment of the proposed future state.

As the detailed design is not yet complete at the time of producing this Scoping Report, the 'Rochdale Envelope' approach will be utilised. Rochdale Envelope is a term derived from EIA case law which seeks to balance the need for flexibility for a development that is not yet fully defined, with the ability to assess significant effects of the development upon the environment, and any necessary mitigation (R. v Rochdale MBC ex parte Milne (No. 1) and R. v Rochdale MBC ex parte Tew (1999) and R. v Rochdale MBC ex parte Milne (No. 2) (2000)). It is described by a series of maximum extents known as the 'worst case' scenario. The detailed design of the scheme can then vary within this 'envelope' of design without invalidating the corresponding EIA and consent. Hence, the actual footprint of the main scheme development will be smaller than the boundary utilised for scoping.

The scoping boundary for the CFIIS is depicted in Drawing 99_DRG_15_1. This scoping boundary will be refined into a redline boundary (RLB) for subsequent planning and marine licence applications. Additional minor works out with the scoping boundary (e.g. signage installation along roads) may be determined during the detailed design process and will then be incorporated as part of the RLB.

The methodology proposed to inform this scoping exercise is based on the Source-Pathway-Receptor model (refer Figure 1.2.1).

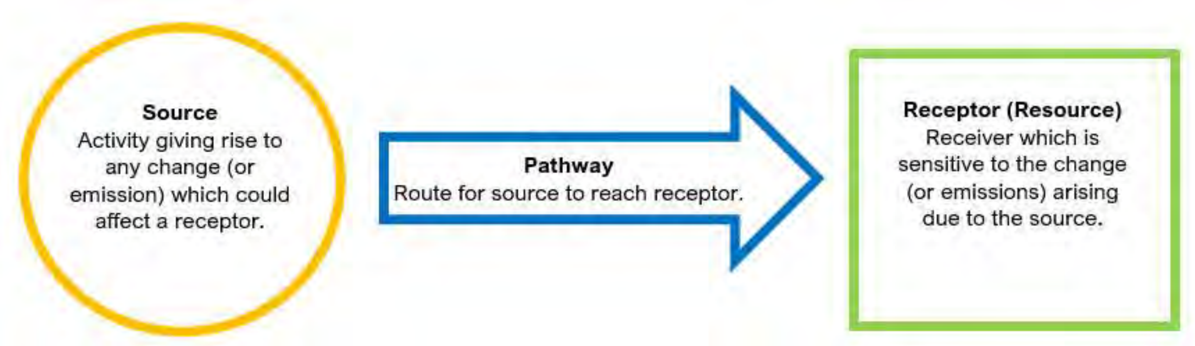

Figure 1.2.1: Source → Pathway → Receptor Model

The construction and operational activities for the project, i.e., the 'sources' of impacts are described upfront in Sections 3.2: Development Description and 3.4: Project Phases. Environmental aspects are then discussed on a topic basis in Sections 6 to 23. Each environmental topic discusses the baseline condition (to give an initial understanding of the receptors), identifies potential construction and operational impacts or effects and, where necessary, proposes mitigation measures to be implemented as part of the project. For the purpose of this Scoping Report, the term 'impact' has been used to refer to the way in which an environmental resource/receptor is changed by the project proposal. 'Effect' is used to describe the consequence of the change to (or impact upon) an environmental resource/receptor.

Topic sections conclude by outlining proposed inclusions and exclusions for the EIA. In line with IEMA guidance, topics will be proposed to be **scoped in** or **scoped out** of the EIA based on the credible potential for significant residual effects occurring after the implementation of mitigation (IEMA, 2017).

Where an environmental topic is proposed to be **scoped out** of the EIA on the basis of mitigation, that mitigation is included in the Initial Schedule of Mitigation (ISoM) (Section 24). The mitigation outlined in the ISoM shall be transcribed into a Construction Environmental Management Document (CEMD) developed for the CFIIS. The CEMD will also include mitigation identified by the EIA process. Where a topic is proposed to be **scoped in** to the EIA, consideration is also given to the proposed EIA methodology for each topic.

1.3 Consultation

In the lead up to the Scoping Report and throughout the development design, a programme of consultation has and will continue to be undertaken with statutory and non-statutory consultees, including members of the public.

The CFIIS project team sought advice from THC's Pre-Application Advice Service for Major Developments by attending a pre-application meeting on 18th January 2023. The Service is made up of relevant officials across THC and other key agencies. The output of this consultation was the receipt of a Pre-application Advice for Major Developments pack (Reference number: 22/04570/PREMAJ) (THC, 2023a) with inputs from:

- THC Planning and other departments/roles (i.e., transport planners, access officer, ecologist, forestry officer, landscape office, Flood Risk Management team, contaminated land officer and environmental health officer;
- The Marine Directorate Licensing Operations Team (MD-LOT);
- NatureScot;
- Transport Scotland (TS);
- Scottish Environment Protection Agency (SEPA);
- The Northern Lighthouse Board (NLB); and
- Historic Environment Scotland (HES).

Consultation has also been underway with:

- Crown Estate Scotland (CES) - with regard to proposed seabed/foreshore development and marine works licences for marine surveys and ground investigations;
- The Maritime & Coastguard Agency (MCA) – for confirmation marine surveys and ground investigations would not cause a danger or obstruction to navigation;
- Utility providers – with regard to existing and proposed power and water assets; and
- Landowners – with regard to land leasing and acquisition.

Note that the consultation engagements described above are not exhaustive, and stakeholder discussions have also been held with various businesses and individuals. As the EIA progresses, additional organisations will be identified and consulted as part of the Pre-application Consultation (PAC) process (refer to Section 4.1.3: Pre-application Consultation). A summary of relevant consultation will be presented in a PAC Report for submission as part of consent applications. The PAC Report will provide an audit trail of how the project has responded to stakeholder comments. Consultation that is specific to a particular EIA discipline will be reported in detail where relevant within the technical chapters of the EIAR.

2 Background

2.1 Location

Located in the west of Scotland, approximately seven miles south-west of Fort William, the Corran Narrows is the narrowest section of Loch Linnhe and has a grid reference centre point of NN 01826 63387 (see Figure 2.1.1). Loch Linnhe is located along the Great Glen fault line and framed by the hills running south-west to north-east. The loch effectively acts as a dividing landform, separating the western peninsula landmass (including the communities of Ardgour, Sunart, Ardnamurchan, Moidart, and Morvern) from the region of Lochaber in the east (see Figure 2.1.1).

Figure 2.1.1: Location of the Corran Narrows (Google Maps, 2024)

On the west side of the Corran Narrows is the village and community of Ardgour. On the eastern side, is a small settlement within the community catchment of Nether Lochaber. Whilst this settlement is understood to be associated with the nearby settlement of Onich to the south, for the purpose of this report, this settlement will be hereafter referred to as 'Corran' in order to distinguish this area specifically (see Figure 2.1.2). The Corran Narrows and adjacent settlements fall within the administrative area of THC. The residents and businesses of Ardgour and Corran are also served by the respective Ardgour and Nether Lochaber Community Councils.

The Corran Ferry service transits across the Corran Narrows, between the villages of Ardgour (on the west shore) and Corran (on the east shore) on the route depicted in Figure 2.1.2.

Figure 2.1.2: Current Ferry Crossing Route between Ardgour and Corran

Ardgour is a small, coastal village consisting of approximately 30 houses, the Inn at Ardgour and a historic lighthouse. Ardgour is encompassed by the Ardgour Special Landscape Area and includes a long foreshore of sandy, gravelly beach. A small, steel-frame is located at the foreshore. Three miles west of Ardgour is the village and crofting properties of Clovullin.

The settlement of Corran consists primarily of approximately 7 'shorefront' houses, the Corran Bunkhouse and The Corran (serviced accommodation). A private road on the east side of the A82 leads to another 7 or so houses. The area north and east of Corran is characterised by natural broad-leaf or plantation woodland. Villages south along the A82 include Bunree and Inchree, which offer various places for short-stay accommodation. A small unnamed watercourse runs from the east, under the A82 and alongside the A861 through the village to the loch.

Three power transmission cables owned by Scottish and Southern Electricity Networks (SSEN) are situated on or above the seabed of the Narrows, making landfall at various locations within or adjacent to both Ardgour and Corran settlements (see Drawing 99_DRG_15_1). Two 33kV cables are currently de-energised. The third cable, an 11kV cable, is scheduled for de-energisation by SSEN prior to the commencement of the CFIIS construction. These sub-sea cables have been/will be superseded by directionally drilled ducted power cables installed across the Corran Narrows to the south of Corran Point.

As discussed in Section 1.2: Scoping Methodology, the proposed area of development utilised for scoping is delineated by the scoping boundary as shown in Drawing 99_DRG_15_1.

2.2 The Corran Ferry

The Corran Ferry service carries passengers and vehicles across the Corran Narrows between the settlements at Corran and Ardgour. Although a short crossing of approximately 420m between slipways, the service provides an essential connection for the western peninsular communities to and from Lochaber, as well as for those on the Isle of Mull via the Fishnish – Lochaline route. There has been a ferry crossing on Loch Linnhe at the Corran Narrows for centuries. The first turntable ferry was introduced in the 1930s, which could accommodate a single car at a time.

The ferry service provides these communities with access to hospitals, further education, larger retail outlets and, in some instances, their place of work and/or supply chain needs. In addition, it also acts as a gateway for tourists visiting the peninsula and onwards to destinations such as Mull, Iona and Mallaig.

THC owns, funds and operates the Corran Ferry service, which is the busiest single vessel operated route in Scotland. The ferry operates a frequent transit operating 361 days of the year, carrying over 270,000 cars each year. The alternative route is a 40-mile road journey between Ardgour and Corran via Fort William.

The Corran service currently operates with one of two compatible, though ageing, vessels; the MV Maid of Glencoul (in service since 1976) and the MV Corran (in service since 2001). The two vessels are unique in that they support quarter-point vehicle ramps, meaning that they berth alongside the slipway, with their ramps positioned at an angle for loading/unloading vehicles from the slipway (see Figure 2.2.1). The vessels are designed to hold station alongside the slipways despite the fast flowing currents in the Narrows.

Figure 2.2.1: The MV Corran Quarter-point Vessel on the Ardgour Slipway

2.3 Project Need

As mentioned previously, the purpose of the CFIIS is to provide new infrastructure to support the introduction of a larger NEV to increase the resilience of the Corran Ferry service and reduce long-term carbon emissions. Challenges to the current service, imposed by the existing vessels and infrastructure are described in this section.

The current ferries are ageing. The main ferry utilised on the route is the MV Corran, she is 23-years old with a further life expectancy of approximately 10 years. The MV Maid of Glencoul, utilised during periods to meet demand and when the MV Corran is out of service, is 49 years old. The MV Maid of Glencoul is operating well beyond her original design life and in urgent need of replacement, with the sourcing of spare parts becoming both difficult and expensive. In situations where the service is suspended or not operating (e.g. after hours, or when vessels are out of service for breakdown repairs, maintenance or during periods of extreme weather), the road-based diversion time can be up to two hours, and includes a height restriction for some tall vehicles, due to a restricted height rail bridge. Hence, a new vessel is required in the immediate-term.

The current vehicle-deck capacity is insufficient to cope with peak demand periods. When there is short-shipped traffic (i.e., vehicles left behind), the ferry service will routinely depart from timetable and begin to 'shuttle' between slipways to minimise and clear any backlog of queuing traffic. Whilst this is effective, it cannot always keep pace with demand, especially during peak tourism season (Summer).

Marshalling areas on both sides of the crossing are too small to accommodate peak demand queueing, partly due to short-shipped traffic. This increases road safety and network performance risks. This risk is greater on the Nether Lochaber side of the Narrows, where peak traffic may ultimately back up out onto the A82 trunk road.

The junction with the A82 is sub-optimal in that it is located close to a bend with restricted sight lines, includes very tight entry and exit corners, includes no stacking capacity for turning vehicles from Fort William and lacks suitable deceleration or acceleration lanes.

The two ferry vessels overnight on 'swing' moorings located on the seabed near Ardgour, which requires a vessel-to-vessel transfer of crew at the start and end of the operating day via a small crew transfer boat. This practice is a comparatively high-risk arrangement and consequently has been gradually phased out elsewhere in Scotland in recent decades.

When the MV Corran is away for maintenance or repairs, the standby vessel, MV Maid of Glencoul, is in operation alone. She has a significantly smaller vehicle capacity and includes more onerous height and weight restrictions, limiting ferry access to the peninsula for some larger vehicles. These restrictions on the MV Maid of Glencoul mean that the largest commercial vehicles cannot access the peninsula at all, due to the aforementioned bridge height restrictions on the alternative road route.

The current 1:10 gradient slipways are not fitted with any berthing/alignment structures and hence the service more susceptible to the impact of extreme environmental conditions. There are no other quarter-point vessels operating in Scotland which could replace the MV Corran and MV Maid of Glencoul.

The more common, similarly sized, ferry vessels found within Scotland are the 'straight through' roll-on roll-off vessels such as Caledonian Maritime Assets Limited's (CMAL's) 'Loch Class' vessels. However, the 'Loch Class' vessels are designed to operate on steeper 1:8 slipways and, particularly at the Corran slipway, would probably require an alignment structure to allow them to maintain positioning on the slipway due to the wave, wind and strong tidal currents routinely experienced in the Narrows.

The Corran Ferry service is the only major vehicle ferry service operated by THC. The Corran Ferry therefore must function as a standalone service with intrinsic built-in resilience.

In summary, there is a need to ensure and maintain an appropriate, resilient connection between communities either side of the Corran Narrows; various options for which have been considered by THC over the years. The proposed CFIIS specifically addresses the infrastructure requirements to facilitate an NEV and standby vessel; the design requirements for which are discussed in Section 2.4. However, the prospect of an alternative crossing method for the Corran Narrows have been considered, and for completeness, this is discussed in Section 2.5: Alternative Crossing Options.

2.4 Design Requirements

In order to improve the service and increase resilience, up to two NEVs, with an increased vehicle transport capacity, were proposed to replace the existing quarter-point vessels in the Corran Ferry service. Electric vessels were proposed over diesel-powered vessels as a means of reducing greenhouse gas (GHG) emissions in line with Scotland's commitment to achieving net-zero GHG emissions (see Section 4.2.1 for further details). The 'straight-through' NEVs would require new infrastructure to support their operation. Infrastructure suitable for the NEV(s) will also be able to support other vessels with this more conventional 'straight-through' arrangement, providing additional operational resilience by allowing the opportunity to collaborate with other Scottish ferry operators for potential vessel substitution arrangements. This infrastructure and it's required functions formed the scope of the initial CFIIS design brief.

Slipways at a 1:8 gradient will be required to support the 'straight-through' boarding and offloading arrangement for the NEV(s). The currents of the Corran Narrows at approximately mid-tide are onerous and run largely parallel to the shoreline during ebb and flow tides. The Corran shoreline, specifically, runs immediately adjacent to the deeper channel through the Narrows. In addition, the predominant south-westerly winds generate wave and wind conditions that penetrate through the Narrows and create the most onerous conditions on the Corran side. The Ardgour slipway experiences considerably lower tidal currents and less severe environmental conditions, with the worst conditions resulting from less common north-easterlies. It needs to be ensured that the vessels are stable on the slipways, taking account of tidal and weather conditions. This may require engineering stabilisation, protection and support for safe and efficient operations.

An overnight berthing structure will be required for vessel berthing, NEV charging, water bunkering and safe crew access on and off the vessels. Berthing on the overnight berthing structure will eliminate the need for crew to undertake vessel-to-vessel transfer to vessels on swing moorings. Berthing and operation of the vessels will require sufficient water depths to ensure safe under-keel clearance to the seabed throughout the tidal range. It was also recognised power requirements for NEV charging may require an upgrade to the electricity grid.

Marshalling areas with sufficient capacity for demand will be required to safely manage the queuing vehicle traffic and minimise the likelihood of traffic backing-up onto busy roads. Safe access for vehicles, cyclists and pedestrians will be required between the slipways, marshalling areas, main roads, public transport (i.e. bus stop(s)) and villages; requiring good junction design and promoting the use of active travel networks.

Shore-based ferry staff collecting fares and managing loading/unloading operations for the ferry service ('pursers') will require limited welfare and shelter facilities. Public access to appropriate facilities including toilets, changing places, electric vehicle (EV) charging, bicycle shelters and parking will also be required, serviced by appropriate utilities including lighting, power and water.

It was proposed two ferries could potentially operate concurrently on a timetable in peak times to minimise backing up of queuing traffic. If this was to go ahead, this would require staffing for two crews (essentially duplicating THC's ferry operations team). Therefore, in addition to the infrastructure outlined above, staff accommodation and additional storage would also be required. The introduction of crew accommodation triggered the desire and subsequent proposal for affordable accommodation in line with THC policy. Note, this requirement was later removed from the CFIIS design scope, refer Section 2.6: Design Development for details.

2.5 Alternative Crossing Options

Prior to the initiation of the CFIIS, various options were considered for improving the transport connection across the Corran Narrows. THC commissioned a high-level feasibility study for a fixed link (bridge or tunnel) option, the report of which was issued in March 2020 (Stantec, 2020). This report concluded a fixed link was potentially feasible, and was subsequently used to support the nomination of a fixed link at Corran to be carried forward into the Scottish Government's Strategic Transport Project's Review 2 (STPR2). The outcomes of STPR2 inform the national transport investment in Scotland over the following 20 years.

Unfortunately, a fixed link across the Corran Narrows was not adopted into the priorities of STPR2. Without a credible funding option or timescale for a fixed link, focus was directed into upgrading the ferry service as the most feasible and deliverable option for improving the transport link in the short to medium term. There remains an aspiration from THC for a fixed link across the Corran Narrows in the future.

An outline business case for commissioning replacement vessels (and associated upgrade to the ferry infrastructure) was produced in 2022 (Stantec, 2022). The business case as presented in the Stantec report is summarised in Section 2.2: Project Need. The report sought to answer the question of whether both vessels in service at the time (MV Corran and MV Maid of Glencoul) should be replaced, or whether there was case for retaining the MV Corran as a secondary vessel. The report concluded there was a valuable case for replacing both ageing vessels with two NEVs, and hence, this was carried forward as the operational scenario for which the infrastructure of the CFIIS needed to support. (Note, however, the intention for two NEVs was later scaled back to one as described in Section 2.6: Design Development). It was essential, that no part of the CFIIS was to preclude the option of a fixed link across the Corran Narrows in future.

The Stantec (2020) study concluded that the potential feasibility of a fixed link at Corran Narrows based on indicative routes as shown in Figure 2.3.1. The northern crossing (RC2) was found to have more disbenefits than other routes. Therefore, it is THC's understanding that any future fixed link will utilise land south of the narrows (similar to indicative routes RC3 RC4 or RC5). This has been taken into account during development of the preferred option for the CFIIS, hence the proposed CFIIS will not conflict with any land that may be required in future for a fixed link.

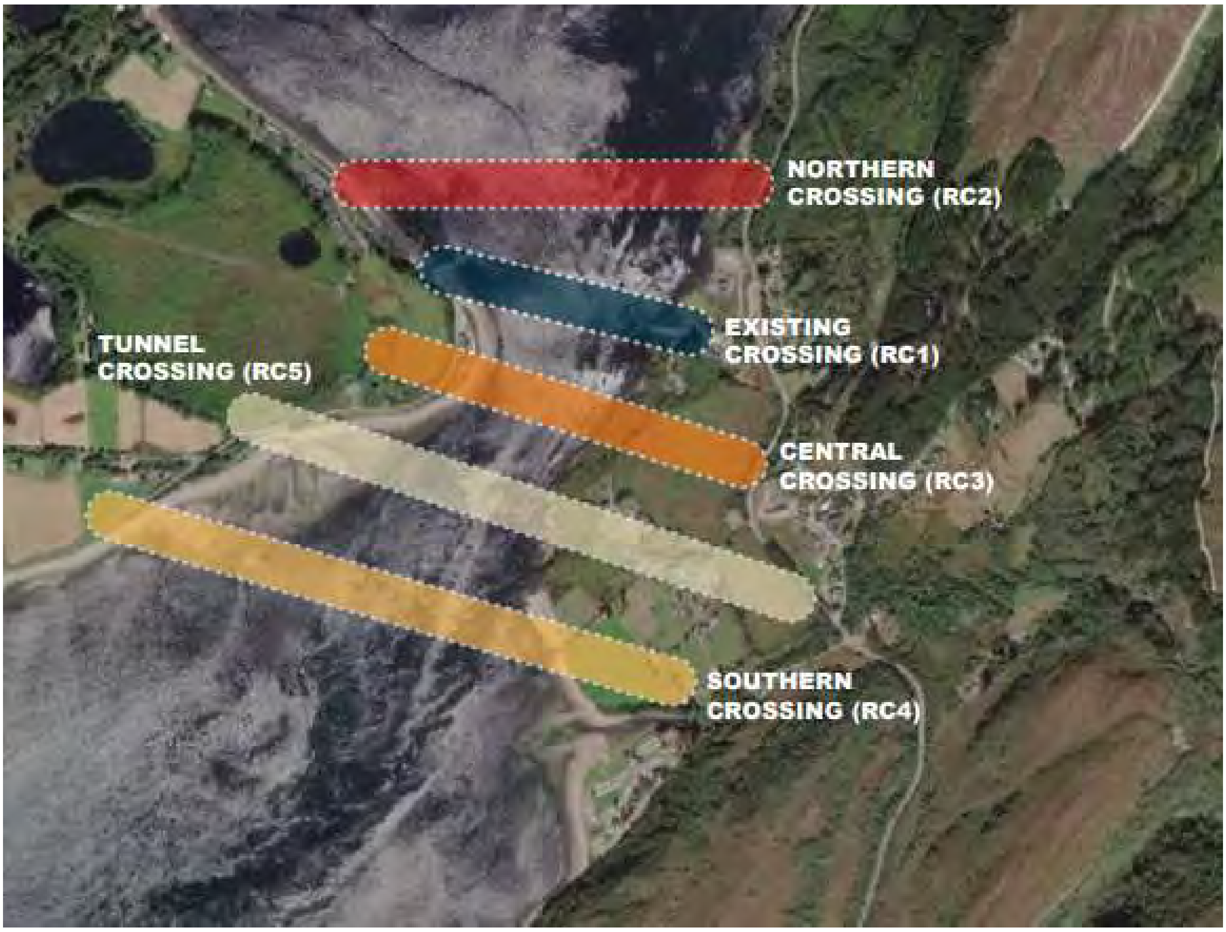

Figure 2.3.1: Conceptual Routes of a Fixed Link at Corran Narrows (Stantec, 2020)

2.6 Design Development

The design scope of the CFIIS has evolved over a two-year period in response to stakeholder feedback, design constraints, funding priorities and wider THC objectives.

Various initial, conceptual designs were developed to position the key infrastructure described in Section 2.4: Design Requirements, within the locality in a way that was potentially feasible and in consideration of constructability and consentability. These designs were then subject to a process of detailed optioneering assessment, which considered stakeholder feedback from the initial PAC events (2022) and pre-application planning responses (refer Sections 4.1.4 and 1.3 respectively) as well as outputs from early geophysical, ecological and wave/current studies.

A preferred layout for each side of the Narrows was carried forward for further refinement and outline design. Wave and current modelling led to the introduction of a breakwater on the southern side of the proposed new slipway north of Corran. The breakwater will provide a degree of shelter from adverse waves and strong tidal currents at the slipway berth, improving the condition for operations, especially in adverse weather. The breakwater will also be used to secure a fendered framework to support the vessel when on the slipway (i.e., an alignment structure). Conversely, tidal currents and adverse wave conditions at the proposed location for the new slipway on the Ardgour side are less extreme, and hence the requirement for an alignment structure was removed for the Ardgour slipway.

During the design process, it became clear that funding for a second NEV was unlikely to be secured in the short-medium term. Instead, only one NEV would initially be commissioned and the MV Corran would be retained as the back-up vessel. In light of this, and in consideration of community feedback, the decision was made to focus the CFIIS to include only the infrastructure essential to accommodating the introduction of a single NEV and/or improving the resilience of the service, thereby alleviating the challenges described in Section 2.3: Project Need. It is recognised that in peak times, the operational ferry will likely need to depart from timetable and operate a shuttle service, as per current operations.

Other proposals developed for the ferry crossing, including enhancement and extension of the existing marshalling and parking provisions at Ardgour, modernising storage and office facilities and provision of dedicated staff accommodation to assist in staff recruitment and retention remain within THC's medium-long term aspiration but no longer form part of the CFIIS scope.

Through consultation with SSEN, it was that confirmed power requirements for NEV charging during the operational phase will require an upgrade to the electricity grid, to be undertaken by SSEN. During the design process, it was identified that there is a possibility for the NEV and CFIIS infrastructure to be commissioned and ready for operation prior to the availability of sufficient power from the grid. In this case, the NEV will be charged by a temporary diesel generator with supporting fuel storage. The generator may be mobile (e.g., trailer-mounted) or fixed, and will only be utilised until the permanent grid connection is in place. However, as there is a chance the generator could be required for more than a few months, a temporary, fixed option was introduced to the design scope of the CFIIS.

During the outline design phase, it was identified that there is a need to remove existing infrastructure which is in conflict with the proposed development or construction footprint at Ardgour, namely, the western portions of two existing SSEN subsea cables (which will become redundant prior to construction commencing) and the existing small boat pier.

Details of infrastructure carried forward for construction in the CFIIS are outlined in Section 3: Development Description. A discussion of design alternatives, results of the optioneering assessment and justification for the final design will be included in the EIAR.

3 Development Description

Design elements are discussed in Sections 3.1 to 3.3, while the lifecycle phases are discussed in Sections 3.4 to 3.6.

3.1 Scheme Overview

As part of the coastal nature of the scheme, construction will occur in the marine and terrestrial environment including intertidal areas. Infrastructure of the CFIIS will include:

On the Ardgour side:

- Slipway;
- An overnight berthing structure;
- Localised road improvements and formalised residential parking;
- Footpath(s);
- Vessel charging facilities;
- Temporary diesel generator with associated fuel storage in appropriate housing/containment; and
- Associated services (lighting, power, water and drainage).

On the Nether Lochaber side:

- Slipway;
- A breakwater with vessel alignment structure;
- A new marshalling area and access road;
- A new junction with the A82;
- Public car parking;
- A toilet block;
- Shared-use Path(s);
- A bicycle shelter;
- EV car charging units;
- Purser's kiosk; and
- Associated services (lighting, power, water and drainage).

Dredging on both the Ardgour and Nether Lochaber sides will also be required, as will the removal of sections of redundant sub-sea cabling near the Ardgour infrastructure.

Elements of the scheme are described in more detail in Sections 3.2 and 3.3. An overview of the conceptual design is outlined in Drawing 2387-WS-ZZ-ZZ-DR-C-0101 P02.

The new infrastructure and NEV will work in combination to increase service capacity and resilience, having both been designed in consideration of the specific engineering and environmental challenges of the Narrows. The overnight berthing structure at Ardgour will allow for overnight charging and safer crew access to the vessels. The breakwater on the Nether Lochaber side will provide protection from wave, current and wind conditions and the attached alignment structure will provide vessel support, easing vessel access onto the slipway in adverse current and weather conditions. The infrastructure upgrade of the CFIIS is therefore expected to minimise the service disruption risk associated with strong currents and adverse weather, whilst the NEV will result in reduced risk of downtime for breakdowns and maintenance in comparison to the aging vessels currently operating the service. Improvements to marshalling and access especially on the Nether Lochaber side will improve road safety and service user experience and continue to facilitate active travel links.

Descriptions of the construction techniques for the infrastructure are outlined in Section 3.4.1: Construction Methods.

3.2 Development at Ardgour

Development at Ardgour will take place predominantly seaward of the A861, refer Drawing 2387-WS-ZZ-AG-DR-C-0102 P03.

3.2.1 Slipway and Road Access

A 1:8 gradient concrete slipway, supported on infilled steel sheet piled foundations, will be constructed just north of the existing slipway. The marshalling lane from the front of the existing marshalling area will be extended adjacent to the A861 for vehicle access to the new slipway. Land reclamation will be required to create footings for the root of the slipway and marshalling lane extension.

3.2.2 Overnight Berthing Structure

The overnight berthing structure is designed as a T-head pier to offer shelter for the operational and standby ferry vessels from the most challenging environmental conditions at Ardgour which prevail from the north-east. The pier approach element and pier head elements which make up the T-shaped overnight structure are proposed to be infilled steel sheet piled structures supporting a concrete deck. The pier approach is approximately 100m with berths on either side. The pier head is approximately 50m long.

The overnight berthing structure will be fitted with a gantry and/or feeder pillar for overnight NEV charging. The overnight berthing faces will be fitted with a timber and/or rubber fendering system. Other faces, including a potential fair-weather berth and small boat berth will be fitted with vertical timber and/or rubber linear fendering. The overnight berthing structure will also be fitted with bollards, ladders, grab rails, copes, handrailing, washdown/bunkering points and lighting columns.

In addition, each overnight berth on the pier approach will be fitted with a pontoon and associated access walkway(s) to facilitate safe crew transfer between the shore and the berthed vessel.

The structure also includes the potential for use of the north of the pier head as a ‘fair-weather’ berth.

A small boat berth, with ladder access and mooring travellers is proposed to the sheltered south face of the pier head.

To provide access to the overnight berthing structure, a small area of land reclamation will be constructed at the landward end. Rock armoured protection will be installed on the sloping seaward faces of this land reclamation area. Pedestrian access to the beach on either side of the root of overnight berthing structure will be provided.

To ensure there is sufficient water depth for unrestricted access in all tidal conditions, the works require dredging of the seabed each side of the overnight berthing structure. Where suitable, dredge arisings shall be retained and reused on site as fill for structures and/or reclamation. Unsuitable arisings may need to be disposed of at a suitable licenced dredge disposal site.

3.2.3 Parking Area

Formalised parking spaces will be constructed on the seaward side of the A861 between the new slipway and the overnight berthing structure. This will also require a small element of land reclamation from the intertidal area. Rock armoured protection will be installed along the length of the seaward face.

3.2.4 Purser's Kiosk

A small welfare cabin, termed the 'purser's kiosk' will provide shelter, storage for essential items (including first aid equipment) and simple welfare amenities for the marshalling staff (e.g., kettle). This is proposed to be constructed in the existing marshalling area. The purser's kiosk is most likely to be in the form of a prefabricated cabin on a concrete base.

3.2.5 Pier Demolition

Between the proposed new slipway and overnight berthing structure is the existing small pier, extending approximately 40m seawards and made from a steelwork approach with a 15m wide steel sheet piled head. Demolition of this existing pier is required to make space for vessel movements when using the new infrastructure.

3.2.6 Diesel Infrastructure

Although it is hoped that the SSEN grid will be able to provide a suitable power supply for vessel charging in time for the NEV commencing operations at Corran Narrows, this cannot be guaranteed at this point. Hence provision is currently included for a temporary diesel generator in appropriate sound insulation housing which would only be utilised until the required electricity grid upgrade works are completed. A temporary diesel storage tank will also be installed to supply this generator. The location of this temporary diesel infrastructure will be determined as the design process is progressed.

3.2.7 Services and Drainage

Electricity and/or water provision will be installed as part of the CFIIS to service the overnight berthing structure, slipway, purser's kiosk and scheme lighting.

Potable water is required for periodic washdown of the overnight berthing structure and the slipway. Potable water bunkering is also required to service the ferry vessels. Potable water will be accessed via the existing network and include a suitable break-water tank and pump unit.

As mentioned previously, upgrade to the grid is required for electrical power supply for the NEV charging during the operational phase, and any infrastructure required for the upgrade will be provided by SSEN. The CFIIS includes the installation of electrical infrastructure from the SSEN electrical grid, including the installation of cables, ducting, drawpits, switchboard(s) and feeder pillar(s). Precise locations for this infrastructure will be determined as the design process progresses, although it is currently assumed a feeder pillar will be required adjacent to the sub-station at the end of North Corran and/or on the overnight berthing structure. Switchboard(s) are anticipated to be located either in the yard of the ferry office or on the overnight berthing structure.

Sections of existing de-energised sub-sea cabling will require removal from within the footprint of the proposed works. The terminals, which will be cut and capped, will be anchored to be seabed, below dredge depth, to prevent unrestricted movement.

Lighting for the scheme infrastructure outlined above will be designed and implemented in accordance with appropriate guidance to meet health and safety requirements and also to minimise unnecessary light pollution. Appropriate drainage will be designed and installed for surface water management of hard surfaces and include a bypass separator before discharging into the adjacent sea. Street furniture, road-markings and signage will also be installed where required.

3.3 Development on the Nether Lochaber Side

Development on the Nether Lochaber side of the Narrows will predominantly take place north of Corran in an area of woodland between Loch Linnhe and the A82. Refer Drawing 2387-WS-ZZ-NL-DR-C-5101 P02.

3.3.1 Slipway

Ardgour development will include the construction of a 1:8 gradient concrete slipway surface, supported on side walls, constructed from infilled precast concrete and in-situ pours. The slipway is to be accessed via the new marshalling area (refer Section 3.3.3: Marshalling Area).

3.3.2 Breakwater and Alignment Structure

A solid breakwater will be constructed on the south-west side of the slipway and fitted with a steel framework and fendering on the berth face to support the vessel (i.e. the alignment structure). The alignment structure will hold the vessel in position on ebbing tide. Rock armoured protection will be placed on the southern face and west end of the breakwater. The breakwater protects the vessel from the forces of the flood tide.

To ensure there is sufficient water depth for unrestricted access to the slipway in all tidal conditions, the works require dredging of the seabed to the seaward and the north of the slipway structure. Where suitable, dredge arisings shall be retained and reused on site as fill for structures and/or land reclamation. Unsuitable arisings may need to be disposed of at a suitable licenced dredge disposal site.

3.3.3 Marshalling Area

New marshalling lanes of increased capacity and dedicated entrance and exit lanes will be constructed within the marshalling area on the Nether Lochaber side of the Narrows. This will be located on an area created by levelling the existing land and reclaiming an area from the adjacent foreshore. The levelled area will be notably lower than the existing A82. As such there is a need to install suitable slopes separating the elevations between the lower marshalling area and the higher verge along the western edge of the A82. The land reclamation will have rock armour installed on the seaward faces where these are impacted by tidal forces.

3.3.4 Access Road and Junction

An access road will connect the marshalling lanes to the A82 trunk road. This requires the development of a suitable new road junction with the existing A82 and will require the re-alignment of a section of the A82 to ensure appropriate approaches are constructed for vehicles accessing, egressing and travelling through this junction.

3.3.5 Car Park

A car park area will be constructed on the eastern side of the marshalling lanes. As well as typical car parking spaces, this area will also include provision for oversize vehicles and disabled parking access. The car park will include EV charging stations, initially two charging units are planned with the capacity to charge 4 cars at a time.

3.3.6 Purser's Kiosk

A small, prefabricated cabin on a concrete base, termed the 'purser's office' is anticipated to be located between the head of the slipway and the marshalling lanes. The structure will provide shelter and storage for essential items (i.e., first aid kit) for the ferry staff managing the interface between the loading/unloading of the vessel and the marshalling area.

3.3.7 Toilet Block

A new toilet block will be installed and will include a changing places facility. The foul drainage will be connected to the Scottish Water wastewater network at Corran or feed a new septic tank.

3.3.8 Bicycle Shelter

A bicycle shelter will be installed near the car park.

3.3.9 Shared-use Path

A path for pedestrians and wheeler access will be constructed from the new slipway to follow the western edge of the new junction and the A82, to connect with the existing footway/cycleway adjacent to the north-bound bus stop at Corran. This shared-use path will therefore retain the active transport link to the ferry service which is also part of the National Cycle Network. The path will be segregated from the A82 by a suitable verge buffer.

The path will be bituminous surfaced with slopes and/or retaining wall edges and must span over several existing burns which cross the A82 via culverts.

3.3.10 Services and Drainage

Electricity and/or water provision will be installed as part of the CFIIS to service the toilet block, purser's kiosk, washdown point, slipway and scheme lighting.

Potable water is required for periodic washdown of the overnight pier and the slipway. Potable water bunkering is also required to service the ferry vessels. Potable water will be accessed via the existing network and include a suitable break-water tank and pump unit. Appropriate drainage will be designed and installed for surface water management of hard surfaces. As mentioned, the new toilet, including changing places facility on the Nether Lochaber side will be connected into the local Scottish Water network or feed a new septic tank.

A suitable cable route, including ducting and draw-pits will be required to be constructed between the new infrastructure of the CFIIS and the SSEN network. The network tie in is anticipated to be at a feeder pillar adjacent to a sub-station within the field area at the end of North Corran cul-de-sac. It is expected that the cable route will be via the farmer's gate, through the ferry office garden area and beneath the A861.

Lighting for the scheme infrastructure outlined above will be designed and implemented in accordance with appropriate guidance to meet health and safety requirements and also to minimise unnecessary light pollution.

Appropriate drainage will be designed and installed for surface water management of hard surfaces and include a bypass separator before discharging into the adjacent sea. Street furniture, road markings and signage will also be installed where required.

3.4 Construction Phase

The construction phase of the CFIIS is currently programmed to start mid to late 2025, with completion planned for the end of 2026.

3.4.1 Construction Compounds

Construction compounds on either side of the Narrows will be established within the Scoping boundary south of the development as depicted in Drawing 99_DRG_15_1.

The construction compound at Ardgour is anticipated to be established south of the village of Ardgour, with access from the A861 near the Corran Point Lighthouse.

On the Nether Lochaber side, a construction compound is expected to be established south of the village with access off the A82. This compound will support preliminary access works into the woodland area north of the village, until a site compound can be established in the footprint of the development.

Establishing these compounds is expected to involve a small area of ground vegetation clearing and the formation of a hard standing area. Construction compounds will provide:

- Site office cabins;
- Welfare cabins for construction personnel (potentially powered by diesel generators or connected to the power grid where possible);
- Segregated waste facilities;
- Mobile lighting trailers;
- Laydown areas for the storage of equipment and materials;
- Storage units for storage of equipment and materials;
- Parking areas for workers, machinery and mobile equipment; and
- Security fencing and gates.

3.4.2 Construction Methods

This section outlines the techniques to be utilised during the construction phase of the CFIIS. These will be considered within the CFIIS EIA. Construction techniques that have been considered throughout this report to understand the potential sources of impacts are as follows:

- Vegetation clearance – including the removal of approximately 2.1 hectares (ha) of woodland;
- Soil stripping – standard construction techniques employed to remove soil overburden;
- Vibration and impact piling - to install the overnight berthing structure, to install the Ardgour slipway structure and possibly to secure cut and capped subsea cables ends to the seabed;
- Rock stripping and possible rock blasting – potentially required onshore and offshore on the Nether Lochaber side for the creation of the marshalling area/car park, to achieve appropriate water depths at the slipway and provide a suitable toe for the breakwater structure. Although blasting is a last resort, its use has been included within this report to ensure impacts are considered;

- Rock crushing and processing – rock will likely be processed for re-use in the scheme as fill material;
- Dredging activities – to create sufficient water depths at the overnight berthing structure, slipway on the Nether Lochaber side and the breakwater toe. Techniques may include backhoe, mechanical excavation, ripping and plough dredging on either side of the Narrows.
    - A backhoe dredge technique (i.e., a pontoon mounted excavator supported by a hopper barge) is likely to be the primary technique utilised at Ardgour;
    - A bund mounted excavator/ripper supported by land based plant is the most likely technique anticipated for dredging on the Nether Lochaber side;
- Dredging disposal activities - where characterises are suitable, dredge spoil will be preferentially utilised within the scheme development, as infill or rock armoured protection. Any alternative disposal or reuse of dredge spoil will be informed by a Best Practicable Environmental Option (BPEO) assessment.
- Earthworks activities - including excavation, infilling, compaction and grading with mobile plant;
- Land reclamation and rock armour placement - constructed by installing rock armoured slopes on rockfill material. Where necessary, a negative buoyancy geotextile may be utilised to prevent rockfill material from migrating through rock armour layers. Infill material will be compacted and graded ready for surfacing;
- Concrete works – both in situ (with formwork shuttering) and precast concreting activities may be included in the scheme. All concrete to be poured in the marine environment (e.g., for the slipways) will utilise marine compatible concrete mixes;
- Road construction - standard traffic management and road construction techniques including compacting aggregates followed by the laying of bituminous surfacing;
- Cut and cap cable removal techniques – sections of the redundant SSEN sub-sea power transmission cables will be removed where the cables (or associated exclusion zones) conflict with the construction footprint at Ardgour. This is likely to include lifting part of the cable above the water utilising a vessel with a winch, cutting the cable and capping (sealing) the exposed end, then securing the capped end of the cable to the seabed. Securing the cable on the seabed is anticipated to include a piled restraint with a concrete cap;
- Hot cutting/grinding – may be used to remove the existing small pier at Ardgour;
- Pile removal – piles that form the existing small pier at Ardgour will be removed, most likely utilising the vibrating piling rig from a barge, with the aim to remove the full piles from the seabed. If full removal is not achievable, piles may need to be cut off just below seabed level. Where possible, materials arising from demolition (i.e. rockfill from the pier head) shall be reused within the works; and
- General construction activities – activities include, but are not limited to, building construction for the toilet block, installation of prefabricated cabins for the purser's kiosks, installation of associated services, construction of a retaining wall, deliveries of heavy plant, machinery and materials using Heavy Goods Vehicles (HGVs) by land and vessels by sea, other small ancillary works such as the installation of street furniture, road markings and signage.

3.4.3 Reinstatement

The footprint required for construction will be larger than the footprint of the final infrastructure as built, however, the area required for construction activities will be minimised where possible to reduce unnecessary disturbance. Areas of land no longer required for the project will have topsoil reinstated, levelled or graded to tie into the surrounding terrain and seeded or planted for habitat regeneration. All other materials and waste will be removed from the area. Progressive reinstatement will be undertaken where practicable so that reinstatement may be completed throughout the construction phase when areas become available. Compensation planting and biodiversity enhancement initiatives as part of reinstatement will be considered within the EIA and Biodiversity Enhancement and Management Plan (refer Section 13: Terrestrial Ecology and Ornithology).

3.5 Operational Scenarios

As mentioned previously, THC are seeking to commission a 'straight through' NEV specifically for the Corran crossing. This NEV and the new infrastructure constructed for the CFIIS will work in combination to increase ferry service capacity and resilience.

As the CFIIS facilitates the introduction of the NEV, ferry operations are described here for context. The 32-car NEV is intended to replace the 28-car capacity MV Corran as the primary service vessel on the Narrows whilst the 28-car capacity MV Corran replaces the 14-car capacity MV Maid of Glencoul as the standby vessel. The NEV will therefore increase capacity in each sailing by 15% compared to the MV Corran, thereby facilitating the movement of more vehicles per crossing and reducing vehicle wait times and potential for back-up onto the adjacent road network. As mentioned in Section 2.6: Development Description, it is envisioned the NEV will move from a timetabled service to a shuttle service in peak times, as per current operations of the MV Corran. It is envisaged that the ageing MV Maid of Glencoul will be retired from the Corran Ferry service.

Note, the MV Corran will require modification of its quarter ramps to allow it to move from operating on the existing 1:10 slipway ramps to the new 1:8 slipway ramps. These vessel ramp modifications are out of scope of the CFIIS.

The main activities associated with the ferry service will not change due to the CFIIS. The following activities will be very similar to what they are currently, although their location may change:

- Vessels transit between the slipways on Nether Lochaber and Ardgour sides of the Narrows on a timetable or in shuttle-mode at peak times;
- Vehicle, passenger and cyclist loading to vessels via the slipways;
- Vehicle, passenger and cyclist access and use of the slipways and marshalling areas;
- Day-to-day vessel and infrastructure maintenance, including monitoring inspections, servicing, refuelling and wash-down; and
- The ferry office building and storage building (Cuil Righ) at Ardgour will continue to be utilised (with no change in location).

The CFIIS will introduce the following changes to operations:

- Vessels will be berthed on the overnight berthing structure when not in use, as opposed to moored on the off-shore swing mooring, eliminating the need for vessel-to-vessel transfers of personnel;
- The NEV will be charged at the overnight berthing structure via the electrical network (potentially utilising diesel infrastructure in the short-term pending any necessary upgrades to the existing power network);
- The new overnight berth provides the potential for a 'fair-weather' berth on the North side of the pier head;
- Ferry service route will lengthen slightly from approximately 420m to an estimated 550m and be located approximately 150m north from the existing route.
- Marshalling areas are significantly increased on the Nether Lochaber side providing significantly increased capacity to mitigate the impacts of peak periods and their potential to impact the adjacent trunk road network;
- A new road junction on the A82 will considerably improve the approach and access to ferry infrastructure for all vehicles compared to the existing junction;
- Water bunkering activities may be carried out on the overnight berthing structure;
- The purser's kiosks will provide improved welfare facilities for shore-based ferry personnel;
- Additional facilities will be provided on the Nether Lochaber side including a changing places toilet, parking, cycle shelter and EV charging facilities;
- Maintenance dredge activities may be required to ensure water depths are maintained on the Ardgour side, though these are expected to be infrequent; and
- New slipways facilitate the potential for access by additional vessel types (i.e., Caledonian Maritime Assets Limited's (CMAL's) 'Loch Class' ferries) on the route from time to time, if required.

The NEV is anticipated to have an operating life of 30 years. There is, at present, no plans to discontinue the Corran Ferry service. There is however, an aspiration for a fixed link at Corran Narrows (as discussed in Section 2.5: Alternative Crossing Options), which would essentially render the service redundant. The future of the CFIIS under this scenario is discussed in Section 3.6: Decommissioning.

3.6 Decommissioning

The CFIIS will result in a diversion of operations away from the existing slipway at Ardgour and the existing slipway, carpark and toilet facilities at Corran. This infrastructure is proposed to be retained, primarily as a contingency for the lifeline ferry service and also because it is understood the infrastructure will still provide benefit to local communities.

Access and use of the existing slipways at Ardgour and Corran will be maintained in the short to medium term in part for the operational service of the MV Maid of Glencoul. The MV Maid of Glencoul will remain as a back-up vessel for the Corran Ferry service until the NEV is fully operational on the route, however, she will be unable to operate safely on the new 1:8 gradient slipways. As a result, the existing toilet block, car park and cycle shelter at Corran may continue to be utilised by ferry service passengers in the short to medium term.

Even beyond the service lifetime of the MV Maid of Glencoul, the existing slipways are proposed to be retained for use or re-purposed by local communities and THC. These concrete surfaced, sheet-piled and infilled slipways do not readily deteriorate and hence there is low risk of their causing any detrimental impacts to the local environs. THC will continue to manage access to slipways and have proposed the use of access gates following the introduction of the NEV, if required.

The existing carpark, toilet block and cycle shelter at Corran are also proposed to be retained during and beyond the operational phase of the CFIIS for the amenity these facilities provide. These facilities are frequently used by tourists, pulling off the A82 for a rest stop and to enjoy the scenic outlook. The carpark can also act as overflow parking for local businesses, such as the Corran Bunkhouse and has the potential to be converted into an overnight parking area with additional picnic tables, encouraging the use of this public space. A potential change of use would be subject to a separate planning application and is not considered part of the CFIIS project.

The CFIIS infrastructure will be designed and constructed for a design life of 50 years in line with Category 4 'Marine Structures' of British Standard (BS 6349), assuming appropriate maintenance during operations. A 50-year design life exceeds the anticipated lifespan of the proposed NEV and greater than that of the proposed standby vessel, the MV Corran. As discussed in Section 2.5: Alternative Crossing Options, a fixed link across the Narrows remains an aspiration for THC, and the infrastructure of the CFIIS in no way precludes a future fixed link crossing option. If a fixed link is delivered in future, the CFIIS infrastructure will be able to be re-purposed. The overnight berthing structure at Ardgour may be suitable for providing berthing for leisure craft or commercial vessels (e.g., fish farm boats). The slipways could be utilised for launch/recovery of small vessels. The CFIIS marshalling and car park on the Nether Lochaber side could be re-purposed as overnight parking and/or public open space for leisure activities. The scenic viewpoints down the glen make this an attractive opportunity.

As such, whilst existing infrastructure at both Ardgour and Corran may no longer be required to support the ferry service in the longer term, this infrastructure has value in supporting local businesses, fish farm activities, recreation and tourism.

Under the long term scenario where the proposed infrastructure is truly redundant and required for removal, demolition techniques will predominantly be a reversal of construction techniques (described in Section 3.3.1: Construction Methodology). Any potential environmental effects associated with demolition or decommissioning are therefore reasonably expected to be equal to (or less than) those associated with construction, which will be assessed in the EIA. Subsequently, all decommissioning or demolition activities beyond the design life of the infrastructure are not considered to warrant a separate impact assessment and will be **scoped out** of the EIA.

4 Consenting and Policy Context

4.1 Consenting

Construction of the proposed CFIIS will fall under two main legislative acts, the Marine (Scotland) Act 2010 and the Town and Country Planning (Scotland) Act 1997, which require compliance with underpinning regulations. The main regulatory instruments are discussed here but this list is not exhaustive. In addition, there may be further licences and consents required to facilitate construction and operations.

4.1.1 Planning Consent

As the CFIIS involves new development above MLWS and the making of material change in the use of any buildings or other land, planning permission will be required under The Town and Country Planning (Scotland) Act 1997, as amended.

An EIAR and PAC process will be required to support the planning permission application as discussed in Sections 4.1.3 and 4.1.4 respectively.

4.1.2 Marine Licensing

A number of activities listed under Part 4; Section 21 of the Marine (Scotland) Act 2010, as amended, require a Marine Licence. The CFIIS includes activities involving the deposit or removal of substances or objects in the sea, either on or under the seabed, and activities to construct, alter or improve any works in or over the sea or on or under the seabed. Hence, marine elements of the scheme are subject to marine licensing and the project will therefore require the following licences to be issued by Marine Directorate Licensing Operations Team (MD-LOT):

- Licence to construct, alter or improve works in the Scottish Marine Area (SMA); and
- Licence to carry out any form of dredging and deposit any substance or object in the SMA.

An EIAR and PAC process will be required to support the marine licence application as discussed in Sections 4.1.3 and 4.1.4 respectively.

4.1.3 Environmental Impact Assessment

To determine whether an Environmental Impact Assessment (EIA) is required, developers may request a Screening Opinion from the relevant consenting authority under Regulation 10(1) of the Marine Works (EIA) (Scotland) Regulations 2017, as amended, and/or Regulation 8(1) of the Town and Country Planning (EIA) (Scotland) Regulations 2017, as amended. For the purpose of this report, the Marine Works (EIA) (Scotland) Regulations 2017, as amended, and the Town and Country Planning (EIA) (Scotland) Regulations 2017, as amended, will hereafter be referred to as the 'marine EIA regulations' and 'terrestrial EIA regulations' respectively.

The CFIIS project team understood the proposal would constitute an EIA development under item 10(g) of Schedule 2 of the marine and terrestrial EIA regulations; construction of a harbour or port installation exceeding 1 ha. Confirmation was requested from THC Planning on 25th July 2023, for which a positive Screening Opinion was received on 16th August 2023 that an EIA would be required to support the planning application.

In consideration of both THC's Screening Opinion and managing the risks of the project, the CFIIS project team have elected to undertake and submit an EIA for both terrestrial and marine elements of the proposal. The submission of an EIA to the MD-LOT, subsequently qualifies the proposal as an EIA development under item 7(2)(b) of the marine EIA regulations. Hence, a single EIAR will be submitted to support both the Planning Permission and Marine Licence applications.

4.1.4 Pre-application Consultation

PAC is a requirement to support a planning consent application and/or marine construction licence application for developments that meet certain criteria. The PAC process is established to ensure effective stakeholder and community consultation.

The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 prescribes that projects above MLWS and which are classified as 'Major Developments' require PAC. 'Major Developments' are defined by The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009. The CFIIS is understood to qualify as a project requiring PAC under The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009 due to:

- The area of the site is or exceeds 2 ha above MLWS, i.e. constituting a 'Major Development'.

The Marine Licensing (Pre-Application Consultation) (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 CFIIS qualifies as a project requiring PAC because it will incorporate:

- A deposit or object within the Scottish marine area for the purposes of reclaiming land; and
- Construction of works within the Scottish marine area that exceeds 0.1 ha.

Subsequently, the scheme is required to go through the PAC process to meet the requirements of both marine and planning PAC regulations. The project team will give notice to THC Planning Department in the form of a Proposal of Application Notice in accordance with item 35B(2) of the Town and Country Planning (Scotland) Act 1997, as amended. A PAC Report, incorporating a summary of consultation activities and outcomes will be submitted to support the marine licence and planning consent applications.

4.1.5 Crown Estate Licence

Under the Scottish Crown Estate Act 2019 (The Act), The Crown Estate owns the Scottish territorial seabed out to 12 nautical miles (NM). The Crown Estate issues licences, leases, and consents for various marine works including (but not limited to) ports and harbour development, dredging and dumping of material, laying cables and pipelines, coastal protection and flood defence works and deployment of monitoring equipment.

Authorisation from CES in the form of a Marine Works Licence may be required for the subsea cable removal works, dredging and re-use or disposal of spoil, and construction of marine infrastructure and land reclamation.

4.1.6 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', has the primary aim of maintaining biodiversity within Member States. The Habitats Directive is transposed into Scottish law by a combination of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) and the Habitats Regulations 2010 (in relation to reserved matters). These are commonly known as the 'Habitats Regulations'.

The Habitats Regulations identify several habitats or species whose conservation interest requires the designation of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), which form a set of protected sites within the United Kingdom (UK) National Network.

In addition, the Habitats Regulations make it an offence to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. These listed species are commonly termed European Protected Species (EPS). Actions in relation to EPS can be made lawful through the granting of derogation licences. The licences are granted by the relevant authorities.

4.1.6.1 Habitats Directive

A Habitats Regulations Appraisal (HRA) will be required for the CFIIS due to its proximity to multiple sites within the UK Site Network, namely SACs and SPAs. The legislative context for this requirement is incorporated within Article 6(3) of the Habitats Directive (92/43/EEC) and Article 4(4) of the Birds Directive (2009/147/EC) and is implemented in Scotland through the Habitats Regulations.

An Appropriate Assessment (AA) is part of the HRA process and is required when a plan or project potentially affects a site on the basis of 'likely significant effects' (LSEs).

An AA must demonstrate that there will be no adverse effect on site integrity, nor on the conservation objectives of the designated site. Should this requirement not be satisfied, a project would only receive consent if:

(1) Imperative Reasons of Overriding Public Interest (IROPI) are proved; and
(2) There are no satisfactory alternatives.

It is responsibility of the competent authority to determine whether there are any LSE and therefore whether an AA is needed for relevant designated sites. To inform this process, a HRA Supporting Document considering sites that could be affected by the development will be provided. This Supporting Document will provide sufficient information to allow the competent authority to undertake a HRA (and an AA, if required). This Supporting Document will be provided as part of the consent application.

4.1.6.2 European Protected Species Licence

If it is determined that the development or construction activities will likely affect EPS listed under the Habitats Regulations, which includes cetaceans and European otter, an EPS Licence will be required. An EPS licence will only be granted if it is proved that:

(1) The project IROPI can be proven;
(2) There are no satisfactory alternatives; and

(3) The proposed action must not be detrimental to the maintenance of the species at 'favourable conservation status'.

The construction techniques likely to be utilised for the CFIIS have potential to disturb cetaceans, and licensing will be required. This is discussed further in Section 14.2: Marine Mammals. In addition, with evidence of European otter known in the area, consideration will also be given with regard to otters. Otter are considered further in Section 13: Terrestrial Ecology and Ornithology.

4.1.7 Water Framework Directive

The Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament) is transposed into Scottish law through the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act). The directive aims to achieve a good quality status for all rivers, lochs, transitional waters (estuaries), coastal waters groundwater and groundwater dependant wetlands. As such, the main aims of the WFD are to:

- Prevent deterioration and enhance status of aquatic ecosystems, including groundwater;
- Promote sustainable water use;
- Reduce pollution; and
- Contribute to the mitigation of floods and droughts.

To assess the impact of any development or activity on a water body, especially those which may pose a risk of reducing the quality status of a water body, a WFD assessment is required. A WFD assessment should demonstrate if the development will:

- Cause or contribute to deterioration of status; and/or
- Jeopardise the water body achieving good status.

A WFD assessment will be required for the CFIIS. Details of the assessment are discussed in greater detail in Section 10: Water Quality.

4.1.8 The Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended)

Under the Water Environment and Water Services (Scotland) Act 2003 Act, the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (hereafter referred to as ‘CAR’) apply regulatory controls over activities which may affect Scotland’s water environment. CAR covers activities relating to point-source and diffuse discharges, water abstraction, engineering within inland waterways and groundwater works which could impact upon water courses and water bodies including: rivers, lochs, estuaries, coastal waters, as well as groundwater and groundwater dependant wetlands. Activities are controlled by the SEPA under General Binding Rules (GBRs), registration and licence level authorisations. While CAR does not apply to projects authorised by a Marine Licence, construction works above MHWS affecting the water environment and any permanent discharges to water from the CFIIS will fall under CAR. Furthermore, relevant GBRs should be followed, where appropriate, to minimise pollution risks in line with construction best practice.

4.2 Policy Context

This section outlines the main policies relevant to the proposed CFIIS. Where policies from the National Planning Framework 4 (NPF4), Highland-wide Local Development Plan (HwLDP), West Highland and Islands Local Development Plan (WHILDP), Scotland's National Marine Plan (NMP), Planning Advice Notes (PANs) and Technical Advice Notes (TANs) are relevant to a specific environmental topic, they are mentioned in the relevant sections within this document.

4.2.1 Scottish Government Net-Zero and Decarbonisation Targets

In 2019, Scotland committed to achieving net-zero GHG emissions by 2045 through the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. This commitment will require the decarbonisation of all sectors, including industry. To address decarbonisation in industry, initial targets up to 2032 were established in the 2018 Climate Change Plan (CCP). The current CCP identifies seven key sectors, including transport, and a summary of their targets/policies to contribute towards net-zero. The commitment to net-zero and the targets/policies of the CCP were key factors in the business case for a new vessel to be electric, and the associated requirement for vessel charging infrastructure.

4.2.2 Planning Policies

The development planning 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).

The NPF4 sets out the strategy for long-term development within Scotland. It was published in February 2023 and sets out the strategy for development for the next 20 years (Scottish Government, 2023). Relevant policies for CFIIS which will be used to support the EIA are identified in individual topic sections.

The relevant LDPs are the HwLDP (THC, 2012) and the WHILDP (THC, 2019). Of note, the Corran crossing is specifically outlined in the HwLDP for 'improved ferry connection'.

With the adoption of NPF4, THC's website states this will likely lead to a reduction in the number and range of policies required in LDPs and that a review of the LDPs is planned. Although there are to be new arrangements for LDPs, policies of the HwLDP and WHILDP are still in place. Hence, relevant policy considerations will be considered in the EIAR.

The Scottish Government also provides advice and technical planning information in the form of PANs and TANs. The key principles of PAN 1/2013 Environmental Impact Assessment, namely integration, proportionality and efficiency, have been utilised to inform the scoping approach (refer Section 1.2: Scoping Methodology) and will be likewise used for the development of the EIA. Relevant PANs for CFIIS which will be used to support the EIA are identified in individual topic sections.

4.2.3 Scottish National Marine Plan

As the CFIIS is in part below MHWS and within 12 NM of the Scottish Coastline, it falls within the remit of the Marine (Scotland) Act 2010 and the 2015 Scottish National Marine Plan (NMP) covering inshore waters as required by the Act (Scottish Government, 2015a). The NMP lays out the Scottish Minister's policies for the sustainable development of Scotland's seas and provides General Planning Principles (GENs) and sector-specific policies, most of which apply to the construction and operations of CFIIS. In addition, there are a series of Good Environmental Status (GES) descriptors within Scotland's NMP.

It is noted that work is underway on Scotland's National Marine Plan 2 (NMP2). The status of NMP2 will be monitored and if there are any new or different policies relevant to the development then these will be considered within the EIAR.

GESs and GENs are specific to environmental topics and as such, are detailed in the relevant sections within this report. In addition, the following marine planning policies in the NMP are also considered for this project:

- TRANSPORT 5 - climate and sea level projections should be taken into account in the design of any new ports and harbours, or of improvements to existing facilities; and
- REC & TOURISM 4 – provides support to proposals that incorporate opportunities to share infrastructure with recreational users.

5 Cumulative Impacts

Cumulative Impact Assessment forms part of the EIA process, although it is recognised that this can be a complex process to implement. Existing built developments will form part of the baseline for assessment within various chapters of the EIA, however, it is necessary to take into account future unrelated developments that may give rise to cumulative impacts.

As the number and nature of cumulative impacts may change between the submission of this report and subsequent submission of the EIA, this section only states how potential cumulative impacts associated with the CFIIS are proposed to be assessed within the EIA.

5.1 Methodology

IEMA suggest a useful ground rule for cumulative impact assessment, which will be applied in the production of the CFIIS EIAR:

- Developments already built and operational are excluded from cumulative impact assessment, as they are included within the EIA environmental baseline;
- Projects that are consented but not yet developed or are within the consenting process need to be considered; and
- Projects that are earlier in the process (i.e. prior to consent submission) can be discounted, as the developer of that project will be responsible for considering the effects of other projects in their own consent applications, and there is unlikely to be sufficient information to make a meaningful assessment.

Based on the nature of a topic-specific assessment and dependent on the geographical zone of influence for individual effects, consideration of the potential for cumulative impacts will reasonably vary between topics. All assessments will consider the potential cumulative impacts, in accordance with the EIA Regulations, and the extent of each assessment will be defined within each topic-specific chapter of the EIAR. The terminology that will be used to describe cumulative effects, as adopted by IEMA, is as follows:

'Additive Effects are those that result from additive effects caused by other past, present or reasonably foreseeable actions together with the plan, programme or project itself; and

Synergistic Effects which arise from the reaction between effects of a development plan, programme or project on different aspects of the environment (IEMA, 2020a)'.

Factors considered in scoping other projects in or out for cumulative impact assessment include connectivity, pathways, receptor locations and effect ranges. Once projects that may give rise to cumulative impacts have been identified (as per Sections 5.1.1 and 5.1.2), a review of their potential effects will be completed to understand whether they could have impacts upon the same receptors as the CFIIS. Cumulative assessment will be considered for the relative topic areas utilising the information publicly available for the relevant projects. The outcome will be recorded within the CFIIS EIAR, presented on a topic-basis, with cumulative assessment considered for each relevant topic area. Where required, mitigation measures will be outlined under each of the topics assessed within the CFIIS EIA.

5.1.1 Onshore Developments

Terrestrial developments will be identified through a review of the Highland Council ePlanning web portal. As a general rule, these are anticipated to include developments of the following nature:

- Major developments close enough to have impacts on the same receptors; and
- Potentially non-major developments in the immediate vicinity of the proposed development, which could impact upon the same receptors. It's noted that this is unlikely to include residential alterations or developments of less than 3 houses.

A review conducted in March 2024 has identified only one project within the categories above, the Choire Nam Muc Hydropower Scheme. This hydropower scheme was consented in 2019 (planning reference: 17/01675/FUL), with construction initially planned for 2023/2024 and the potential to become operational in 2024/2025. The need to assess cumulative effects will be considered within the EIAR.

5.1.2 Marine Developments

At the time of preparing this Scoping Report, there are currently no marine developments that have been identified as having the potential for significant cumulative effects.

Marine developments for consideration in the EIA will be identified through a review of both the Highland Council ePlanning web portal and the Marine Directorate's register of current projects. As a general rule, these are anticipated to include developments of the following nature within Loch Linnhe:

- Ports and harbour developments;
- Aquaculture developments; and
- Recreational marine developments.

6 In-Air Noise and Vibration

Environmental, or community noise is a broad term that encompasses noise emitted from many sources, including road, rail, marine and air traffic, industry, construction, public work and neighbourhood noise. All of these sources potentially contribute adversely to the overall noise environment. It is therefore reasonable to expect communities to be sensitive to any deterioration in their acoustic environment as a result of a proposed development.

The proposed CFIIS will introduce temporary new noise and vibration sources into the local area in the form of construction plant and activities, and permanent new noise sources in respect of battery charging of the NEV. This section consequently considers the potential for adverse noise and vibration impacts to occur from the construction of the development, and from operational noise in relation to power generation/storage for NEV charging. Variations in noise levels from the existing noise environment may also occur as a result of moving existing noise sources to new locations, for example, use of the new marshalling area on the Nether Lochaber side and vessel loading of vehicles at both new slipways. Hence, these changes are also considered.

It is recognised that, although the NEV is out of scope for the project, the electric propulsion of this vessel will reduce operational noise as the electric battery will be considerably quieter than the diesel engines of the existing diesel powered vessels.

For environmental assessments, ‘noise’ typically refers to airborne noise, whilst vibration can be thought of as ground-borne noise. For the remainder of this section, unless specified, the term ‘noise’ refers to both airborne noise and vibration.

Note, the potential for in-air noise and vibration effects on terrestrial species are considered in Section 13: Terrestrial Ecology and Ornithology. Underwater noise and vibration is considered separately in Section 7.

6.1 Legislation, Policy, Guidance and Resources

The overarching European legislation in relation to terrestrial environmental noise is the ‘Environmental Noise Directive’ (END). The END aims to limit people’s exposure to environmental noise but does not prescribe noise limits. Instead, it requires each member state to provide data on noise exposure, and to develop action plans to prevent or reduce noise exposure and to preserve existing quiet areas. Although the UK has now left the EU, this requirement is still in place as the END is transposed and implemented within ‘The Environmental Noise (Scotland) Regulations’.

At a national level, the relevant policy documents include:

- Planning Advice Note (PAN) 1/2011 – ‘Planning and Noise,’ (Scottish Government, 2011a); and
- Technical Advice Note (TAN) – ‘Assessment of Noise’ (Scottish Government, 2011b).

PAN 1/2011 provides little guidance in respect of construction noise, other than recommending that the use of planning conditions is not the preferred method for controlling temporary construction noise. Specifically, the document states:

“32. While planning conditions can be used to limit noise from temporary construction sites, it is most effectively controlled through the Control of Pollution Act 1974 (COPA74) and the Pollution

and Prevention Control Act 1999 for relevant installations. Notice can be served in advance of works and site conditions set to control activities."

Guidance relevant to noise and vibration associated with the CFIIS includes:

- BS 5228:1997 and BS 5228:2009 'Noise and vibration control on construction and open sites' (BSI, 1997; BSI, 2009);
- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound';
- Design Manual for Roads and Bridges (DMRB) (National Highways *et al.*, 2024); and
- Pre-application Advice for Major Developments pack (THC, 2023a).

The 'Code of practice for basic information and procedures for noise and vibration control' parts 1 to 5 (BSI, 1997) is the approved Code of Practice under COPA74, however, it is the 2009 version of the Standard that should be used for planning applications.

The BS 5228:2009 standard provides useful guidance on practical noise control. Part 1, provides recommendations for basic methods of airborne noise control including sections on community relations, training, occupational noise effects, neighbourhood nuisance and project supervision. The annexes provide information on noise sources, noise calculation procedures, mitigation measures and their effectiveness. Part 2 provides similar guidance for vibration.

BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BSI, 2019) is an appropriate method of assessment for fixed plant and is a recognised standard within PAN 1/2011 and the associated TAN. It should be noted, however, that BS 4142 is suitable only for the assessment of residential receptors and so an alternative method of assessment will need to be agreed if any non-residential receptors are identified.

6.2 Baseline

A desktop survey has been undertaken to identify the location of the nearest groups of Noise Sensitive Receptors (NSRs) within the vicinity of the project. Ardgour is a small settlement of approximately 30 houses, the Inn at Ardgour and the Corran Point Lighthouse. Corran is a similarly small settlement containing approximately 7 'shorefront' houses west of the A82 trunk road, the Corran bunkhouse short stay accommodation and The Corran (serviced accommodation). Corran also includes another 7 or so houses up the hill, east of the trunk road. As such, NSRs in these settlements consist of residential housing, short-stay accommodation and the Corran Point Lighthouse. Locations of these NSRs are depicted in Drawing 99_DRG_08_1 in relation to an indicative development boundary. All identified NSRs are in the vicinity of the existing ferry infrastructure and ferry operations, and hence subject to a level of operational noise impacts in the current state.

6.3 Potential Construction Impacts

Construction noise is expected to result primarily from the following activities:

- Rock stripping and possible rock blasting;
- Rock crushing and processing;
- Vibration and impact piling;
- Dredging activities;
- Hot cutting/grinding;

- General construction activities; and
- Construction traffic.

Construction noise levels will vary throughout the construction period as construction activities, plant and locations vary. Construction noise effects would be temporary in nature, although the construction period is anticipated to last 12-18 months, so noise effects do have the potential to be significant if not considered and controlled appropriately.

Note, blasting is not the preferred method of marine or terrestrial rock removal, however, it may be required in certain circumstances. The magnitude of blasting cannot be determined at this stage, however noise impacts from blasting will be of very short duration and are expected to be managed via communications to local stakeholders. Furthermore, it is in the interest of the blast engineer to minimise air-overpressure (noise) to increase the efficiency of the blast.

Until the required construction methods are further refined, it is not possible to determine the likelihood for significant vibration effects, however, appropriate vibration level limits for the nearest residential receptors can be adopted within the EIA to ensure no adverse vibration impacts should occur (refer Section 6.5: Mitigation).

6.4 Potential Operational Impacts

Operational noise impacts would be temporary and permanent in nature and so careful consideration has been given to the siting of operational activities.

The potential introduction of temporary plant (e.g., a diesel generator) will contribute additional noise to the local soundscape and so an assessment will be required in accordance with BS 4142 to determine the extent of any required mitigation. Note, whilst the NEV itself is not within the consenting scope, it is recognised that charging of the vessel's onboard batteries is facilitated by the CFIIS, hence battery charging will be assessed in accordance with BS 4142 to inform the need for any mitigation.

Noise from vehicle movements will (and currently does) contribute to the noise environment. There is the potential for noise levels to increase in some locations and decrease in others, as a result of the relocation of marshalling areas and accesses. There is the potential for positive impacts for some NSRs, particularly in Corran, where existing activity will move further away from some receptors.

No vibration effects are anticipated from operation of the development on either the Ardgour or Nether Lochaber side of the Narrows.

6.5 Mitigation

As it is not possible to assess blasting vibration at EIA stage, impacts from blasting (if required) will be controlled through the setting of vibration limits. These will be defined in consultation with the blast engineer and governed through construction Risk Assessments and Method Statements (RAMS). This mitigation has been captured in the ISoM in Section 24 for implementation.

6.6 Proposed Impact Assessment

It is proposed that the following elements are **scoped in** to the Noise Impact Assessment (see Table 6.6.1), and included within the EIAR:

- Construction noise (including road traffic but excluding blasting);
- Construction vibration (excluding blasting);
- Operational noise from temporary plant (e.g., diesel generator) and NEV batteries; and
- Operational noise from road traffic: the noise from road traffic arriving and leaving the ferry access areas (i.e. slipways and marshalling areas) will be considered.

Monitoring and methods proposed for the impact assessment is discussed in Section 6.6.1 and 6.6.2.

It is proposed that the following elements are **scoped out** of the Noise Impact Assessment as outlined in Table 6.6.1.

- Operational vibration: No vibration effects are anticipated from operation of the development;
- Blasting noise (air-overpressure): It is not possible to predict noise from blasts and BS 5228 advises that limits cannot be set. It is in the interests of the blast engineer to minimise air overpressure to increase the efficiency of the blast;
- Blasting vibration: It is not possible to assess this at the EIA stage and is more appropriately controlled through the setting of vibration limits. Should blasting be required, this will be controlled through use of a Risk Assessment Method Statement (RAMS).

A summary of the scoping outcomes is presented in Table 6.6.1.

6.6.1 Baseline Noise Monitoring

A baseline sound level survey will be undertaken as part of the EIA. It is proposed that monitoring will be undertaken at four Noise Monitoring Locations (NMLs). Indicative NMLs are shown on Drawing 99_DRG_08_1. If required, these will be adjusted in field to obtain the best representation of data for the NSRs. Continuous unattended monitoring will be conducted at NMLs for a period of approximately 1 week. In addition, some attended spot measurements will be undertaken during the installation and decommissioning of the survey equipment. Simultaneous wind speed and rainfall monitoring will be carried out at one of the NMLs and the measured sound level data filtered for periods of high wind speeds and precipitation events.

The monitoring undertaken at the NMLs will be used to quantify the existing background and ambient sound levels. These will then be used to determine appropriate noise level limits for the construction and operational periods. The spot measurements will be used to quantify noise levels from existing operations and sound sources, and will be used to inform the operational noise assessment.

6.6.2 In-air Noise and Vibration Impact Assessment

It is proposed that a Construction Noise Impact Assessment is undertaken in accordance with the BS 5228 guidance. Where appropriate, this assessment will also consider the potential for adverse vibration impacts, although this will not cover blasting, which can only be assessed following a series of test blasts on the development site.

An airborne noise propagation model will be produced that will predict noise levels for a series of construction scenarios, which will be determined with reference to a proposed construction timeline. Each modelled scenario will consider the noise level output of typical construction plant that may be working in activity areas closest to sensitive receptors. The predicted levels will be compared to the threshold levels detailed in BS 5228:2009+A1:2014 - Part 1 Noise.

Annex E of BS 5228:2009 provides methods of predicting vibration levels from a variety of construction activities. Vibration calculations will be undertaken for a similar set of scenarios as those selected for the airborne noise assessment. However, the study area for the vibration assessment will be limited to the closest receptors to the construction activity areas, on the assumption that if vibration is within acceptable levels at the closest receptors, then it should also be within acceptable levels at more distant receptors. Predicted vibration levels will be reported for both a 66% and 95% confidence level and compared to appropriate vibration limits. The assessment will consider vibration effects on both humans and buildings.

It is anticipated that operational noise of the temporary diesel generator, if required, and the permanent NEV charging infrastructure will be assessed in accordance with BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

In addition, consideration will also be given to traffic movements with due regard to appropriate standards, such as DMRB (National Highways *et al.*, 2024) to determine the Significance of Effects with respect to Observable Adverse Effects Levels.

As per the Pre-application Advice for Major Developments pack (THC, 2023a), the Noise Impact Assessment will include:

- For construction:
    - A description of construction activities with reference to noise generating plant and equipment;
    - A detailed plan showing the location of noise sources, NSRs and NMLs;
    - A description of any noise mitigation methods that will be employed and the predicted effect of such methods on noise levels;
    - A prediction of noise levels resultant at the curtilage of NSRs; and
    - An assessment of predicted noise levels in comparison with relevant standards.
- For operations:
    - A description of the proposed development in terms of noise sources and the proposed locations and operating times;
    - A detailed plan showing the location of noise sources, NSRs and NMLs;
    - A description of any noise mitigation methods that will be employed and the predicted effect of such methods on noise levels;
    - A survey of current ambient (LAeq) and background (LA90) noise levels at appropriate locations neighbouring the proposed site;
    - A prediction of noise levels resultant at neighbouring noise sensitive premises, for the operational phase of the proposed development. The raw data and equations used in the calculations will be made available on request; and
    - An assessment of predicted noise levels in comparison with relevant standards.

Table 6.6.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Noise (excluding blasting)	In	In
Vibration (excluding blasting)	In	Out
Road Traffic	In	In
Blasting Noise & Vibration	Out	NA

NA = Not applicable.

7 Underwater Noise

The focus of this section is to provide an understanding of underwater noise associated with the construction and operation of the proposed CFIIS. Underwater noise can cause disturbance or harm to fish and marine mammals depending on the frequencies and sound levels involved. The significance of the impacts of underwater noise on various ecological receptors can be found in Section 14.2: Marine Mammals and Section 14.3: Fish and Shellfish of this report. This section focusses solely on the sources of underwater noise and whether they can give rise to significant noise levels at frequencies that need to be considered for marine ecological receptors.

7.1 Policy, Guidance and Resources

The Scottish Government has released general policies as part of the Scotland's National Marine Plan in favour of sustainable development and use of the marine environment which include:

- **GEN 13 Noise**: Development and use of the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects (Scottish Government, 2015a).

The Scottish government has released a series of good environmental status descriptors (GES) within Scotland's National Marine Plan. These include:

- **GES 11**: Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment. (Scottish Government, 2015a).

General underwater noise data was explored from the Joint Nature Conservation Committee's (JNCC's) Marine Noise Registry (MNR) and noise related scientific literature to inform this section of the Scoping Report. This was determined to be suitable in the absence of underwater noise level data for the specific region of the Corran Narrows.

7.2 Baseline

Background or "ambient" underwater noise is created by several natural sources, such as rain, breaking waves, wind at the surface, and seismic, biological and thermal noise.

Biological sound sources include marine mammals (using sound to communicate, build up an image of their environment and detect prey and predators) as well as certain fish species. Anthropogenic sources of noise in the marine environment include fishing boats, ships, industrial noise, seismic surveys and leisure activities, all of which add to ambient background noise.

Hydrodynamic and geophysical movement within the Narrows will contribute to the overall soundscape, known as geophony. Current speeds within tidal races can produce elevated background noise levels, particularly at higher velocities (Bassett *et al.*, 2014). Turbulence, seabed stress and sediment movement all contribute to elevated noise levels, typically at frequencies <100Hz (Willis *et al.*, 2013). It is expected that in the Corran Narrows, with observed tidal movements up to 2.85 ms^{-1} (Partrac, 2022), flow noise will contribute heavily to the overall soundscape. The Corran Narrows may have several anthropogenic noise sources that also contribute to the marine soundscape. The ferry service between Ardgour and Corran has been in place for centuries, with the current diesel-engine MV Corran operational since 2001. On a daily basis, the ferry transits the Narrows multiple times an hour and is likely to be a notable component of noise levels within the area. This also includes a programme of cruise vessels, with 17 cruise vessels scheduled for 2024 (FWMSCIC, 2024). As the only entrance into upper Loch Linnhe, the Corran Narrows is also a commonly used thoroughfare for other vessels and as such, will experience intermittent increases in vessel noise alongside typical ferry movements. Commercial vessels associated with the timber mill, aquaculture sites and other businesses at Corpach and Caol navigate the Narrows frequently, while recreational vessels transiting the Caledonian Canal must also navigate this area. Shipping generally contributes substantially to the noise levels at low frequencies (<1000Hz) in coastal areas (Wilcock *et al.*, 2014), however, the west coast of Scotland has lower overall shipping noise levels than other areas of the UK (Farcas *et al.*, 2020). Nonetheless, the baseline underwater noise levels are expected to be slightly elevated within the Corran Narrows due to vessel noise.

Other anthropogenic noise sources within the Corran Narrows and surrounding waters may be generated at the Ardgour salmon farm. While the farm does not use Acoustic Deterrent Devices (ADDs) to prevent seal depredation, typical activities at the site will likely create noise. These may include diesel-powered generators for electricity generation, air-powered feeder systems, net cleaning, and workboat/transportation vessel movements (Sim, 2021).

Seabed bathymetry can strongly influence the sound propagation (how sound travels from its source). Sound propagating in shallow waters, such as those in the Corran Narrows, interacts strongly with the seabed and surface. Reflection of the sound from these surfaces causes it to lose energy with distance from the source. Sound may also absorb into the seabed resulting in it being dampened, which is otherwise known as attenuation. Sound propagation within shallow water is complex and can be influenced by environmental factors including seasonal oceanographic conditions (DOSITS, 2021). The type of sediments in an area also influences sound propagation through reflection, attenuation, and scattering effects (Jensen *et al.*, 2011).

The bathymetry and hydrology of the Corran Narrows will heavily influence sound propagation, in addition to the enclosed nature of the Narrows and the surrounding coastline. The physical marine environment is largely influenced by tidal and eddy currents that move through the channel, which is approximately 280m wide at the narrowest point (Scottish Government, 2015b). Tidal fluctuations generate considerably strong currents (>2.5m/sec during spring tides). The main channel has a complex bathymetry which becomes a more gradual slope towards the Ardgour side. The maximum depth is approximately 29m below chart datum (CD). Due to the shallow depths associated with the area and the subsequent absorption of sound at the seafloor and sea surface interface, it is likely that sounds do not travel far from the source within this environment (Richardson *et al.*, 1995).

7.3 Potential Construction Effects

During construction and installation of the CFIIS, there is the potential for underwater noise to be generated from the following activities:

- Rock stripping and possible rock blasting;
- Vibration and impact piling;
- Dredging activities; and
- Vessel movement.

Reclamation of land includes the placement of material onto the seabed, however noise levels associated with this activity are minimal and hence not considered within this section.

7.3.1 Rock Stripping

Rock stripping may need to be conducted to create suitable depths or surfaces for installation of infrastructure. This may be conducted using mechanical methods or blasting, which may produce elevated noise levels.

The mechanical rock breaking technique employed will determine the source noise levels, for example measurements of hydraulic rock breaking of a Xcentric Ripper determined unweighted source levels of 184.8 decibels (dB) re 1 Mirco-pascal (μPa) RMS (Lawrence, 2016). As discussed in Section 14.2 and 14.3 the potential for disturbance of ecological receptors by rock stripping activities cannot be ruled out at this stage.

If underwater rock blasting techniques are required for the construction phase of CFIIS, noise emissions would have a greater likelihood of causing adverse effects on receptors and could potentially cause significant effects.

7.3.2 Piling

Piling will be required to construct the overnight berthing structure and Ardgour slipway structure. Underwater noise levels generated by piling increase with pile diameter. This is due to larger diameter piles having greater surface areas in contact with the surrounding environment. As such, more energy can be transferred into the water column and seabed in the form of noise. Noise from piling is produced as piles are driven into the seabed using vibration or hammer (impact) methods. Pilling typically gives rise to noise at levels at source which are high enough to cause harm to marine mammals and potentially fish, hence, this will need to be further considered.

7.3.3 Dredging

Dredging will be required during the CFIIS construction to achieve the depths required for the infrastructure and ferries. Dredged material may be disposed of at appropriate sites or used within other areas of the construction. Dredging may utilise a dredging vessel with a backhoe excavator (i.e., backhoe dredging (BHD), but other techniques (plough or hydraulic dredge) may also be needed depending on the bathymetry, sediment composition and infrastructure design.

Source noise levels associated with dredging activities are routinely below that which would be expected to physically impact ecological receptors. As noise emitted would rapidly dissipate within the shallow water environment at the Corran Narrows, it is not anticipated that this noise source would be considered significant in EIA terms.

7.3.4 Vessel Movement

Vessel movement associated with the aforementioned activities may be the most frequently occurring noise source at the proposed CFIIS. Vessel traffic is a substantial contributor to general anthropogenic underwater noise, with the primary sources of sound coming from the propellers, propulsion and other machinery (Ross, 1976; Wales and Heitmeyer, 2002). During construction there will be increased vessel activity as materials are transported to the site and used to place structures in their relevant locations.

There are no studies to quantify the levels of shipping related noise within the proposed CFIIS location. Studies to examine the impact of ship noise on cetaceans often cite 120 dB re 1 µPa as a disturbance threshold (Hatch *et al.*, 2012; McQuinn *et al.*, 2011), and it is recognised that noise produced by shipping can cause stress impacts in marine mammal, fish and invertebrate populations (Rolland *et al.*, 2012; Wale *et al.*, 2013). The extent of vessel noise on the Scottish west coast has yet to be thoroughly investigated, however, marine traffic frequently occurred in data recorded from various locations around the UK coast (Merchant *et al.*, 2016).

In the Corran Narrows, vessel movements during the construction phase may be more frequent than during normal time periods that would involve typical transit of vessels through the channel, fish farm vessel movements and current ferry journeys. However, overall noise levels are not expected to be significantly elevated as construction operations will be undertaken at very slow vessel transit speeds due to the nature of the vessels and activities undertaken.

7.4 Potential Operational Effects

Activities associated with the operational phase that have the potential to generate underwater noise include:

- Vessel movement; and
- Maintenance dredge activities.

7.4.1 Vessel Movement

Although ferry operations are outwith the scope of the CFIIS, it is recognised the CFIIS will facilitate the introduction of an NEV and slightly alter the route of the ferry crossing. Hence vessel movement has been included for completeness.

Noise associated with the normal operation of the NEV associated with the CFIIS may have an impact on the underwater soundscape, electric ferries are considered to produce less noise than conventional diesel-powered ferries. In a shallow-water river system, an electric ferry was found to produce noise between 400 and >11 000 Hz (based on the 75th percentile above 120 dB re 1µPa2 m2). Under the same conditions, a diesel-powered ferry generated noise between 20 to >11 000 Hz, and at radiated noise levels 8-12 dB greater than the electric vessel (Parsons *et al.*, 2020).

Whilst the NEV is expected to result in lower underwater noise levels than the existing diesel ferries reducing the overall sound scape, it is acknowledged that the diesel-operated MV Corran will still be in use occasionally as the back-up vessel.

7.4.2 Dredging

Maintenance dredging may be required infrequently at the overnight berthing structure and/or slipways during the operational phase to maintain water depths for vessels. Underwater noise associated with dredging in the Corran Narrows is not anticipated to result in significant effects as described in Section 7.3.3.

7.5 Proposed Impact Assessment

It is proposed that potential sources of underwater noise from the construction phase arising from rock stripping, underwater rock blasting (if required) and piling are **scoped in** to the EIA process (see Table 7.4.1). Dredging and vessel movements will be **scoped out** as they are unlikely to give rise to harmful noise levels. A slight reduction in underwater noise is expected during the operational phase due to the introduction of the NEV, however it is unlikely to be significant and hence it is proposed that operational underwater noise effects are **scoped out** of the EIA.

Rock stripping, blasting and piling will be modelled to predict the noise emission levels and frequencies at difference distance from noise sources. The underwater noise model will inform the marine ecology impact assessments. As the project design develops, effort will be made to minimise underwater noise sources and their sound pressure levels.

Table 7.5.1: Summary of Effects Scoping Table

Potential Impact	Phase	
	Construction	Operations
Rock Stripping and Potentially Blasting	In	NA
Piling	In	NA
Dredging	Out	Out
Vessel Movement	Out	Out

NA = Not applicable.

8 Air Quality

This section focusses on fugitive dust emissions as a potential air quality impact associated with the CFIIS. GHG emissions associated with the project during construction and operations are covered in Section 22: Climate Change. No other planned discharges to air that could have an impact on air quality have been identified.

8.1 Legislation, Policy, Guidance and Resources

The Air Quality Standards (Scotland) Regulations 2010 lay out limits and targets for air quality including limits for particulate matter.

The Scottish Government has released general policies as part of the Scotland's National Marine Plan in favour of sustainable development and use of the marine environment which include:

- **GEN 14 Air quality**: Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits (Scottish Government, 2015a).

Policy 23(d) of the NFP4 provides for the protection of air quality for new development proposals (Scottish Government, 2023).

Relevant guidance relating to air quality includes:

- IAQM Guidance on the assessment of dust from demolition and construction (IAQM, 2024);
- IAQM Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2018);
- Guidance for Pollution Prevention (GPP) 6: Working at construction and demolition sites (Environment Agency, Northern Ireland Environment Agency (NIEA), Department for Environment, Food and Rural Affairs (DEFRA), SEPA and Natural Resources Wales (NRW), 2023); and
- Pre-application Advice for Major Developments pack (THC, 2023a).

Relevant sources of information include:

- 2023 Air Quality Annual Progress Report for The Highland Council (THC, 2023b) and
- Air Quality in Scotland Air Quality Management Areas (AQMA) (Air Quality in Scotland, 2024).

8.2 Baseline

The Highlands are a primarily rural area, with a low population density. Air quality in the Highland Council area is generally good (THC, 2023b). Background dust emissions at Ardgour and Corran are not expected (or known) to be high as there are limited potential sources of dust in the area.

8.2.1 Air Quality Management Areas

The Air Quality in Scotland website provides a centralised source of air quality information for Scotland. Data and maps on Local Air Quality Management parameters and AQMA are provided (Air Quality in Scotland, 2024).

The area of proposed development (i.e. Corran Narrows; Ardgour and Nether Lochaber sides) is not designated as an AQMA, and the nearest designated area is the city centre of Inverness. Inverness is approximately 73 miles north-east of Corran; therefore, this AQMA will not be affected by the CFIIS.

8.2.2 Potential Dust Receptors

As per the guidance (IAQM, 2024), human dust sensitive receptors were identified within 350m of the site boundary. At Ardgour, receptors include private residences as well as two commercial properties, the Inn at Ardgour and the Nomad Café. The closest of these are situated along the A861, directly across the road from the proposed civil works.

At Corran, human dust sensitive receptors include private residences of the village, the nearest of which is North Corran Beag Home (~15m from site boundary and of which the garden is adjacent), as well as commercial businesses, The Corran Bunkhouse and The Corran serviced accommodation (~200m from the main development boundary north of the village and ~43m from the proposed new footpath). Additionally, residences within 350m of the proposed construction compound south of Corran include houses either side of the Bunree Junction and at Inchree.

Dust sensitive receptors within 50m of the construction traffic route (i.e. A861 and A82) within 250m of site entrances (including construction compound entrances) were identified in line with the guidance (IAQM, 2024). Additional receptors identified from this process include one residential house out with the main village of Ardgour, at grid reference NN 01438 63451, and 5 properties along the A82, south of the proposed construction compound.

In this instance it is deemed prudent to also consider the A82 trunk road as a receptor. The A82 currently has a 50 mile per hour (mph) speed limit in the vicinity of the CFIIS, as such there is a potential for high volumes of relatively fast moving traffic to be on the road, which could be impacted by trackout.

Vegetation and fauna may also be disturbed by prolonged exposure to high concentrations of dust, however, no sensitive ecological receptors as defined within the IAQM (2024) guidance are identified.

8.3 Potential Construction Impacts

Dust has the potential to affect human health through inhalation of particles and dust particles in eyes. Dust can also cause a nuisance by coating surfaces such as cars and windows. Dust deposition on vegetation may reduce a plant's ability to photosynthesise and carry out other biological functions such as gas exchange, which stresses plants, and if allowed to continue for lengthy periods of time could cause adverse effects.

The IAQM (2024) guidance splits construction dust sources into four types, a brief description of these is provided below:

- Demolition - the removal of existing structures. Dust arisings depend on the construction materials and how the structures are demolished. For example, the use of a wrecking ball on a brick building will give rise to high levels of airborne particulate dust;
- Earthworks - the process of soil-stripping, ground levelling, excavation and landscaping. This process gives rise to exposed soils both in-situ and when stored. If the soils are allowed to dry out, they become a source of dust when soil particulates are made airborne by being moved, disturbed by plant movements or blown by the wind;
- Construction - the provision of new structures, modification or refurbishment of structures. Construction sources of dust relate to the specific construction materials and techniques, but are primarily associated with dry construction materials. Examples include the storage, movement and placement of aggregates, the working of materials (i.e., cutting blocks and slabs) and the use of cements, especially if allowed to dry out; and
- Trackout – the movement of materials onto public roads by traffic. Soils and construction materials can be spread, wet or dry, from the site onto public roads via construction vehicle tyres, directly impacting upon road conditions and, when allowed to dry out, providing a source of dust made airborne by the wind or when driven over.

The potential for each type of dust source to arise due to the CFIIS construction works are discussed in turn in the following sections.

8.3.1 Demolition

With regard to the CFIIS, there is a need to demolish the existing small pier at Ardgour. The pier is low lying and primarily made of steel and concrete. The means of demolition (steel cutting and concrete breaking) are unlikely to give rise to noticeable quantities of dust for this relatively small structure.

8.3.2 Earthworks

Approximately 2.1 ha of earthworks including excavations, infill and levelling may be required for works on the Nether Lochaber side of the Narrows, with an additional 0.2 ha and 1.2 ha allowances for construction of the shared use path and construction compound respectively. Onshore rock stripping or rock blasting may be required, potentially giving rise to acute, but localised and temporary dust emissions. The scale of the works at Corran and the fact that the shared use path passes close to residential properties mean that there is a potential for significant effects in the absence of appropriate mitigation measures.

Up to 0.2 ha of earthworks is estimated to be required for the Ardgour shoreside works with up to a further 1.1 ha for the construction compound. The earthworks area is much smaller in Ardgour, than on the Nether Lochaber side. Although Ardgour earthworks are in the immediate vicinity of residential properties, it is unlikely to give rise to significant dust effects due to their small nature. However, that does not mean that mitigation shouldn't be applied to minimise nuisance effects.

8.3.3 Construction

Construction works (i.e., provision of new structures, modification or refurbishment of structures) associated with the CFIIS that are not being completed in the marine environment are primarily associated with surfacing of the earthworks areas and the construction of the buildings. The toilet block at Corran is a relatively small building and located away from residential receptors, and the pursers kiosks are likely to be prefabricated. Hence, construction works associated with the CFIIS are unlikely to give rise to significant dust sources.

8.3.4 Trackout

CFIIS development includes the creation of a new junction onto the A82 trunk road. Once the junction is created, it will be utilised as the access for all construction works on the Nether Lochaber side. While the new junction being created, the construction compound will be located south of Corran, with access from the junction of the A82 and a local road to Bunree. Construction traffic will have to travel up and down the A82 between this compound and the development site north of Corran for the initial works. Once the new junction with the A82 is complete and the construction compound is relocated to within the Scoping boundary north of Corran, there will still be a need for vehicular access to and from the A82 trunk road by the construction workers and delivery vehicles.

As discussed in Section 8.3.2, there is a large area of earthworks required for CFIIS works on the Nether Lochaber side, providing a source of trackout material. The A82 has been identified as a receptor (see Section 8.2.2) in this instance. Track out onto this trunk road could affect the road surface in terms of traction, and dust in the air could affect visibility, both of which could impact upon road safety.

Trackout effects on the Ardgour side will be limited due to the smaller volume of traffic, and limited area of earthworks.

8.4 Potential Operational Impacts

All work areas and new infrastructure will be finished with hard surfacing, dense aggregate, rock armour or replanted with vegetation, hence, there will be no ground left exposed to give rise to sources of dust. Hence, the operational phase of the CFIIS is not expected to cause any effects to baseline air quality with regard to dust.

8.5 Mitigation

Significant effects from dust in Ardgour are not predicted, however, mitigation will still need to be implemented, due to the close proximity of residential properties, to ensure that no nuisance effects are experienced. Without sufficient mitigation, significant dust effects are predicted for receptors on the Nether Lochaber side, and hence project specific mitigation measures need to be developed. It is proposed that for consistency and completeness, dust mitigation for Ardgour is not proposed at this stage, instead it will be developed during the EIA process.

8.6 Proposed Impact Assessment

It is proposed that air quality in terms of dust is **scoped in** for construction, due to the need to complete a full assessment of earthworks and trackout effects for the CFIIS to allow site specific mitigation to be identified. Air quality effects associated with operations are **scoped out**. See Table 8.6.1 for a summary of the scoping of effects.

The impact assessment will follow the guidance set out in 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2024), and will consider earthworks and trackout effects on the dust receptors identified in Section 8.2.2.

Mitigation will be proposed, including monitoring, in line with Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (IAQM, 2018) for activities on both the Nether Lochaber and Ardgour sides of the Narrows.

It should be recognised that dust mitigation is well understood and very effective. Hence, with mitigation and monitoring in place, no residual effects on air quality are predicted.

Table 8.6.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Demolition dust effects on human receptors, namely Ardgour residents	Out	NA
Earthworks dust effects on human receptors	In	NA
Construction effects on human receptors	Out	NA
Trackout on human receptors and the A82	In	NA
Dust effects on ecological receptors	Out	NA

NA = Not applicable.

9 Geology, Land and Soils

The focus of this section is geology, land and soils onshore. The potential effects on sediments in the marine environment will be addressed in Section 11: Seabed, Coastal Processes and Flooding. Furthermore, it is acknowledged soils are integrally connected to the habitats they support. Impacts on terrestrial habitats are discussed in Section 13: Terrestrial Ecology and Ornithology.

9.1 Policy, Guidance and Resources

In relation to soils, NPF4 sets out under Policy 5 the intent to '*protect carbon-rich soils, restore peatlands and minimise disturbance to soils from development*.' Specifically:

a) Development proposals will only be supported if they are designed and constructed:

i. In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land; and

ii. In a manner that protects soil from damage including from compaction and erosion, and that minimises soil sealing.

b) Development proposals on prime agricultural land, or land of lesser quality that is culturally or locally important for primary use, as identified by the LDP, will only be supported where it is for:

i. Essential infrastructure and there is a specific locational need and no other suitable site;

ii. Small-scale development directly linked to a rural business, farm or croft or for essential workers for the rural business to be able to live onsite (Scottish Government, 2023);

The following guidance and resources have been used to inform this section:

- IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment (IEMA, 2022a);
- GPP 2: Above Ground Oil Storage (NIEA, DEFRA, SEPA and NRW, 2018a);
- GPP 6: Working at Construction and Demolition Sites (NIEA, DEFRA, SEPA and NRW, 2023);
- GPP 22: Dealing with Spills (NIEA, DEFRA, SEPA and NRW, 2018b); and
- Ground Investigation Interpretative Report (Causeway Geotech, 2024).

9.2 Baseline

The baseline presented in this section has been informed by ground probing, geotechnical investigations, desktop studies and site walk-overs. The ground probing consisted of 40 hand probes completed on the Nether Lochaber side to determine the depth to suitable engineering soil/rockhead. It was not possible to deploy other ground investigation techniques at the Nether Lochaber side, as a result of a lack of access afforded by the current topography and tree coverage in the area.

Five trial pits were dug on the Ardgour Side, two close to the existing marshalling areas (TP02 and TP03) and three in the field adjacent to the existing substation (TP05-TP07 as shown on Figure 9.2.1). Samples from each of the trial pits were subject to chemical analysis in the form of waste acceptance criteria testing. Various compounds and elements were quantified in the soil samples with their associated leachates (Causeway Geotech, 2024).

Figure 9.2.1: Trial Pit (TP) Locations (Causeway Geotech, 2024)

9.2.1 Designated Sites

Three designated sites relevant to geological features were identified within 5 kilometres (km) of the scoping boundary. These are outlined in Table 9.2.1.

Geological Conservation Review (GCR) sites contain geological and geomorphological features of national and international importance. Most GCR in Scotland have statutory protection through designation as geological features in Sites of Special Scientific Interest (SSSIs) (NatureScot, 2023a).

Table 9.2.1: Sites of Geological Significance within 5km of the CFIIS Scoping Boundary

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Connectivity Yes/No	Evaluation Rationale
Onich to North Ballachulish Woods and Shore SSSI	300m SE	Geological Dalradian Supergroup	No	Not considered further – Distances between the designated site and the CFIIS are considered too great for impacts to geological features.
Onich Dry River Gorge GCR Site	700m SE	Geology	No	**Not considered further** – Encompassed within the Onich to North Ballachulish Woods and Shore SSSI, hence distance is considered too great for effects to geological features.

Onich Shore Section	1.8km SE	Geology	No	**Not considered further** – Encompassed within the Onich to North Ballachulish Woods and Shore SSSI, hence distance is considered too great for effects to geological features.

As outlined in Table 9.2.1, designated sites in proximity to the CFIIS are all determined to be too far away for impacts to the designated geological feature(s), hence designated sites are not considered further within this section.

9.2.2 Geology

The bedrock geology around Corran is dominated by metamorphic rocks of the Dalradian Supergroup. These rocks are metamorphosed sediments of Precambrian age (>542 million years old). On the Nether Lochaber side, the Linnhe Quartzite member is interrupted by three igneous intrusions of Siluro-devonian age (443-354 million years old). On the Ardgour side is the Fort William formation Micaceous psammite and semipelite.

Another significant feature of the wider regional geology is the Great Glen fault which forms a series of NE-SW trending faults which generally follow the line of Loch Linnhe. However, in this specific location, both sides of the loch form part of the Dalradian supergroup which lies to the SE of the main fault line (Causeway Geotech, 2024).

9.2.3 Soils

The generalised soil type at Ardgour is mineral podzols, and mineral podzols or peaty gleys for the site north of Corran (see Figure 9.2.2). Underlying the topsoil, superficial deposits are mainly marine or raised marine in nature. These are well drained. Therefore, it is unlikely that any peat will be present in the site. This is supported by the findings of trial pits dug as part of ground investigation works in the field at Ardgour, which encountered topsoil in the 50-150mm stratum (Causeway Geotech, 2024). Ground probing at the CFIIS site north of Corran returned a maximum depth to underlying engineering soil / rockhead of 0.7m, with an average depth of 0.25m. Some probe locations were recorded as being exposed rockhead with no overlying cover. It was noted that the material covering the rockhead was loose, providing little to no resistance.

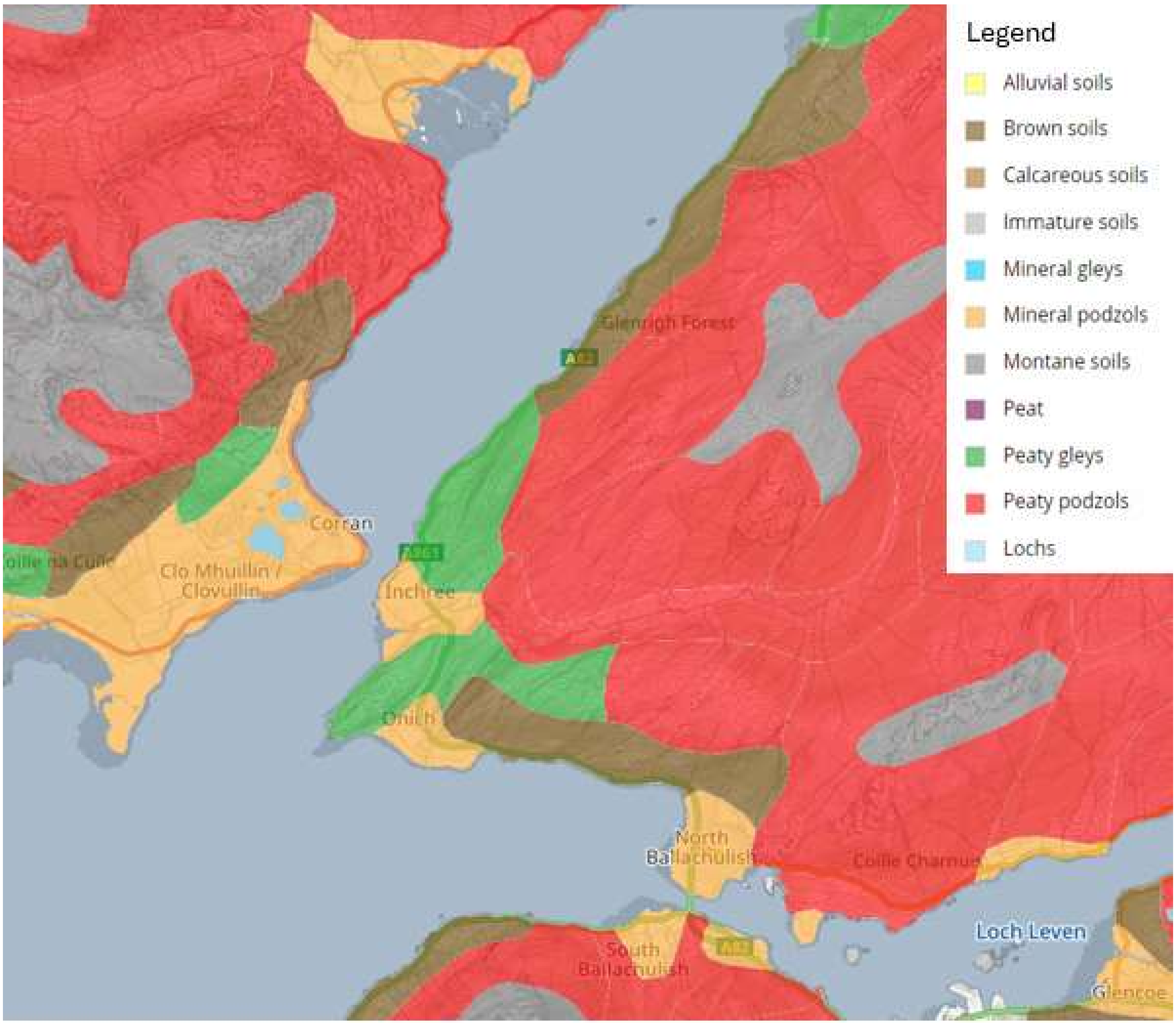

Figure 9.2.2: Soil Types at the CFIIS Site and Surrounds (Scotland's Soils, 2024)

Land Capability for Agriculture (LCA) classification, rates land on scale of 1 to 7 with Class 1 representing land that has the highest potential flexibility of use and Class 7 as land of very limited agricultural value. The LCA within the CFIIS scoping boundary on both sides of the Narrows is 5.3: 'Land capable of use as improved grassland. Pasture deteriorates quickly' (Scotland's Soils, 2024), see Figure 9.2.3. This is average for the wider region, whereby the quality of land for agriculture is generally classified as either land capable of use as improved grassland, land capable of producing a narrow range or crops, or land capable of use as rough grazings.

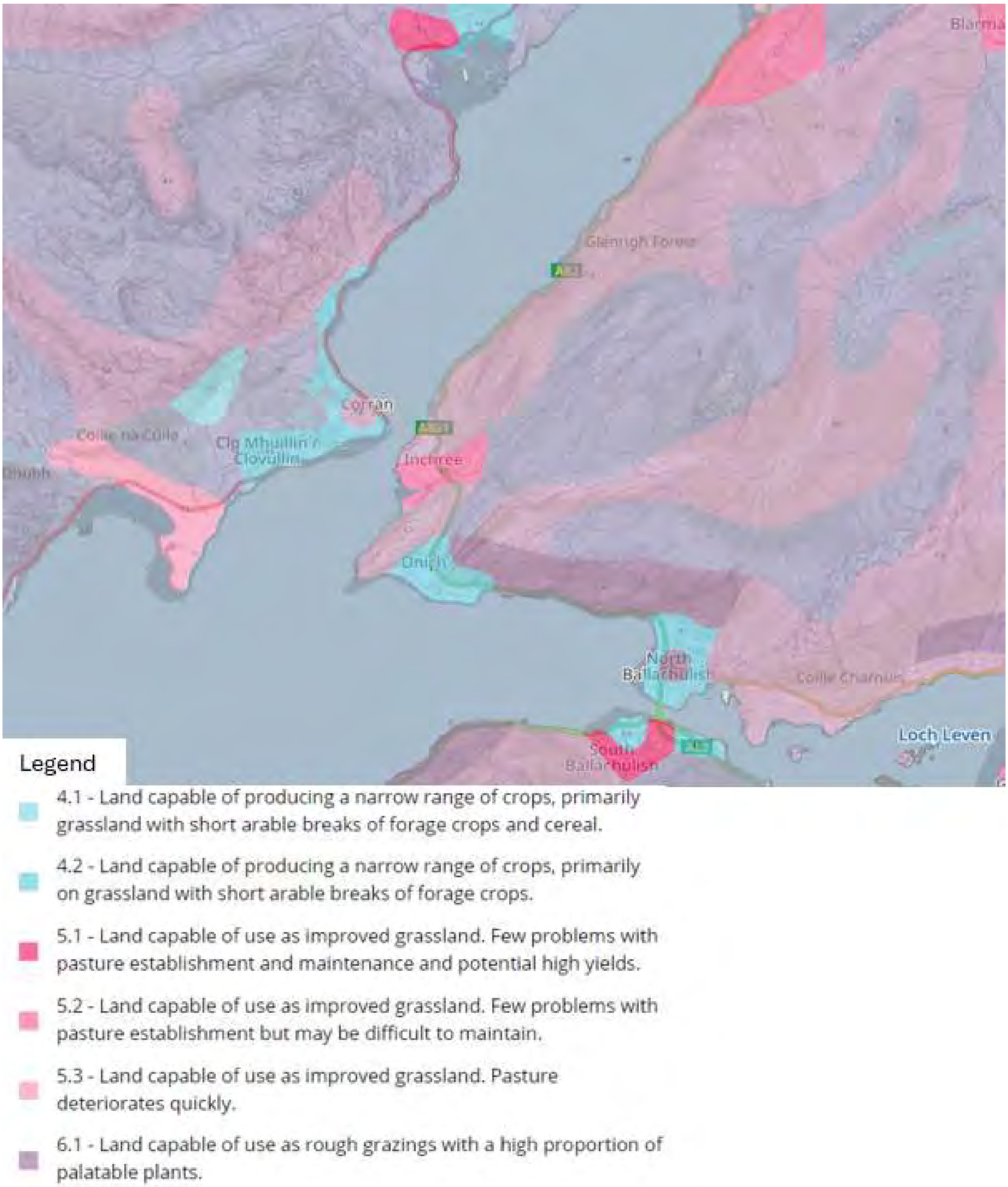

Figure 9.2.3: LCA at the CFIIS Site and Surrounds (Scotland's Soils, 2024)

9.2.4 Contamination

Neither side of the Corran Narrows have a history of industrialisation, that would suggest a likelihood of significant sources of pollutants that could have caused land contamination. The use of hydrocarbons in the form of heating oil, fuels and lubricants of vehicles, could give rise to small scale sources of contamination, but no evidence of this has been found.

The samples taken from the trial pits during the ground investigations did not identify any evidence of ground contamination, when compared against the waste acceptance criteria all samples were identified as inert waste.

Japanese knotweed has been identified on the Nether Lochaber side (see Section 13.1.3). Japanese knotweed are a perennial plant, growing each year from extensive underground rhizomes. The species can be spread when fragments of rhizome, or stem (as small as 1cm or less) are transported to new sites, which can then develop into new plants. The soils under and adjacent to stands of Japanese knotweed could contain the plants rhizomes (generally at distances of ≤7m and to 2m in depth). Hence, all soils to rockhead within 7m of the above-ground areas of Japanese knotweed are considered to be contaminated with INNS (SEPA, 2008).

9.3 Potential Construction Impacts

Construction impacts on geology, land and soils associated with the CFIIS include:

- The removal (i.e., loss) of rock and soils through excavations;
- The risk of spread of existing contamination;
- Soil degradation; and
- Soil contamination.

9.3.1 Loss of Geology and Soils

On the Ardgour side, removal of soils will be minimal, limited to activities such as the installation of services including electrical infrastructure adjacent to the existing substation, to facilitate the NEV charging system.

On the Nether Lochaber side, soil stripping will be more extensive, approximately 2.1 ha. The depth to engineered soil/rockhead is low (average of 0.25m), hence a total of 5,250 Metres-cubed (m^3) of soil will be removed to make way for the road junction, marshalling area, parking, footpaths etc. The intent is to reuse the soils in the reprofiling of the surrounding areas where practicable, however, the detail of this has not yet been developed. As discussed in Section 9.2.3, the LCA grade of the soil is 5.3 which is of relatively low agricultural value and widespread in the area. As such the removal of the soil is not likely to have a significant effect on agriculture, or soil assets of the area.

Rock stripping and rock blasting may also be required (though blasting is less likely). Rock stripping/blasting for the CFIIS is not of a scale as to have a significant effect on the characteristics of the regional geology. Although a cut and fill calculation has not yet been completed (refer Section 15: Materials and Waste for further details), it is likely that all of the rock removed will be reused in the land reclamation elements of the scheme and will not be required to be removed from site.

9.3.2 Spread of Existing Contamination

As discussed in Section 9.2.4 it is known that an area of soil on the Nether Lochaber side is subject to Japanese Knotweed contamination, this soil will need to be appropriately managed to prevent the spread of this INNS. As discussed in Section 12.1.1.3 under the Wildlife and Countryside Act 1981 it is a legal offence to knowingly or recklessly allow INNS to spread into the wild. As such appropriate management of both the plant and soils is required. Japanese Knotweed is considered further in Terrestrial Ecology (Section 13). An eradication plan is being developed in alignment with SEPA (2008) guidance, which will include the management of contaminated soils (Section 13.3).

No other contaminated land has been identified on site, and the risk of finding any is thought to be low. If, however, potential contamination is encountered during the construction works, then affected soils will be isolated, while they are further investigated, and their fate considered.

9.3.3 Degradation of Soils

Exposed soils may dry out and be eroded by wind and water. Where material is being excavated within the Nether Lochaber side construction footprint and being reused onsite, soil will be placed in its final location directly where possible and planted promptly to protect it against the degrading forces of wind and water. Where this is not the possible it will be appropriately stored to minimise further degradation. Storage of materials including soils is considered in Section 15.

Construction compound creation will require the removal of soil to allow appropriate hard standings to be installed. Once no longer needed the areas will be reinstated, by removing any aggregate placed to create the hard standing and restoring the soils. As discussed in Section 15, any soils stored will have to be stored appropriately. This may include the use of turves or planting in areas where soils are stored for a long period of time, to protect them from degradation.

9.3.4 Soil Contamination

Pollution from a loss of containment of hazardous materials or waste on the construction site, could give rise to soil contamination. The risk of loss of containment is reduced by ensuring appropriate storage and handling of materials as explained in Section 15.

As per standard construction site practices, if a loss of containment were to occur onsite, Pollution Incident Response Plans would be employed in alignment with the pollution control hierarchy. This will include the deployment of materials available in onsite spill kits to minimise the spread and to absorb polluting substances. Where spills soak into the ground/soils it, is standard procedure to dig up the soils and sentence them as waste for offsite appropriate disposal.

9.4 Potential Operational Impacts

The CFIIS includes components of land reclamation and hence, once completed, additional land will have been created. This will provide the space required for shoreside operations of the Corran Ferry service, such as marshalling. By creating land for this use, there is less land-take of existing land. As the land reclamation is part of the design and is required to allow the facilities to be accommodated within the existing setting (topography of the area and existing land uses), it is not considered an impact on a receptor and therefore will not be taken forward for further consideration in the EIA.

9.5 Mitigation

Cut and fill calculations will be completed as part of the design process with the aim being to maximise the onsite reuse of materials in an appropriate manner. This includes consideration of the reuse of soils, rocks and dredge spoil, where possible.

Mitigation identified in Section 13.5 with regard to developing a Japanese Knotweed eradication plan and implementing it at the earliest opportunity will ensure that there is no spread of Japanese Knotweed contaminated soils.

If previously unidentified contaminated land is suspected or found on site, works in the immediate vicinity will be halted and advice sought from the Environmental Clerk of Works (ECoW) in the first instance. If the soils have already been excavated, they will be isolated from other materials while advice is sought.

Mitigation identified in Section 15.5 with regard to the appropriate storage and handling of material, will help to minimise soil degradation. Soil removed from temporary areas will be stored to allow it to be used as part of the site reinstatement.

A Pollution Incident Response Plan will be developed in alignment with GPP 22 (NIEA, DEFRA, SEPA and NRW, 2018b) to protect land and water in the event of a loss of containment of potentially polluting substances (refer Section 10.3). Spill kits will be made available close to the working areas with equipment suitable for the types and quantities of materials being utilised.

9.6 Proposed Impact Assessment

Potential effects on geology, land and soils as a result of the CFIIS taking account of mitigation identified in Section 9.5, 13.3 and 15.5 will not be significant. Therefore, it is proposed this topic is **scoped out** of the EIA for both the construction and operations phase.

Table 9.6.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Loss of geology and soils.	Out	NA
Spread of Existing Contamination	Out	NA
Degradation of soils.	Out	NA
Soil Contamination	Out	NA

NA = Not applicable.

10 Water Quality

This section will address water quality by considering the water column of the marine environment, the groundwater and terrestrial waterbodies as potential receptors.

10.1 Legislation, Policy, Guidance and Resources

Relevant legislation for water quality include:

- The Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament) (see Section 4.1.7 for further details);
- Water Environment and Water Services (Scotland) Act 2003 as amended;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 as amended ('CAR');
- Bathing Water Directive (2006/7/EC); and
- The Water Environment (Shellfish Water Protected Areas: Environmental Objectives etc.) (Scotland) Regulations 2013, as amended.

General policies as part of the NMP relevant to water quality include:

- **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 (Scottish Government, 2015a).

The Scottish government has also released a series of good environmental status (GES) descriptors within Scotland's NMP. These include:

- **GES 5**: Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters; and
  GES 8: Concentrations of contaminants are at a levels not giving rise to pollution effects (Scottish Government, 2015a).

Management of the water environment is considered in the HwLDP (THC, 2012) under the following policies:

- **Policy 49**: Coastal Development, which states:
  - *Proposals should not have an unacceptable impact on the natural, built or cultural heritage and amenity value of the area*; and
- **Policy 72**: Pollution, which states:
  - *Proposals that may result in significant pollution such as noise (including aircraft noise), air, water and light will only be approved where a detailed assessment report on the levels, character and transmission and receiving environment of the potential pollution is provided by the applicant to show how the pollution can be appropriately avoided and if necessary mitigated.*
  - *Major Developments and developments that are subject of Environmental Impact Assessment will be expected to follow a robust project environmental management process, ...or a similar approach.*

Relevant guidance utilised in this section includes:

- Planning Advice Note (PAN) 79: Water and Drainage (Scottish Government, 2006);
- GPP 2: Above Ground Oil Storage Tanks (NIEA, DEFRA, SEPA and NRW, 2018a); and
- GPP 5: Works and Maintenance in or Near Water (NIEA, DEFRA, SEPA and NRW, 2018c);
- GPP 6: Working at Construction and Demolition Sites (NIEA, DEFRA, SEPA and NRW, 2023);
- GPP 22: Dealing with Spills (NIEA, DEFRA, SEPA and NRW, 2018b); and
- Guidance - Water Framework Directive Assessment: Estuarine and Coastal Waters (Environment Agency, 2023).

10.2 Baseline

Water quality monitoring results were requested and obtained from MOWI for their 'Linnhe' fish farm north of the CFIIS (refer Sections 10.2.6 and 10.2.9 for further details). Note, potential socioeconomic impacts on this fish farm are considered in Section 20: Population and Socioeconomics.

10.2.1 Loch Linnhe Waterbody Status

Loch Linnhe is one of the largest sea lochs on Scotland's west coast, stretching ~60 km in a south-west to north-east direction (Scottish Government, 2015b). The loch forms part of the Caledonian canal linkage between the Irish and North Seas. Loch Linnhe branches into Loch Eil, the Caledonian Canal and the River Lochy ~14km north-east of the narrows, near Fort William. Loch Linnhe forks ~36km south-west of the narrows at the Isle of Mull into the Sound of Mull and Firth of Lorn, which both lead to the Hebridean sea in the west (see Figure 10.2.1).

Loch Linnhe has a fjordic nature, in which interactions between seabed topography, freshwater input, tide level variations and meteorological forces (e.g., wind) drive the circulation. Freshwater inflows are a key control of the Loch Linnhe system dynamics, determining surface stratification and controlling deep water renewal (i.e., the entry of more saline and dense seawater from the south-west). Pulsed releases of freshwater from upper Loch Linnhe travel through the Corran Narrows, then along the northern side of the lower loch (due to rotation), and finally out to sea (Scottish Government, 2015b).

Loch Linnhe is designated into two water bodies for the purpose of SEPA water quality characterisation. These water bodies are divided at the Corran Narrows along the approximate line of the existing ferry route (Figure 10.2.1). Loch Linnhe North (SEPA ref: 200089) is a transitional water body, 25.3 Kilometres-squared (km^2) in area. Loch Linnhe South (SEPA ref: 200081) is a coastal water body 148.7km^2 in area. The most recent assessment, undertaken in 2014, found Loch Linnhe North was classified as having 'good' overall and water quality status, and 'high' physical condition status. Loch Linnhe South was classified with slightly lower results, having 'moderate' overall and water quality status and 'high' physical condition status (SEPA, 2015).

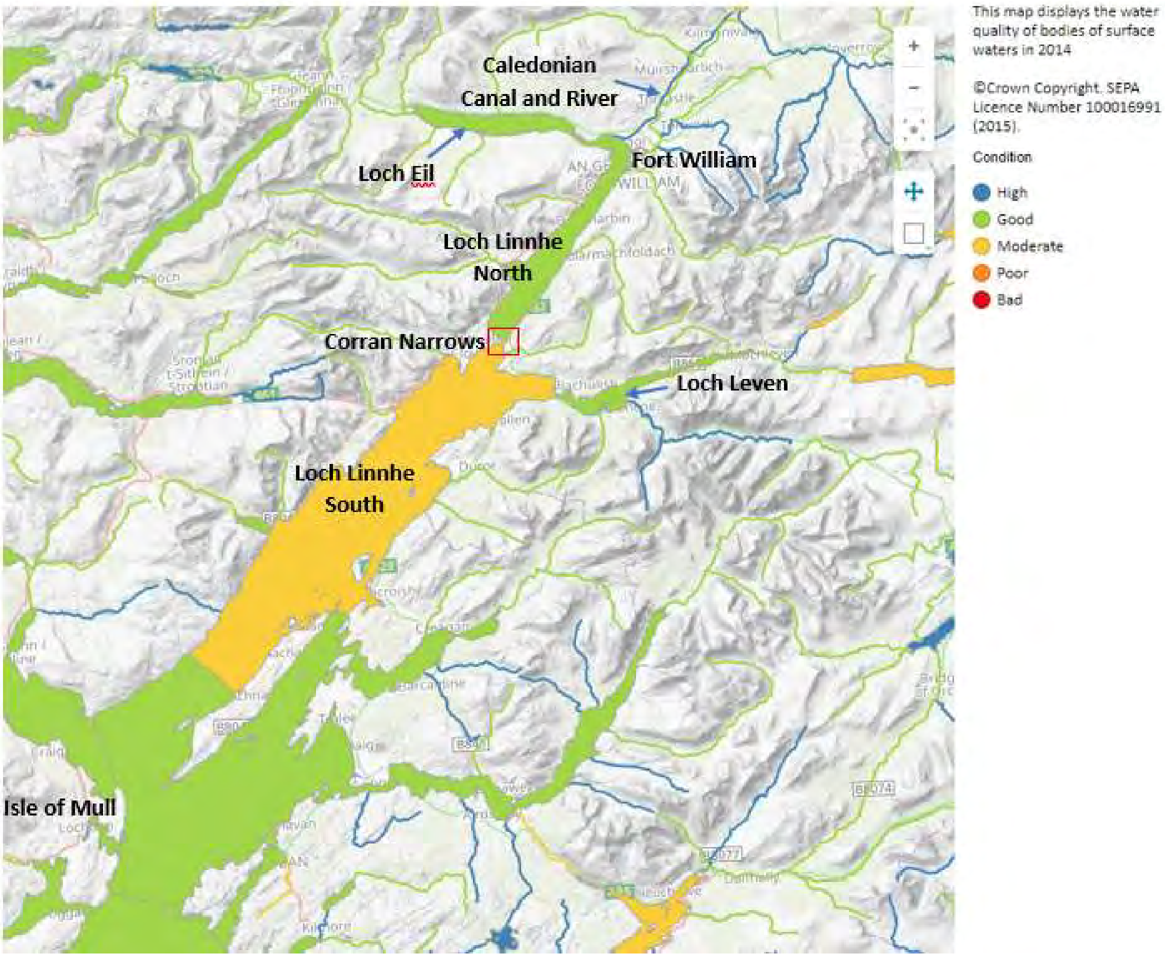

Figure 10.2.1: 2014 Water Quality Status of Loch Linnhe (SEPA, 2015)

10.2.2 Groundwater

Groundwater in the area is associated with the Fort William groundwater body in the Scotland river basin district (SEPA ref: 150696) which covers a total of 2274.7km^2. This groundwater body is classified as good overall status and is a drinking water protected area (SEPA, 2023a; SEPA, 2023b). As discussed in Section 9.2, rockhead or sound engineering soil was found at a maximum depth of 0.7m on the Nether Lochaber side during a probing study.

10.2.3 Watercourse

There is a small, freshwater watercourse in Corran that crosses under the A861 and discharges into the Narrows to the north of the existing slipway. This watercourse originates on the forested hill of Druim na Birlinn. The watercourse carries low volumes of water and is considered to be highly disturbed and of relatively low quality in terms of aquatic habitat (see Figure 10.2.2).

Figure 10.2.2: Watercourse through Corran, March 2022

There are no watercourses within, or proximal to, the scoping boundary on the Ardgour side of the Narrows.

10.2.4 Physical Parameters

Physical parameters for marine water quality were obtained from MOWI, as sampled at their 'Linnhe' finfish farm (Site ID FS0240), approximately 400m north-west of the CFIIS scoping boundary. MOWI undertake water quality monitoring of their fish farm twice daily. Temperature measurements between June 2018 and September 2022 recorded lowest and highest readings at 5m water depth of 5.1°C and 14.6°C, recorded on the 7th of February 2020 and the 10th of September 2022 respectively.

10.2.5 Bathing Waters

No designated bathing waters are located in the vicinity of the proposed CFIIS (SEPA, 2023c). The nearest SEPA monitored bathing water is located ~34km away at Ganavan, near Oban (Grid Reference: NM 8620 3281).

10.2.6 Shellfish Water Protected Areas & Classified Shellfish Harvesting Areas

Shellfish Water Protected Areas (SWPA) are used for commercial shellfish cultivation. Water quality in these designated areas is regularly monitored by Food Standards Scotland (FSS) and classified by SEPA. The closest designated shellfish waters and approximate distances and direction by sea from the development site include:

- Loch Leven (SWPA 36), 6km south-east;
- Loch Eil (SWPA33), 16km north; and
- Lismore (SWPA25), 21km south-west;

These SWPAs were all classified as 'Good' in the most recent 2018 classifications published by SEPA (SEPA, 2023d). These SWPAs contain shellfish rearing sites which are listed as currently active. One additional shellfish rearing site exists in Loch Linnhe outwith SWPAs. This is Camas a Chuilinn, operated by Fass Fern Mussels, ~6km north-west of the CFIIS Scoping boundary. Classified Shellfish Harvesting Areas also exist in the SWPAs listed, and over the Camas a Chuilinn shellfish rearing site (Scotland's Aquaculture, 2023).

10.2.7 Seawater Finfish Sites

The nearest fish farms to the CFIIS proposed development and approximate distances from the Scoping boundary include:

- 'Linnhe' (Site ID FS0240), operated by MOWI Scotland Ltd, ~400m north-west;
- 'Gorsten' (Site ID FS0237), operated by MOWI Scotland Ltd, 7.5km north-east;
- 'Loch Leven' (Site ID FS0244), operated by MOWI Scotland Ltd, 8.5km south-east by sea; and
- 'Shuna Point' (Site ID FS1354), operated by Scottish Sea Farms Ltd, 16km.

10.2.8 Drainage and Wastewater Management

Buildings at Ardgour and Corran are plumbed into the Scottish Water network for potable water and wastewater management.

There are two Scottish Water emergency overflow outfalls currently in use at Ardgour, one near the storage building, the other stemming from a pumping septic tank near the village green. There are four redundant outfall pipelines on the Ardgour foreshore north-west of the existing slipway, which are no longer in use.

There is an emergency overflow outfall at Corran. Immediately south of the existing slipway, discharging into the Narrows.

All surface rainwater run-off from the villages and existing ferry infrastructure currently drains into the Corran Narrows without treatment.

10.3 Potential Construction Effects

10.3.1 Marine

Potential effects on marine water quality associated with the construction phase of the development include:

- Increase in solids in the water column; and
- Pollution from a loss of containment.

10.3.1.1 Increase of Solids in the Water Column

An increase of solids in the water column of the marine environment may arise from both onshore and offshore construction activities.

The potential for mobilisation of particulates is largely dependent on the particle size and water currents. Lighter, smaller particles (silts) stay suspended over longer periods, allowing greater geographical dispersal. Larger, heavier particles like sand and gravels quickly drop out of the water column, limiting geographic spread (Jones *et al.*, 2016). Strong currents not only transport solids away from their source of origin, they also add energy to them, such that they stay within the water column for longer.

10.3.1.1.1 Onshore Sources of Solids

Surface water run-off containing silts entering the marine environment can increase solids in the water column. The construction phase of the CFIIS will give rise to areas of exposed soils and require the storage of soils and aggregate material, especially on the Nether Lochaber side. As water flows over exposed ground or around material stockpiles, it picks up small solids (i.e. silt) from these sources. Subsequently, this silty surface water run-off may increase concentrations of solids in the water column if permitted to enter the aquatic environment. Surface water run-off from soils is also likely to have an increased organic content, which may have an effect on water chemistry due to the associated oxygen demand of the materials.

Whilst volumes of potential surface water run-off are unlikely to cause a significant change to the water quality of Loch Linnhe, localised effects are possible as a result of the CFIIS without the implementation of effective surface water management measures. Standard construction site mitigation for surface water management will be implemented as outlined in Section 10.6: Mitigation, to minimise loss of silts to the marine environment.

As discussed in Section 9.2.4, there is no known source of chemical contamination of soils, if any are found, then their management will also ensure that they are not allowed to wash into the sea, so as not to impact upon water quality. Release of soils potentially containing fragments of non-native species into the marine environment does not raise a particular concern, as terrestrial species will not grow in the marine environment. Furthermore, having been subject to saline conditions, any fragments of INNS are likely to become unviable, and therefore highly unlikely to be able to establish elsewhere, if they were to wash up on land.

10.3.1.1.2 Offshore Sources of Solids

Offshore activities with the potential to increase solids in the water column include:

- Dredging activities;
- Rock stripping and possible rock blasting; and
- Land reclamation.

Marine sediments at the Corran Narrows consists predominantly of coarse sands and gravels, with a small proportion of cobbles and silty sands (refer Section 11: Seabed, Coastal Processes and Flooding for further details). Notably, the site of marine development on the Nether Lochaber side of the Narrows is primarily exposed bedrock, with very low volumes of overlying sediment, reflecting high energy currents through this area.

The predominantly coarse nature of the seabed in the vicinity of the CFIIS means that any material entering the water column during dredging activities would likely drop out and return to the seabed quickly. As such, notable sediment plumes are not predicted. The predominant water flow on the Ardgour side, on both spring and ebb tides, is anti-clockwise away from the fish farm and towards the area to be dredged at the overnight berthing structure and Ardgour slipways. Hence, sediments are predicted to be deposited on the southern and eastern sides of the Ardgour marine construction site.

Rock stripping (with the potential for rock blasting) on the Nether Lochaber side, will create a spoil with a range of particle sizes. The material will be removed from the seabed for use in the land reclamation or breakwater construction. The majority of the material will drop out of the water column due to its size, however, finer materials could be mobilised into the water column during these works. Due to the speed of the tides through the Corran Narrows and passing construction works on the Nether Lochaber side, it is likely that any fines will be rapidly dispersed north or south in Loch Linnhe, depending on the currents at the time. Due to the relatively small volumes of fines particles in this area, the activities are unlikely to give rise to visual plumes or lead to sedimentation issues.

Land reclamation typically includes the placement of larger rocks around an outer edge to create a bund which infill material can be placed within, the infill material needs to be suitable engineered fill, as such it will be of low silt content (such as material won during dredging). Due to the low volumes of silts in this infill material, it is unlikely that this activity will give rise to a notable increase in solids in the water column.

Although any increases in solids in the water column are expected to be localised and short lived, it is recognised that changes in sediment loading, if they were to occur, could have detrimental effects on water quality which could have knock on implications for the fish farm. As such, monitoring and mitigation is proposed in Section 10.6: Mitigation.

10.3.1.2 Pollution from a Loss of Containment

A loss of containment of hazardous substances, if allowed to enter the water environment, may have a detrimental effect on water quality. Such substances may include fuels, oils, paints, trade effluent, waste materials, concrete washings and concrete from pours in the marine environment.

The potential for release of concrete during concrete pours will be reduced by utilising pre-fabricated concrete units or marine-compatible concrete and appropriate shuttering. Relatively low volumes of hazardous material will be required on site, such that the impact from a loss of containment would be low. The likelihood of such a loss will also be low, as hazardous materials will be managed by appropriate storage and handling as discussed in Section 15.5. Mitigation in alignment with the pollution prevention hierarchy will minimise potential effects in the event of a loss of containment event as described in Section 9.5: Mitigation.

10.3.2 Fresh Water

The only construction works planned near the watercourse at Corran are associated with the construction of the shared use path, as such potential impacts on fresh water are limited.

10.3.2.1 Increase of Solids in the Water Column

As discussed in Section 10.3.1.1.1, surface water run-off from areas of exposed or stored soils can give rise to solids entering watercourses. This can increase turbidity in the stream and lead to soils dropping out on the base of the watercourse, reducing the quality of the habitat present. The small scale of the works in the vicinity of the watercourse, and the implementation of standard construction site surface water management as outlined in Section 10.6: Mitigation, make it highly unlikely that there will be silts entering the watercourse. Furthermore, if an increase in solids were to occur, adverse effects on this small, already disturbed watercourse are not expected to be significant.

10.3.2.2 Pollution from a Loss of Containment

Due to the location of the bulk of the development works and the construction compounds relative to the watercourse in Corran, there is a very limited pathway for hazardous substances to enter this watercourse. Hence, there is a very low risk of pollution to this terrestrial surface water from the CFIIS construction. The risk of hazardous substances entering the watercourse from a loss of containment will be further reduced with the implementation of mitigation outlined in Sections 9.5, 10.6 and 15.5.

10.4 Potential Operational Effects

10.4.1 Marine

10.4.1.1 Increase of Solids in the Water Column

Maintenance dredges may be required during operations to maintain necessary water depths for the vessels. As discussed in Section 10.3.1.1.2, dredging activities are unlikely to give rise to significant issues associated with solids in the water column due to the low volume of silts present. Maintenance dredges, if required, will also be managed through the marine licensing process.

10.4.1.2 Pollution from a Loss of Containment

Operational sources of hazardous materials, with the potential to affect water quality in the event of a loss of containment, include diesel for the temporary generator, effluent from the toilet block on the Nether Lochaber side and litter sources from the marshalling and car parking areas.

Storage locations of the diesel infrastructure (i.e., temporary generator and associated fuel tank, if required) will be determined during detailed infrastructure design. The risk of pollution from a loss of containment will be minimised through embedded pollution prevention controls as the design will ensure in alignment with GBR 28 of the CAR, which includes the need for appropriate secondary containment. Refuelling procedures will be in place to ensure appropriate handling of fuels. In the long-term, the risk of fuel spillages reaching the marine environment will be reduced as the new, primary vessel will be electric, and therefore not generally requiring refuelling with diesel.

10.4.1.3 Sewage Disposal

The sewage disposal route from the toilet block on the Nether Lochaber side will be connected into the local Scottish Water network or treated locally prior to discharge. In the event of the latter, then the design will take into consideration CAR and will be subject to Registration or Simple Licencing by SEPA depending on the sizing of the facility. Due to the existing control mechanisms in place to manage sewage discharges, there is no need to consider them further within the EIA process.

10.4.2 Fresh Water

No potential effects on terrestrial watercourses have been identified for the operational phase of the CFIIS. Operations associated with the Corran Ferry are moving away from the watercourse in Corran.

10.5 Water Framework Directive Considerations

In the absence of specific Scottish Government guidance, the Environment Agency's WFD assessment scoping template (Environment Agency, 2023) was completed, to provide an understanding of the need for WFD assessment topic area considerations. The completed WFD scoping is provided in Appendix 1. The scoping exercise concludes that only impacts on Biology: habitats and Invasive Non-Native Species needs further consideration.

10.6 Mitigation

Surface water run-off will be minimised by ensuring soils and materials are appropriately handled and stored (see Section 15.5). In addition, measures such as geotextile silt fencing will be utilised to prevent silty water running into the marine or terrestrial watercourses in alignment with GPP 5: Works and Maintenance in or Near Water (NIEA, DEFRA, SEPA and NRW, 2018c).

Visual inspections will be conducted regularly during dredging, blasting and marine rock breaking activities to monitor water turbidity caused by increased sediment loading. If a sediment plume is observed to be not dissipating/settling as expected, or is being transported away from the Narrows, the need for engineered containment measures (e.g., a silt curtain) will be considered.

Storage and handling of potentially polluting materials will be managed appropriately as outlined in Section 15.5, this will protect against loss of containment. Furthermore, in the event of a loss of containment, the Pollution Incident Response Plan as discussed in Section 9.5 will be employed to minimise effects due to a pollution incident.

These mitigation measures have been captured in the ISoM (Section 24) for implementation during construction.

10.7 Proposed Impact Assessment

The operational phase of the CFIIS will not give rise to any potentially significant effects on marine or terrestrial water quality. The implementation of mitigation as outlined in Section 10.6 will similarly ensure any potential impacts from construction activities are also non-significant. As such it is proposed that effects on water quality are **scoped out** of the EIA. A summary of scoping outcomes is outlined in Table 10.7.1.

The WFD Scoping Assessment identified the need to further consider INNS and effects on benthic habitats such as subtidal kelp beds. These effects are discussed further in Sections 14.1 all relevant impacts will be taken forward to EIA as detailed in Section 14.1.5.

Table 10.7.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Marine		
Increase of Solids in the Water Column	Out	Out
Pollution from a Loss of Containment	Out	Out
Sewage Disposal	NA	Out
Fresh Water (Watercourse)		
Increase of Solids in the Water Column	Out	NA
Pollution from a Loss of Containment	Out	NA

NA = Not applicable.

11 Seabed, Coastal Processes and Flooding

The focus of this section is potential effects on the seabed, coastal processes and flooding associated with the construction and operation of the proposed CFIIS. It is recognised that the seabed is a habitat and hence changes to it could have implications for Marine Biodiversity, this is however, considered within Section 14: Marine Biodiversity.

11.1 Policy and Guidance

NMP policies that are relevant to this section are as follows:

- **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 impacts on coastal processes or contribute to coastal flooding; and
- **GEN 9 Natural Heritage:** Marine planning should consider opportunities to protect important geodiversity features and prevent deterioration or enhance where appropriate. Where geodiversity features are qualifying or protected features of designated sites, activities must be managed accordingly under the relevant legislation. Marine planners and decision makers should consider impacts on geology, taking into account their significance. Substantial loss or harm should be exceptional and should only be permitted if this is necessary to deliver social, economic, or environmental benefits that outweigh the harm or loss (Scottish Government, 2015a).

NPF4 policies that are relevant to this section and the proposed CFIIS development are as follows:

- ***Policy 10 Coastal Development:*** *To protect coastal communities and assets and support resilience to the impacts of climate change;*
- ***Policy 22 Flood Risk and Water Management:*** *To strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding* (Scottish Government, 2023).

In the local context, the HwLDP outlines some policies that are relevant to this section:

- ***Policy 64*** *Flood Risk: Development proposals should avoid areas susceptible to flooding and promote sustainable flood management. Development proposals within or bordering medium to high flood risk areas, will need to demonstrate compliance with Scottish Planning Policy (SPP) through the submission of suitable information which may take the form of a Flood Risk Assessment* (THC, 2012).

Relevant guidance used in the section includes:

- Flood Risk: Planning Advice (Scottish Government, 2015c);
- Pre-Disposal Sampling Guidance (Marine Scotland, 2017); and
- Pre-application Advice for Major Developments pack (THC, 2023a).

11.2 Baseline

11.2.1 Seabed

Loch Linnhe is situated close to the south-westerly extension of the Great Glen Fault. The fault divides the bedrock of the region into the Moine metamorphic series and the Dalradian metamorphic series, generally composing the west and east shores, respectively (McIntyre and Howe, 2010). However, in this specific area, the peninsula on the west side of Loch Linnhe (Ardgour) is composed of Dalradian metamorphic rocks which are also found on the east shore. Hence both sides of the site and the seabed in between are composed of rocks of the same age and similar nature. It is a deep channel with a sheer rock face of depths of up to 150m (Hydro-International, 2015), however, the inner basin (Corran Narrows to Loch Eil) and outer basin (on the seaward side of the Corran Narrows), are separated by a shallow sill. The sill has a maximum depth of 18m and width of 290m at high water level (Edward and Sharples 1986). The seabed bathymetry of the Corran narrows can be seen fully in Drawing 2387-901A.

Figure 11.2.1 produced by Smeaton *et al.* (2019) map out type and distribution of sediment in Loch Linnhe based upon sediment sampling, organic carbon content mapping and available literature. The majority of sedimentation in the narrows is predicted to be gravel and coarse sediment.

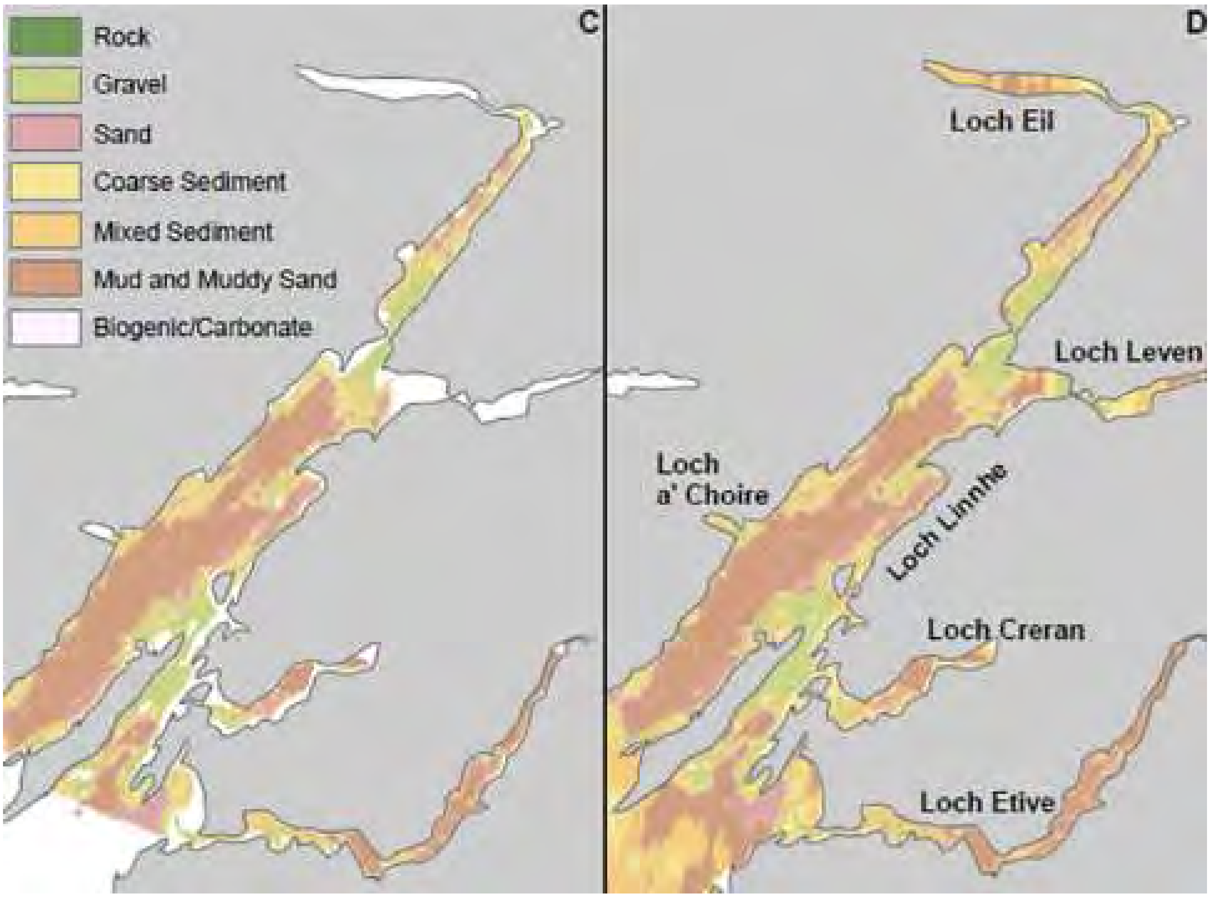

Figure 11.2.1: Sediment Type in Loch Linnhe (C) Tier 2 Data, (D) Tier 3 Data (Smeaton and Austin, 2019)

The paper correlates with ground investigation works conducted at the proposed CFIIS in late 2023. Boreholes completed on the Nether Lochaber side encountered very limited depths of overburden (gravel/cobble) above the psammite (metamorphic sandstone) rockhead. As a result, upper sediment sampling techniques were not able to recover material for analysis. Rockhead was found to be psammite over the full depth of the boreholes.

Ground investigation sampling was completed at Ardgour, with sediment being encountered for the full depth of all cores that were completed in this area. Upper sediments were typically made up of cobbles, gravel, sand and some silt. Across the sediment samples recovered, cobbles were attributed to 6%, gravel 45%, sand 41%, silt 7% and clay 1%. At lower elevations within the sediments, typically at 8m depth and below, sands and silts predominate. Depth to rockhead was not able to be verified on the Ardgour side, even with boreholes typically extending 30m into seabed deposits.

Subsequent upper sediment sample analysis showed no significant cause for concern with regard to contamination (Causeway Geotech, 2024). No samples were above the prescribed Action Level 1 from the Pre-disposal Sampling Guidance (Marine Scotland, 2017).

There are currently 3 de-energised SSE subsea cables that transit along the seabed in an area 50m to 200m north of the existing slipways. The cables have been placed on top of the seabed, and no concrete mattresses or rock has been placed on them for protection or to retain them in location.

11.2.2 Coastal Processes

Loch Linnhe is one of the largest sea lochs on Scotland's west coast and is regarded as having a fjordic character where meteorological forcing, freshwater inputs and seabed topography control the circulation (Berx *et al.*, 2015). The inner basin and outer basin of Loch Linnhe are separated at Corran Narrows by a shallow, narrow sill. This narrow passage contributes to the sea-loch's relatively strong cross-sill tidal currents. The maximum currents speeds across the Corran Narrows sill is 4.9 knots and the mean spring tidal range is 3.7m (Hydrographic Department, 1977). The interaction of tidal flow with the topography of the sill also generates internal waves, turbulent mixing and considerable re-suspension of sediments (Taylor, 1997). Additionally, internal waves are also created by the steady slope within the outer basin up to the Corran Narrows. Due to the fjordic characteristics of Loch Linnhe, wind also channels through the valley increasing wave action. In contrast, the entirety of Loch Linnhe is mostly sheltered from the majority of wind and wave action from the Atlantic ocean.

Some scour is currently observed adjacent to both Corran and Ardgour' s existing slipway structures however, this is largely vessel induced and not a result of coastal processes.

11.2.3 Flooding

Both Corran and Ardgour are within the Loch Linnhe, Lochy (Inverness-shire) and Loch Siel catchment group and are not considered a Potentially Vulnerable Area (PVA) with regard to river flooding. The catchment area has seven PVAs but are generally located along or at the head of sea lochs (THC, 2012) and therefore not associated with the Corran Narrows. A review of SEPAs flood risk maps also identified that there is no specific risk identified with regard to surface water. However, as depicted in Figure 11.2.2, both Corran and Ardgour are at high risk of coastal flooding, which means that each year the area has a 10% chance of coastal flooding (SEPA, 2024a). It is noted that the coastal flood region is immediately adjacent to Loch Linnhe in the lowest lying areas.

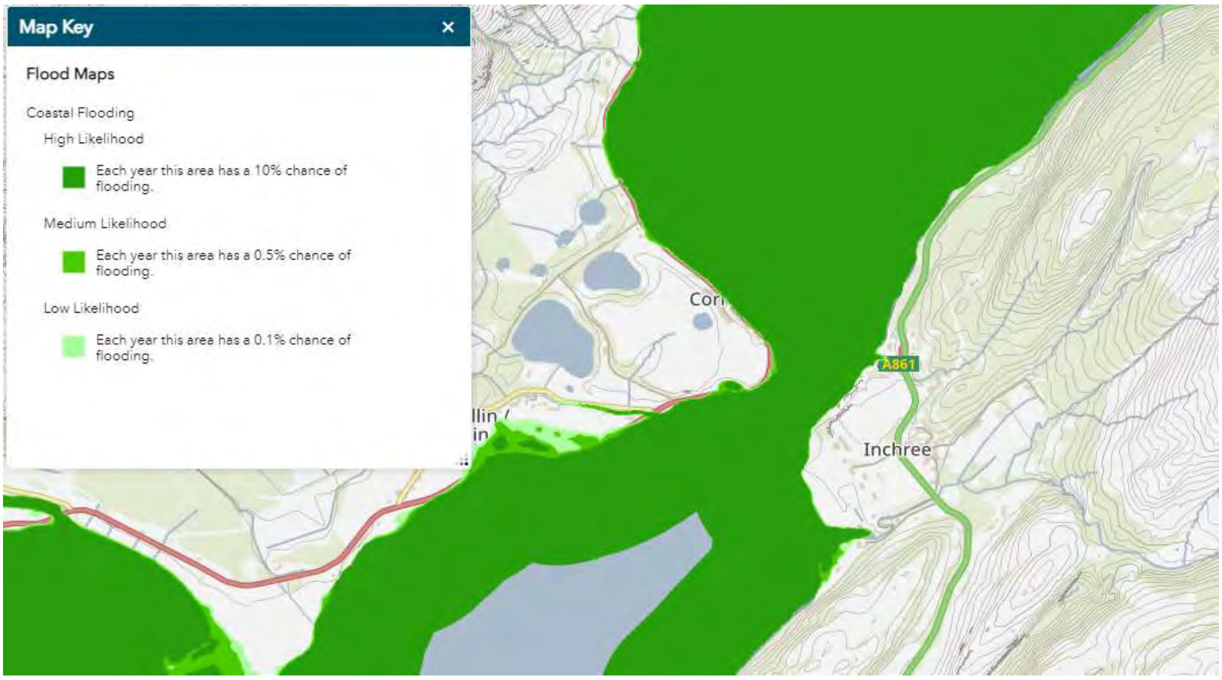

Figure 11.2.2: Coastal Flood Risk Map (SEPA, 2024b)

Correspondence from SEPA provided in the Pre-application Advice for Major Developments Pack (THC, 2023a) expressed that the flood risk water levels developed within the Caol and

Lochyside Flood Protection Scheme Study (JBA Consulting, 2017) would be applicable to Ardgour and Nether Lochaber sides of the CFIIS. The levels are as follows:

- 1 in 200 Year Still Water Level: +4.69m OD (which is equivalent to +6.65m CD);
- Climate Change Allowance: +0.86m; and
- Freeboard Allowance: +0.60m (for floor levels of new buildings not for 'water compatible use').

Hence, elements above 5.55m OD are unlikely to be flooded in event of a 1 in 200 year storm, taking account of climate change.

Various points of the existing ferry infrastructure are below the aforementioned levels. On the Nether Lochaber side; the car park, toilet facility and parts of the marshalling area are below 5.55m OD. With regard to the Ardgour side, the A861, the ferry office, marshalling area, storage building and the pier head, along with other commercial and residential properties are also located on ground which is below the 5.55m OD still water level. Commercial properties offering overnight accommodation and residential properties adjacent to the A861 may have floor levels which are at, or below, 6.15m OD level (the SEPA provided flood risk water level including freeboard allowance for new properties of this type).

11.3 Potential Construction Effects

11.3.1 Seabed

The following construction techniques have the potential to impact upon the seabed:

- Dredging;
- Rock stripping and possible rock blasting;
- Dredge disposal activities;
- Land reclamation and rock armour placement; and
- Cut and cap cable removal techniques.

Dredging, rock stripping and any rock blasting will include the removal of sediment and bedrock, changing the bathymetry of the seabed. This may result in knock on effects to coastal processes, which is discussed further in Section 11.3.2. On the Ardgour side, it is expected that dredging will involve the removal of sediment only and will not reach rockhead level, or encounter significantly different sediment layers, therefore existing seabed characteristics will not notably change. On the Corran side, dredging is associated with psammite bedrock, and again will not result in a change to the seabed characteristics as the rock strata doesn't change type within the depth being removed. As seabed characteristics will not change significantly. There will also be an associated loss to geological features during bedrock removal, however, the volume removed is not significant, has no designation, and there are ample examples of the same geological features throughout the area.

GI works conducted by Causeway Geotech, confirmed that the sediment type at the location of the CFIIS is mainly comprised of gravel and sand, with small portions of cobbles and silt. Gravel and sand sediments will likely drop out rapidly from the water column, with any impacts remaining localised and non-significant. There is also potential for remobilisation of contaminated sediments, but as mentioned in Section 11.2, pre-dredge sample analysis conducted in 2024 showed no evidence of contamination (Causeway Geotech, 2024) and hence is not considered a risk.

The intent is to use the won bedrock and sediments from dredging as infill for land reclamation works or other infill works, due to their suitable physical and chemical properties. However, should there be a requirement for disposal at sea, this will be managed through the BPEO and dredge and disposal licence process.

Land reclamation and rock armour placement will alter the bathymetry of the seabed, which may result in knock on effects to coastal processes and is discussed further in Section 11.3.2. There will also be an associated loss of the seabed itself, but this loss is so small in nature that any impacts associated with loss will not be significant.

Sectional removal of two sub-sea cables (which will be de-energised by the time of the works) will be completed using a cut and cap cable removal technique. Only cable sections conflicting with the construction footprint at Ardgour will be removed. Some form of anchorage at the cut point will be required to ensure the remaining cables are still secured in position on the seabed. As the cable is placed on the seabed, its removal is not predicted to cause any direct effects. The installation of a localised piled restraint, with a concrete cap, to anchor the capped end of the removed cables will affect a very small area of the seabed, and is therefore not considered significant.

11.3.2 Coastal Processes

The construction activities themselves are not anticipated to cause significant impacts to coastal processes and therefore do not require further consideration.

11.3.3 Flooding

Construction activities of the CFIIS are not expected to contribute to an increase in flooding events or risk.

11.4 Potential Operational Effects

11.4.1 Seabed

During operations of the proposed CFIIS, the following activities may give rise to impacts to the seabed:

- Vessel movements; and
- Maintenance dredging.

Vessel movements have the potential to remobilise sediments during manoeuvring and berthing activities due to their propulsion systems. It is noted that this is only relevant where mobile sediments are present, which is likely to be the Ardgour side only. As a result there is a small risk that localised scour holes could be generated on the seabed i.e. along the slipways at Ardgour or at the overnight berths. The depth and extent of any scour holes is highly dependent on vessel manoeuvres and water levels at the time of manoeuvring. Formation of scour holes in one area of the seabed can result in deposition of material in another area of the seabed which can lead to high spots and obstructions requiring maintenance. As scour is limited to areas where there are mobile sediments, and when water levels are low, impacts are not expected to be significant.

Furthermore, as detailed in in Section 11.2, the sediments present around the Corran Narrows (primarily sands and gravels) are unlikely to move significant distances. However, should any maintenance dredging be required, it is expected to be infrequent and small scale. Appropriate dredge sample analysis would be undertaken to ensure that the material is not contaminated. The sampling results would then be used to inform the BPEO report, with the dredging operations controlled through the licensing process. The infrequent requirement for this is such that there will not be notable impacts to be seabed due to removal of material. It is noted that dredging would not involve the removal of bedrock and would be only to achieve design depths.

11.4.2 Coastal Processes

Land reclamation, and to a lesser extent, the proposed bedrock removal proposed for the CFIIS has the potential to alter the wave and tidal climate, wave directions and geomorphological processes within the Corran Narrows. It is recognised that the shape of the development coupled with the narrow nature of the waterbody in which the development lies will influence hydrographics, sediment transport and thus coastal processes around the Corran Narrows.

Modelling thus far has been undertaken to ensure the design feasibility of the proposed development, with particular regard to the shape and nature of the overnight pier, breakwater and slipway infrastructure. This has also included 1 in 50 year storm conditions to ensure the overnight berthing structure is sufficient to protect berthed vessels during extreme weather events. No significant impacts to coastal processes have been identified thus far, however, further modelling will be completed as the design matures in order to fully understand potential impacts and refine the design of the CFIIS, if necessary.

11.4.3 Flooding

The proposed CFIIS will take the flood levels outlined in Section 11.2 into consideration by design. It is recognised that the area, particularly at Ardgour, is already prone to some level of coastal flooding and although creation of land-reclamation and structures does technically result in encroachment on the volume of the coastal waterbody, the impact of this will be negligible and is not anticipated to increase flood risk. Impacts with regard to coastal processes as a result of encroachment on the waterbody are discussed in Section 11.4.2.

Existing ferry infrastructure (slipways, overnight berths, breakwater etc) require to be water compatible and have to be located within the functional floodplain for operational reasons.

It is recognised there is existing non-development related infrastructure, particularly in Ardgour, that are below SEPAs prescribed 1 in 200 year flood levels. Although the development will not protect these properties from flooding, the development will be designed so as to not exacerbate the flood risk from incidents such as by tidal locking of drainage systems.

11.5 Proposed Impact Assessment

No significant impacts to the seabed are anticipated during construction and operations of the CFIIS, therefore it is proposed they are **scoped out** of the CFIIS EIA. It is proposed that construction impacts to coastal processes and flooding are **scoped out** of the EIA, as no impacts are anticipated during this phase.

Coastal modelling is required to understand the effects of coastal process on the marine components of the CFIIS and ferry operations, along with the effects of the CFIIS on coastal process. Modelling is used to inform the design, hence it is unlikely that the CFIIS design taken forward for consenting will have a significant effect on coastal processes. It is however, appropriate to **scope in** coastal processes to the EIA to allow the model findings to be presented to demonstrate that the design is acceptable. As flood risk in this area is primarily due to coastal processes, there is a need to **scope in** operational flood risk into the EIA.

In summary, impacts of the construction and operational phases and whether it is proposed they are scoped in or out of the CFIIS EIA are outlined in Table 11.5.1. Impact assessment methodologies are then detailed where appropriate. The approaches to understand coastal processes and flood risk are detailed in Sections 11.5.1 and11.5.2 respectively.

Table 11.5.1: Seabed, Coastal Processes and Flooding Scoping Summary

Potential Impact	Phase	
	Construction	Operations
Impacts to the seabed	Out	Out
Impacts to coastal processes in the Corran Narrows	NA	In
Impacts to flood risk	NA	In

NA = Not applicable.

11.5.1 Coastal Processes

The studies will be undertaken by RPS Consulting, utilising their in-house MIKE modelling system, based on the Danish Hydraulics Institute's software which is one of the world's leading hydraulic modelling software for the marine environment. The main part of the modelling study will be undertaken using the integrated model MIKE 21/3 Coupled FM. This model includes tidal, wave, sediment transport and water quality modules interlinked and all running on a common flexible mesh bathymetry. Information sources that will also be utilised for the study include the following:

- RPS Consulting's existing and proposed models of the inner and outer basin of Loch Linnhe and the Corran Narrows;
- Up to date bathymetric survey, ground investigation and current monitoring data;
- Wind data UK Met Office for extreme winds speeds over the UK and data from the global atmospheric models;
- Acoustic Doppler Current Profiler data (recording tidal currents over a lunar month);
- SEPA/Environment Agency coastal and estuary flood boundary data sets;
- EA/DEFRA report FD2308 Joint Probability: Dependence Mapping and Best Practice (Environmental Agency and DEFRA, 2005).

As the tidal currents around the Coran Narrows are quite strong, the currents will at times have a significant impact on the wave climate approaching the proposed infrastructure works. Thus, the wave module simulations will be undertaken at times of high current flows as well as at periods around high and low water when the tidal currents are weak.

The Spectral Wave (SW) module will be used to simulate the 1 in 0.1, 1 in 1, 1 in 10 and 1 in 50 year return periods storms from both the north to east and south to west sectors for both extreme joint probability events at high water and with flood and ebb tidal flows. The results of the wave simulations will provide information for reviewing operational impacts, design of the marine structures, land reclamation etc, in terms of structure stability and overtopping.

The impact on the sediment transport regime will be simulated using the coupled model based on 1 in 1 year return period storms with mean tide current flows. The model simulation will produce the littoral currents (tidal and wave driven currents) which together with the waves and the bed sediments allows the model to output the sediment transport pathways and rates.

The study of the impact of wave reflections from the structures and land reclamation will be assessed by running Boussinesq wave models of the area around each of these fixed structures. The boundary conditions for these small local models will be taken from the results of the still water wave module simulations.

All the model simulations noted above will be undertaken for both the current sea levels and for the sea level predicted to occur by 2100.

11.5.2 Flooding

A Flood Risk Assessment will be prepared to understand the impacts to flood risk at the development, but also the surrounding areas. The information provided will align with SEPAs Technical Flood Risk Guidance for Stakeholders (SEPA, 2022). In addition, a Drainage Impact Assessment, written in accordance with the Highland Councils Supplementary Guidance: Flood Risk and Drainage Impact Assessment, will be undertaken. The results of both risk assessments will then be used to inform the EIA.

12 Biodiversity

This section introduces relevant legislation, policy, plans and guidance associated with biodiversity receptors of the CFIIS. This section also identifies statutory designated sites that have been designated for biological quantifying interests or features (noting that some of the Sites of Special Scientific Interest (SSSIs) included within the assessment are also designated for geological qualifying features, and where relevant, are discussed in Section 9: Geology, Land and Soils). The implications of the potential ecological connectivity to designated sites included within Section 12.2 (where identified), will be discussed further in the relevant biodiversity chapters:

- Section 13: Terrestrial Ecology and Ornithology; and
- Section 14: Marine Ecology.

12.1 Legislation, Policy, and Guidance

12.1.1 Legislation

12.1.1.1 Marine (Scotland) Act 2010

The Marine (Scotland) Act 2010 sets out duties on Scottish Ministers' to ensure Scotland's seas are sustainably managed and contain provisions for new Marine Protected Areas (MPAs) in Scottish territorial waters. In order to help meet this requirement, the JNCC and NatureScot produced a list of species and habitats occurring in Scottish waters, which are noted for their conservation importance, referred to as 'Priority Marine Features (PMFs)'. PMFs include benthic and intertidal habitats, marine mammals, fish, and invertebrate species (Tyler-Walters *et al.*, 2016). Inclusion in the PMF list itself does not provide legal protection, however, due consideration must be provided in impact assessments. As such, all PMFs are considered sensitive for the purpose of this assessment.

12.1.1.2 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'), led to the classification of Special Protection Areas (SPAs) for the presence of bird species listed in Annex I of the directive. The Birds Directive also provides legal protection for all wild bird, their nests, eggs and habitats within Europe, which transposed into Scottish law via the Wildlife and Countryside Act 1981 (as amended) (WCA).

12.1.1.3 Wildlife and Countryside Act 1981 (as Amended)

The WCA protects much of the UK's native wildlife, includes amphibians and reptiles (collectively known as 'herptiles'), wild birds, wild plants and fungi. Furthermore, additional protection is given to invertebrate species listed under Schedule 5 of the WCA and plant species listed under Schedule 8 of the WCA.

The WCA further protects native biodiversity by establishing offences in relation to the control of invasive non-native species (INNS) listed under Schedule 9 of the act. The WCA aims to limit the spread of INNS by making it a legal offence to knowingly or recklessly allow INNS to spread into the wild.

12.1.1.4 Habitats Directive and Habitats Regulations

The European Union Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (commonly known as 'The Habitats Directive'), led to the establishment of Natura 2000 Sites (now known as 'European Sites' in the UK) and European Protected Species (EPS). The Habitats Directive is transposed into Scottish law via the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (commonly known as the 'Habitat Regulations'), as discussed in Section 4.1.6: Habitats Directive.

The Habitats Regulations make it an offence to intentionally or recklessly capture, injure, kill, disturb, own or trade animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, own or trade any of the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities.

In addition, The Habitats Regulations determine that, if a plan or project could affect a European Site (i.e. any SPA, Special Area of Conservation (SAC), candidate SAC (cSAC), MPA or proposed MPA (pMPA)), then there are certain considerations that must be made before the proposal can proceed. In particular, Regulation 48 of the Habitats Regulations dictates that any plan or project, which may result in a 'Likely Significant Effect' (LSE) to any qualifying interest/feature associated with a European Site (either alone or in combination with other plans or projects), and is not directly connected with or necessary to the management of the site, shall be subject to an AA. The AA must demonstrate that the proposal will not adversely affect the integrity of the site. Where required, it is the responsibility of the competent authority to carry out a Habitats Regulation Assessment (HRA) based on robust, scientific information provided by the project developer to determine whether there will be any LSE. If no LSE is anticipated, it is likely that an AA will not be required.

It is understood that the CFIIS is not directly connected with, or necessary to, the management of any European Site. Therefore, it is possible that an AA will be required if LSEs are expected to any qualifying interests/features associated with European Sites (see Section 13: Terrestrial Ecology and Ornithology and Section 14: Marine Ecology for further details).

12.1.2 Planning Policy and Plans

12.1.2.1 National Planning Framework 4

The National Planning Framework 4 (NPF4) aims to 'protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks.' Specifically, Policy 3 of NPF4 states:

a) Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats, and building and strengthening nature networks and the connections between them. Proposals should also integrate nature-based solutions, where possible.
b) Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore, and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management.
c) Proposals for local development will include appropriate measures to conserve, restore and enhance biodiversity, in accordance with national and local guidance. Measures should be proportionate to the nature and scale of development.

The requirements for biodiversity enhancement associated with the project will be considered as part of a Biodiversity Net Gain (BNG) Assessment for the project development area. The BNG Assessment will be utilised during the EIA process to determine the significance of impacts associated with habitat loss (for further detail please refer to Section 13: Terrestrial Ecology and Ornithology).

12.1.2.2 UK Biodiversity Action Plan

The UK Biodiversity Action Plan (BAP) was published in 1994 and was the UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992 in Rio de Janeiro (JNCC, 2024). The CBD called for the development and enforcement of national strategies and associated action plans to identify, conserve and protect existing biological diversity, and to enhance it wherever possible. UK BAP priority species and habitats were those that were identified as being the most threatened and requiring conservation action under the UK BAP. The original lists of UK BAP priority species and habitats were created between 1995 and 1999, and were subsequently updated in 2007, following a 2-year review of UK BAP processes and priorities, which included a review of the UK priority species and habitats lists.

12.1.2.3 Planning Advice Notes and Local Development Plans

Planning Advice Note (PAN) 60 'Planning for Natural Heritage' makes reference to the UK BAP, as well as Local Biodiversity Action Plans (LBAPs) (such as THC 'Highland Nature Biodiversity Action Plan' (Highland Nature, 2021)) (Scottish Government, 2008). PAN 60 acts as a mechanism for ensuring nationally and locally important species and habitats are conserved and enhanced through focused local action.

- The HwLDP also outlines relevant policy to biodiversity. Relevant policies include:

- **Policy 57**: Natural, Built and Cultural Heritage of the HwLDP provides guiding principles on development with regard to effects on features of local/regional, national and international importance in the natural environment;
- **Policy 58**: Protected Species, outlines that surveys should be undertaken, and mitigation identified to avoid or minimise impacts to protected species. It also outlines under what circumstances development with potential impacts to protected species may be permitted;
- **Policy 59**: Other Important Species, provides that THC will have regard to species in Annex II or V of the EC Habitats Directive, UK and Local (i.e. Highland Nature) BAP priority species or species on the Scottish Biodiversity List if not protected by other means;
- **Policy 60**: Other Important Habitats and Article 10 Features, provide the council shall seek to safeguard the integrity of linear or continuous habitats as “stepping stones” for the movement of wildlife, and will seek to create new habitats supportive of this concept. It also outlines the regard for habitats of Annex I of the EC Habitats Directive, priority habitats of the UK and Local BAPs or habitats on the Scottish Biodiversity List, if not protected by other means; and
- Guiding principles of **Policy 51**: Trees and Development, and **Policy 52**: Principle of Development in the Woodland, note there should be strong presumption in favour of protecting Scotland’s woodland resources. The HwLDP specifically references consideration of clear and significant public benefit and compensatory planting for proposed woodland removal.

12.1.2.4 UK Marine Policy Statement

The Marine Policy Statement (MPS) is the framework for preparing Marine Plans and taking decisions that affect the marine environment. It also sets the direction for marine licensing and other authorisation systems in each UK Administration. The MPS applies to all UK waters and provides policy context for which national and sub-national marine plans are developed, implemented, monitored, amended and for the assurance of consistency in marine planning across the UK marine area (Scottish Government, 2020a). In Scotland, this is through Scotland’s NMP.

12.1.2.5 Scotland’s National Marine Plan

As discussed in Section 4.2.3, the NMP provides GENs, most of which apply to the construction and operations of the proposed CFIIS. GENs specifically relevant to biodiversity include:

- **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 practise of existing activity should be taken when decisions are being made*;
- **GEN 13 Noise:** Development and use of the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects; and

- **GEN 21 Cumulative Impacts:** Cumulative impacts affecting the ecosystem of the marine plan area should be addressed in decision making and plan implementation (Scottish Government, 2015a).

The NMP also contains a series of GES descriptors. Those relevant to biodiversity include:

- **GES 1:** *Biological diversity is maintained and recovered where appropriate. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions;*
- **GES 2:** *Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems;*
- **GES 4:** *All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity;*
- **GES 6:** *Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected*;
- **GES 7:** Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems; and
- **GES 11:** Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment. (Scottish Government, 2015a).

12.1.2.6 The Scottish Biodiversity List

The Scottish Biodiversity List is a list of animals, plants and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland (NatureScot, 2020a).

12.1.3 Guidance

Section 13: Terrestrial Ecology and Ornithology and Section 14: Marine Ecology were written in line with CIEEM's 'Guidelines for Ecological Impact Assessment in UK and Ireland: terrestrial, Freshwater, Coastal and Marine' (CIEEM, 2018) and the 'Pre-application Advice for Major Developments' pack provided by THC (THC, 2023a).

Additional guidance in relation to protected species and habitats was sought from THC's development guidance on protected species (THC, 2013a), THC's Local BAP 'Highland Nature Biodiversity Action Plan 2021 – 2026' (Highland Nature, 2022).

The Convention for Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention 1992) guides international cooperation between 15 western European governments for the conservation of the North-East Atlantic region and its resources. OSPAR has developed a list of threatened and/or declining species and habitats. The list is based on nominations of species and habitats which were considered priorities for protection by contracting parties and observers to the commission.

12.2 Designated Sites

A review of NatureScot's SiteLink Portal confirms that the area of the CFIIS is not located within any statutory designated sites nor are there any within the immediate vicinity (NatureScot, 2024). However, it is acknowledged that qualifying interests/features associated with designated sites may be ecologically connected to the CFIIS development site, and hence be ecological receptors of the works. To maintain a proportionate approach to the works, all immobile qualifying terrestrial interests or features associated with designated sites situated within 5km of the proposed works and all mobile qualifying terrestrial interests or features associated with designated sites within 20km of the proposed works and all marine qualifying features associated with designated sites within 30km of the proposed works, have been included within the assessment for potential ecological connectivity (as summarised in Table 12.2.1). Some of the SSSIs included within the assessment are also designated for the presence of geological qualifying features. Where applicable, geological qualifying features are included within Table 12.2.1, however, Section 9: Geology, Land and Soils should be referred to for more detail.

No locally designated sites are identified within 20km of the CFIIS location. The sites listed within Table 12.2.1 include those of the following designations:

- Marine Protection Areas (MPAs);
- Nature Conservation Marine Protected Areas (MPA(NC)s);
- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs); and
- Special Protected Areas (SPAs).

A search for proposed and candidate designated sites was also carried out, though none were identified.

Table 12.2.1: Statutory Nature Conservation Designated Sites relevant to the CFIIS

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Onich to North Ballachulish Woods and Shore SSSI	0.3km SE	**Biological:** • Alkaline fen; • Upland mixed ash woodland; • Upland oak (*Quercus* sp.) woodland; and **Geological:** • Dalradian	No	**Not considered further** – None of the habitats or geological features associated with the SSSI have been identified within the CFIIS Scoping boundary.
Onich to North Ballachulish Woods SAC	0.4km SE	• Base-rich fens; • Mixed woodland on base-rich soils associated with rocky slopes; and • Western acidic oak woodland	No	**Not considered further** – None of the habitats associated with the SAC have been identified within the CFIIS Scoping boundary.
Moidart and Ardgour SPA	1.3km NW	**Breeding:** • Golden eagle (*Aquila chrysaetos*)	Yes	**Considered further in Section 13: Terrestrial Ecology and Ornithology –** There are no known records of golden eagle nesting sites within 1km of the location of the CFIIS (Maguire, 2022). However, golden eagles have a core range of 6km (SNH, 2016), and there is considered to be potential habitat for foraging golden eagle within the vicinity of the works. Hence, there is considered to be potential ecological connectivity between the qualifying interest and the proposed works.
Glen Etive and Glen Fyne SPA	3.8km SSE	**Breeding:** • Golden eagle	Yes	

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Doire Donn SSSI	5.8km NNE	**Biological:** • Beetles; and • Chequered skipper butterfly (*Carterocephalus palaemon*)	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.
		Biological: • Upland oak woodland	No	**Not considered further** – The habitat associated with the SAC is considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
Ardgour Pinewoods SSSI	6.6km NNW	**Biological:** • Beetles; • Chequered skipper butterfly; and • Reptile assemblage	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates or reptiles. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates or reptiles associated with qualifying features of the site.
		Biological: • Native pinewood (*Pinus* sp.)	No	**Not considered further** – The habitat associated with the SSSI is considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
Ardgour Pinewoods SAC	6.6km NW	• Alder (*Alnus* sp.) woodland on floodplains; and • Caledonian forest	No	**Not considered further** – The habitats associated with the SAC are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
Carnach Wood SSSI	8.0km SE	**Biological:** • Flies	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
		Biological: • Wet woodland	No	**Not considered further** – The habitat associated with the SSSI is considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
Glen Creran Woods SSSI	12.3km SE	**Biological:** • Bryophyte assemblage; • Lichen assemblage; and • Upland oak woodland	No	**Not considered further** – The habitats associated with the SSSI are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		Biological: • Chequered skipper butterfly; and • Pearl bordered fritillary butterfly (*Boloria euphrosyne*)	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.
Glen Creran Woods SAC	12.3km SSE	**Biological:** • Mixed woodland on base-rich soils associated with rocky slopes; and • Western acidic oak woodland	No	**Not considered further** – The habitats associated with the SAC are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		Biological: • Otter (*Lutra lutra*).	No	**Not considered further** – In a coastal environment, otter generally range between 2 – 10km (Chanin, 2013). However, the SAC is situated approximately 12.3km from the CFIIS site, and it is likely that the distance that otter would have to travel would be much greater, to ensure that the species could stay within suitable habitats. Therefore, it is considered unlikely that otter associated with the SAC would frequent the area of the CFIIS site.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Ben Nevis SSSI	12.4km ENE	**<u>Biological:</u>** • Breeding bird assemblage	Yes	**Considered further in Section 13: Terrestrial Ecology and Ornithology -** The SSSI does not qualify for the presence of a specific ornithological species, instead, it is designated for the presence of a breeding bird assemblage. Only two species are listed within the SSSI citation, snow bunting (*Plectrophenax Nivalis*) and dotterel (*Charadrius morinellus*). Neither species were identified during the breeding bird survey (BBS). However, there are records of snow bunting within the wider context of the development site (NBN Atlas, 2024). Thus, there is considered to be potential for wintering snow bunting to be present.
		<u>Biological:</u> • Bryophyte assemblage; • Native pinewood; • Upland assembly; • Upland oak woodland; • Vascular plant assemblage; and **<u>Geological:</u>** • Caledonian igneous	No	**Not considered further** – The habitats, plant assemblages and geological features associated with the SSSI are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		<u>Biological:</u> • Fly assemblage; and • Small mountain ringlet butterfly (*Erebia epiphron*)	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Sunart SSSI	14.9km WSW	**Biological:** • Bryophyte assemblage; • Eelgrass (*Zostera* sp.) beds; • Egg wrack (*Ascophyllum nodosum ecad mackaii*); • Lichen assemblage; • Rocky shore; • Saltmarsh; • Upland assemblage; • Upland oak woodland; • Vascular plant assemblage; and **Geological:** • Caledonian igneous; • Moine; and • Tertiary igneous	No	**Not considered further** – The habitats, plant assemblages and geological features associated with the SSSI are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		Biological: • Chequered skipper butterfly; • Dragonfly assemblage; and • Moths	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
		Biological: • Otter	No	**Not considered further** – In a coastal environment, otter generally range between 2 – 10km (Chanin, 2013). However, the SSSI is situated approximately 14.9km from the CFIIS site, and it is likely that the distance that otter would have to travel would be much greater, to ensure that the species could stay within suitable habitats. Therefore, it is considered unlikely that otter associated with the SSSI would frequent the area of the CFIIS site.
Sunart SAC	16.0km WNW	**Biological:** • Dry heaths; • Mixed woodland on base-rich soils associated with rocky slopes; • Reefs; • Western acidic oak woodland; and • Wet heathland with cross-leaved heath (*Erica tetralix*)	No	**Not considered further** – The habitats associated with the SAC are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		Biological: • Otter	No	**Not considered further** – In a coastal environment, otter generally range between 2 – 10km (Chanin, 2013). However, the SAC is situated approximately 16.0km from the CFIIS site, and it is likely that the distance that otter would have to travel would be much greater, to ensure that the species could stay within suitable habitats. Therefore, it is considered unlikely that otter associated with the SAC would frequent the area of the CFIIS site.
Loch Shiel SSSI	17.8km NW	**Biological:** • Breeding black-throated diver (*Gavia arctica*)	No	**Not considered further** - Black-throated diver generally range <10km (SNH, 2016). Hence, no potential ecological connectivity is expected between the CFIIS site and the population of black-throated diver associated with the SSSI.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
		Biological: • Bryophyte assemblage; • Native pinewood; • Oligotrophic loch; and • Upland oak woodland	No	**Not considered further** – The habitats and plant assemblages associated with the SSSI are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		Biological: • Chequered skipper butterfly	No	**Not considered further** – Distances between the SSSI and the CFIIS development site are considered to be too great for general ranging by invertebrates. Thus, there is not considered to be any potential ecological connectivity between the CFIIS development site and the populations of invertebrates associated with qualifying features of the site.
Loch Creran MPA(NC)	18.3km SSW	**Biological:** • Flame shell (*Limaria hians*) beds; and **Geological:** • Quaternary of Scotland	No	**Not considered further** – The habitats and geological features associated with the MPA(NC) are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
Loch Sunart to the Sound of Jura MPA(NC)	18.7km WSW	**Biological:** • Flapper skate (*Dipurtus intermedius*)	No	**Not considered further** – There are no known records of flapper skate within Loch Linnie (NBN Atlas, 2024). This suggests that the habitat within the loch is not suitable for the species. Therefore, in addition to the distance from the site, flapper skate associated with the Loch Sunart to the Sound of Jura MPA(NC) are not anticipated to be impacted by the CFIIS.
		Geological: • Quaternary of Scotland	No	**Not considered further** – The geological features associated with the MPA(NC) are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Loch Etive Woods SAC	18.9km SE	• Alder woodland on floodplains; • Mixed woodland on base-rich soils associated with rocky slopes; and • Western acidic oak woodland	No	**Not considered further** – The habitats associated with the SAC are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		• Otter	No	**Not considered further** – In a coastal environment, otter generally range between 2 – 10km (Chanin, 2013). However, the SAC is situated approximately 18.9km from the CFIIS site, and it is likely that the distance that otter would have to travel would be much greater, to ensure that the species could stay within suitable habitats. Therefore, it is considered unlikely that otter associated with the SAC would frequent the area of the CFIIS site.
Eileanan Agus Sgeiran Lios Mór SAC	18.9km SW	• Harbour seal (*Phoca vitulina*)	Yes	**Considered further in Section 14.2: Marine Mammals -** The foraging trips of harbour seal typically range 50km (Lyons, 2004). As harbour seal would only need to travel approximately 19km within the marine environment to reach the location of the CFIIS, it is considered that harbour seal associated with the SAC may be present. Therefore, there is potential for the qualifying feature to be impacted.
Loch Shiel SPA	19.1km NW	**Breeding:** • Black-throated diver	No	**Not considered further** - Black-throated diver generally range <10km (SNH, 2016). Hence, no potential ecological connectivity is expected between the CFIIS site and the population of black-throated diver associated with the SSSI.

Designated Site	Approximate Distance and Direction from CFIIS Site	Qualifying Features	Potential for Ecological Connectivity Yes/No	Evaluation Rationale
Loch Moidart and Loch Shiel Woods SAC	19.7km NW	• Alder woodland on floodplains; • Intertidal mudflats and sandflats; • Mixed woodland on base-rich soils associated with rocky slopes; and • Western acidic oak woodland	No	**Not considered further** – The habitats associated with the SAC are considered to be at a great distance from the proposed works, hence no potential ecological connectivity is expected.
		• Otter	No	**Not considered further** – In a coastal environment, otter generally range between 2 – 10km (Chanin, 2013). However, the SAC is situated approximately 19.7km from the CFIIS site, and it is likely that the distance that otter would have to travel would be much greater, to ensure that the species could stay within suitable habitats. Therefore, it is considered unlikely that otter associated with the SAC would frequent the area of the CFIIS site.
Inner Hebrides and the Minches SAC	24.9km SW	• Harbour porpoise (*Phocoena phocoena*)	Yes	**Considered further in Section 14.2: Marine Mammals** – Harbour porpoise are a mobile feature which have been recorded travelling up to 100km in a straight line (Sveegaard, *et al.*, 2011). As harbour porpoise would only need to travel 25km within a marine environment in order to reach the Corran Narrows, and there are records of the species within Loch Linnhe (NBN Atlas, 2024), it would be justifiable to assume that harbour porpoise associated with the SAC may range within the vicinity of the CFIIS.

The majority of qualifying features of designated sites in proximity to the CFIIS are unlikely to be impacted by the scheme due to the distances involved and the localised nature of the likely impacts. However, potential ecological connectivity has been identified between the scheme and the ornithological qualifying interests/features of:

- Moidart and Ardgour SPA;
- Glen Etive and Glen Fyne SPA; and
- Ben Nevis SSSI.

In addition, potential ecological connectivity has been identified between the project and the qualifying interests/features of:

- Eileanan Agus Sgeiran Lios Mór SAC (with regard to harbour seal); and
- Inner Hebrides and the Minches SAC (with regard to harbour porpoise).

Potential impacts to these identified species are explored further in Section 13: Terrestrial Ecology and Ornithology and Section 14.2: Marine Mammals (as appropriate).

13 Terrestrial Ecology and Ornithology

This section considers all terrestrial ecological and ornithological receptors of the CFIIS, in terms of both habitats and potential species present on both sides of the Corran Narrows that could be affected by the CFIIS, during the construction or operational phase.

13.1 Baseline

Terrestrial ecological and ornithological baseline data of the area proposed for the CFIIS was collected during a Preliminary Ecological Appraisal (PEA) (Affric Limited, 2022) and Breeding Bird Survey (BBS) (Atmos Consulting, 2022), both completed in 2022, and a Protected Species Survey (PSS) in 2023 (Affric Limited, 2024). The surveys were comprised of a data collection exercise (desktop study) and appropriate site surveys.

The desktop studies provided additional context of the site, in regard to species, habitats and designated sites present locally. The desktop studies included a review of publicly available information from the National Biodiversity Network (NBN) Atlas to obtain records of previously identified species within the survey boundaries and wider locality (NBN Atlas, 2024). Information of local site designations was obtained from NatureScot’s SiteLink (NatureScot, 2024). Furthermore, Google Maps and the Department for Environment, Food and Rural Affairs (DEFRA) MAGIC were assessed, to gain an understanding of potential habitat types which may be present (Google Maps, 2023 and DEFRA, 2023).

Surveys were undertaken to cover the development site with appropriate buffers for the species of interest (as shown in Drawing 99_DRG_14_1). It is noted that there have been alterations to the anticipated scoping boundary since the original surveys were undertaken. As a result, although survey data is available for the full scoping boundary, there are some gaps in information associated with specifies specific buffer zones. Further ecological survey works to capture ecological baseline data outside of the scoping boundary (where appropriate), will be undertaken as part of the EIA process (as stated in Section 13.4: Proposed Impact Assessment).

The purpose of each terrestrial ecological survey completed in support of the CFIIS is detailed in Table 13.1.1, along with which appendix they can be found in.

Table 13.1.1: Surveys Undertaken to Determine CFIIS Baseline

Document Title	Date Field Work Completed	Purpose	Appendix No.
Corran Ferry Infrastructure Improvement Scheme Preliminary Ecological Appraisal Report	August 2022	Desktop study and Extended Phase 1 Habitat Survey to identify habitats and determine the suitability of habitats for protected species.	Appendix 2
Corran Ferry Breeding Bird Survey Technical Report	April – June 2022	Identify the presence of bird species and determine the (where possible) location of birds' nests.	Appendix 3
Corran Ferry Infrastructure Improvement Scheme Protected Species Survey	May – August 2023	Identify potential for, and (where present) evidence of bats, badger, otter, pine marten and red squirrel.	Appendix 4

13.1.1 Designated Sites

Three ornithological qualifying interests/features associated with designated sites were identified to have potential ecological connectivity to the CFIIS site (see Table 12.2.1) and will be considered further within this section:

- Breeding bird assemblage associated with Ben Nevis SSSI;
- Breeding golden eagle associated with Glen Etive and Glen Fyne SPA; and
- Breeding golden eagle associated with Moidart and Ardgour SPA.

All of the features listed above will be considered further as 'ornithology'.

13.1.2 Habitats and Protected Species

An overview of the findings of the ecological surveys for each potential ecological receptors of the CFIIS is shown in Table 13.1.2. For further details, please refer to the relevant appended reports as per Table 13.1.1.

Table 13.1.2: Overview of Potential for Ecological Receptors within the Ecological Survey Boundaries

Receptor	Description
Habitats and protected plant species	Habitats within the Nether Lochaber scoping boundary were predominantly common within the wider locality (i.e. building, residential gardens, amenity grassland, coniferous woodland), however, broadleaved woodland situated towards the north of the Nether Lochaber scoping boundary was considered to have ecological value due to the presence of native bluebell (*Hyacinthoides non-scripta*) (Affric Limited, 2024). Furthermore, small areas of coastal habitat were considered to have ecological value due to their potential usage by otter (Affric Limited, 2022; Affric Limited, 2024). Much of the existing natural habitat within Nether Lochaber has been degraded due to extensive rhododendron scrub (Affric Limited, 2022). Habitats within the Ardgour scoping boundary were considered to be relatively common within the wider locality (i.e. buildings, residential gardens and amenity grassland) (Affric Limited, 2022).
Amphibians and reptiles (collectively referred to as 'herptiles')	Records of amphibians and reptiles (collectively referred to as 'herptiles') were identified within 2km of the Nether Lochaber and Ardgour scoping boundary, including common toad (*Bufo bufo*), common frog (*Rana temporaria*) and slow worm (*Anguis fragilis*) (Affric Limited, 2022). These species are generally considered to be common and widespread within the wider locality. No herptiles were identified during the PEA survey, however, woodland, scrub, amenity grassland and connected residential gardens were considered to provide suitable habitat within the Nether Lochaber scoping boundary (Affric Limited, 2022). Furthermore, two potential hibernacula were identified in the broadleaved woodland within the Nether Lochaber scoping boundary (Affric Limited, 2024). Scrub, amenity grassland, open grassland and connected residential gardens was considered to provide suitable habitat within the Ardgour scoping boundary (Affric Limited, 2022). Available habitat in Nether Lochaber (i.e., Corran) and Ardgour was considered to be sub-optimal for herptiles due to the general lack of connectivity as a result of urban developments, such as highways and buildings. However, it is considered probable that common and widespread herptile species are present within the identified suitable habitats in low numbers.
Badger	No records of badger were identified within 2km of the Ardgour scoping boundary, however, records of badger were identified within 2km of the Nether Lochaber scoping boundary. No evidence of badger was identified within either the Nether Lochaber or Ardgour badger scoping boundaries or 100m buffer zones. However, suitable habitat for sett building and foraging/commuting was identified within both the Nether Lochaber and Ardgour scoping boundaries (Affric Limited, 2024). As badger are a highly mobile species, there is potential for badger to roam within the scoping boundaries from territories outside of surveyed land, hence, the presence of foraging/commuting badger therefore cannot be discounted.

Receptor	Description
Roosting bats	No records of bat species were identified within 2km of either the Nether Lochaber or Ardgour scoping boundaries and no evidence of roosting bats was identified within the Nether Lochaber or Ardgour bats scoping boundaries. However, the Nether Lochaber and Ardgour scoping boundaries lie within the known national range of five bat species, including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bat (*Myotis daubentonii*), natterer's bat (*Myotis nattereri*) and brown long-eared bat (*Plecotus auritus*). Individual Potential Roosting Features (PRF-I) (as described in Collins, 2023) were identified within the broadleaved trees situated within the Nether Lochaber bat scoping boundary and in the 'lighthouse store' situated just outside of the Ardgour scoping boundary (Affric Limited, 2024). Additional survey works will be required to confirm the presence, or likely absence, of roosting bats.
Foraging/commuting bats	As outlined above, no records of bat species were identified within 2km of the Nether Lochaber or Ardgour scoping boundaries, although the Nether Lochaber and Ardgour scoping boundaries lie within the known national range of five bat species. No evidence of bats was identified within either the Nether Lochaber or Ardgour scoping boundaries. However, suitable foraging/commuting habitat was identified within both the Nether Lochaber and Ardgour. In particular, woodland, residential gardens and coastal habitats in the Nether Lochaber scoping boundary were considered to be of high suitability for foraging/commuting bats, and residential gardens, coastal habitats, and open woodland in the Ardgour scoping boundary were considered to be of moderate suitability for foraging/commuting bats (Affric Limited, 2024). Ultimately, it is anticipated that foraging/commuting bats are likely to be present within both the Nether Lochaber and Ardgour, however additional survey works will be required to determine the species and likely abundance.
Invertebrates	There are no known records of protected invertebrate species within the Nether Lochaber or Ardgour scoping boundaries. Furthermore, no protected invertebrate species were identified during the PEA site survey (Affric Limited, 2022). Local habitats are anticipated to support populations of common and widespread invertebrate species.

Receptor	Description
Otter	There are records of otter within the Nether Lochaber and Ardgour scoping boundaries (Affric, 2024). Locals have reported otter sightings within Loch Linnhe, between the two land parcels. Otter spraints were identified within the coastal margins in Nether Lochaber and Ardgour, confirming the presence of the species (Affric, 2024). In addition, one potential holt was identified just south of the Ardgour scoping boundary (Affric, 2024), one potential otter layup was identified within the Nether Lochaber scoping boundary and another potential otter layups was identified within the Ardgour scoping boundary (Affric Limited, 2024). Additional survey works will be required to confirm whether the holts and layups are actively used by otter, and whether any of the holts are utilised for breeding.
Pine marten	A former pine marten den was confirmed within a residential outbuilding situated towards the southwest of the Nether Lochaber scoping boundary (Affric, 2024). In addition, suitable habitat for pine marten was identified within the broadleaved woodland situated within Nether Lochaber (Affric, 2024). Although no evidence of pine marten was identified, several potential den sites were recorded (Affric, 2024). The woodland is relatively disconnected from high-quality habitat within the wider locality however, records of deceased pine marten on the A82 suggest the species do make attempts to commute between woodland on either side of the A82, therefore there is considered to be ecological connectivity between identified records of the species and the broadleaved woodland in the Nether Lochaber area (Affric Limited, 2024). It should be assumed that foraging/commuting pine marten may utilise woodland habitats within the Nether Lochaber on an opportunistic basis, although additional survey works will be required to confirm whether the potential den sites are in-used by pine marten. No records of pine marten were identified within 2km of the Ardgour pine marten scoping boundary. Habitats were considered to be sub-optimal for the species, hence, the likelihood of pine marten to be present within the Ardgour scoping boundary is considered to be low (Affric Limited, 2024).

Receptor	Description
Red squirrel	Suitable habitat for red squirrel was identified within the broadleaved and coniferous woodland situated within Nether Lochaber (Affric, 2024). No evidence of red squirrel was identified during the PSS, however records of deceased red squirrel on the A82 suggest the species do make attempts to commute between woodland on either side of the A82 (Affric, 2024). There is therefore considered to be ecological connectivity between identified records of the species and the patches of broadleaved woodland in the Nether Lochaber area. It should be assumed that foraging/commuting red squirrel may utilise woodland habitats within Nether Lochaber on an opportunistic basis (Affric Limited, 2024). Records of red squirrel were identified within the Ardgour scoping boundary (Affric, 2024). Although no evidence of the species was identified during the PSS, suitable habitats, including residential gardens and patches of broadleaved and coniferous trees were present (Affric, 2024). Thus, it should be assumed that foraging/commuting red squirrel may be present within gardens and trees within Ardgour on an opportunistic basis.
Other terrestrial mammals	It is expected that the habitats within Nether Lochaber and Ardgour are suitable for populations of widespread mammal species, including hedgehog (*Erinaceus europaeus*) (a UK BAP species).
Ornithology	Overall, forty-two bird species were recorded during the BBS, although only one confirmed nest was recorded, which was identified as black guillemot (*Cepphus grylle*). Thirty-one of the identified bird species were recorded as 'probably' and/or 'possibly' breeding within the BBS area (Atmos Consulting, 2022). Species of note include herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), siskin (Spinus spinus), spotted flycatcher (*Muscicapa striata*), starling (*Sturnus vulgaris*) and wren (*Troglodytes troglodytes*), which are all listed on the Scottish Biodiversity List. Three non-breeding Annex I bird species were identified during the BBS, including arctic tern (*Sterna paradisaea*), common tern (*Sterna hirundo*), and osprey (*Pandion haliaetus*) (osprey is also a Schedule 1 species of the WCA) (Atmos Consulting, 2022). In addition, it is worth noting that the CFIIS lies within 6km (the core range of golden eagle) of both the Glen Etive and Glen Fyne SPA and Moidart and Ardgour SPA (both designated for the presence of breeding golden eagle), hence, there is considered to be potential for foraging/commuting golden eagle within locality of the CFIIS site. Additionally, non-breeding snow bunting (which are associated with the breeding bird assemblage of the Ben Nevis SSSI) may also range within the locality of the CFIIS site (see Table 12.2.1).

The data collected to inform the terrestrial ecological and ornithological baseline provides evidence that there are habitats of value, including habitats capable of supporting protected species, within the CFIIS site. Hence, potential impacts to habitats and protected species due to the proposed works are considered further in Section 13.2: Potential Impacts.

13.1.3 Invasive Non-native Species

A stand of Japanese knotweed (*Reynoutria japonica*) was identified within the broadleaved woodland in the Nether Lochaber scoping boundary and rhododendron (*Rhododendron ponticum*) was identified throughout several different habitat types within the Nether Lochaber and Ardgour scoping boundaries (Affric Limited, 2022). In addition, Spanish bluebell (*Hyacinthoides hispanica*) and hybrid bluebell species (*Hyacinthoides x massartiana*) were identified within a patch of predominantly native bluebell within the broadleaved woodland in Nether Lochaber (Affric Limited, 2024).

These species are all invasive non-native species (INNS) which can spread rapidly. Rhododendron can substantially degrade, or entirely alter, habitat types and cause a loss of biodiversity. Japanese knotweed can negatively impact upon infrastructure, due to its ability to grow through concrete and other hard surfaces. Spanish bluebell is able to outcompete native bluebell for resources, such as light and space, resulting in a decline in native bluebell. In addition, Spanish bluebell are able to hybridise with native bluebell, which results in a change in the genetics of native populations, which could result in the loss of the species as it is known today. These INNS all have negative value to the wider locality. Increased activity within areas containing INNS has the potential to result in accidental spread, thus, the presence of INNS is considered further in Section 13.2: Potential Impacts.

13.2 Potential Impacts

Water is an important resource for all terrestrial ecological receptors and changes in water quality can impact on flora and fauna. There is only one freshwater course within the vicinity of the works. In addition, works will be undertaken within and adjacent to Loch Linnhe (a marine loch).

As discussed in Section 10: Water Quality, no impacts are expected to the quality of freshwater systems, and any adverse changes in water quality within the freshwater environment are highly unlikely, especially when considering the mitigation that will be implemented throughout the construction phase.

Some terrestrial and ornithological species, such as otter, seabirds and divers may venture into marine habitats as part of their lifecycle, for example commuting and foraging. Therefore, changes in marine water quality could have knock on implications for these receptors. Potential impacts to water quality within the marine environment are discussed in Section 10: Water Quality impacts include increased solids in the water column and pollution. In theory, increased turbidity caused by changes in solids within the marine water column could affect underwater foraging. However, as discussed in Section 10.3.1.1 and 10.3.2.1, increases in solids in the water column are expected to be very localised and short lived, hence with mitigation, impacts on terrestrial and ornithological receptors are highly unlikely. Pollution within the marine environment could directly affect terrestrial and ornithological species if they were to come into contact with it, or indirectly if it were to impact their prey species. However, as discussed in Section 10.3.1.2 and 10.3.2.2, there are limited sources of pollution and sufficient mitigation to minimise the risks of changes to water quality have been identified in other Sections. Thus, the risks to terrestrial ecology receptors are minimal.

Similarly changes to soil could impact upon terrestrial ecological receptors due to changes in structure or nutrient availability, these affects are considered in Section 9: Geology, Land and Soils.

As such impacts on terrestrial ecological receptors due to changes in water or soil quality are not considered in this section.

13.2.1 Potential Impacts Due to Construction

13.2.1.1 Habitat Changes

Habitat loss is expected to occur on both sides of the Corran Narrows, with the most extensive habitat loss being associated with the removal of a woodland block situated towards the north of the Nether Lochaber side scoping boundaries. The woodland has potential to support a range of species, including native bluebell, herptiles, bats, badger, hedgehog, red squirrel, pine marten and birds, due to the availability of PRFs, suitable hibernacula, suitable features for dens and suitable habitat for drey, sett and nest building. Additionally, it is expected that an area of coastal habitat will be lost or degraded due to the construction of infrastructure along the coastline, which may result in a reduction of local habitat for otter.

Habitat loss could result in a long-term spatial distribution of individuals within the CFIIS site, although changes in distribution are anticipated to be localised and there is considered to be other habitats within the locality of the CFIIS site that are more suited to the notable terrestrial ecological receptors. As discussed in Section 12.1.2.1 NPF4 Policy 3 requires the project to achieve biodiversity enhancement. To this end, works are ongoing to identify opportunities to develop habitats within the local area. Priority will be given to ensuring that any habitats created are appropriate to support local important flora and fauna, in alignment with the Highland Nature Biodiversity Action Plan (Highland Nature, 2021).

13.2.1.2 Habitat Degradation

As discussed above, no significant impacts to water quality or soil quality are expected, providing the appropriate mitigation measures are implemented (see Section 10: Water Quality and Section 9: Geology, Land and Soils, respectively). However, there may still be potential for habitat degradation due to lighting and mechanical damage to vegetation.

Lighting has various behavioural effects on different species, therefore it is anticipated that there could be temporary alterations to how some species utilise habitats impacted by increased artificial light (if required during the construction works), and therefore some level of habitat degradation could occur.

Mechanical damage to vegetation associated with habitats that are to be retained (i.e. outwith the proposed footprint), could be damaged during construction works. In some instances, mechanical damage can cause permanent or temporary degradation of habitats.

Although mitigation can be readily implemented to minimise effect of habitat degradation, the specification of the mitigation needs to take into account the specific construction works and phasing.

13.2.1.3 Spread of Invasive Non-native Species

Rhododendron, Japanese knotweed and Spanish and hybrid bluebell species are present within the Nether Lochaber side scoping boundary. Construction activity within effected areas has the potential to cause accidental spread of INNS and the introduction of INNS to new locations. In the absence of mitigation, the spread of INNS has the potential to result is extensive habitat loss or degradation (in relation to rhododendron and Japanese knotweed), loss of native bluebell and hybridisation (in relation to Spanish and hybrid bluebell species).

13.2.1.4 Disturbance

Many fauna species are particularly sensitive to disturbance and may actively avoid habitats within the areas of increased visual and audio disturbance. This includes habitats within the vicinity of construction activity, with disturbance distances varying between species. The proposed construction activity will result in a temporary increase in visual and audio disturbance throughout the completion of the works through the presence of workers, plant and equipment. As fauna are likely to avoid areas associated with disturbance, there could be temporary spatial alterations in species distributions in retained habitats within the locality of the CFIIS site. Additionally, disturbance has potential to have greater effects on immobile important ecological features (IEFs), as species may be unable to relocate during sensitive periods in the life cycle.

13.2.1.5 Accidental Physical Injury

The completion of construction works within environments in which fauna may be present has the potential to increase the risk of accidental physical injury, due to increased traffic and footfall, increased usage of materials and machinery and accidental entrapment. With the implementation of appropriate mitigation, the risk of accidental physical injury is expected to be minimised. Standard construction site mitigation will prevent significant effects.

13.2.2 Potential Impacts Due to Operations

13.2.2.1 Habitat Change

Habitat change is expected due to the need to ensure compliance with Policy 3 of NPF4 (see Section 12.1.2.1: NPF4). Due to anticipated time periods required to appropriately establish new habitats, it is expected that habitat change will be ongoing throughout the operational stage. The assessment of habitat change will incorporate considerations to connectivity of habitats throughout the scoping and boundary and within the wider locality.

13.2.2.2 Disturbance

Once operational, the CFIIS will result in spatial alteration to certain activities associated with the Corran Ferry service, hence, disturbance to protected fauna may occur in new areas in the form of visual disturbance and/or from the generation of noise. Fauna may avoid areas affected by disturbance, which may alter their spatial distribution within the CFIIS location and surrounding habitats long-term. The significance of the effect will be determined by the presence of IEFs, as otter and potentially bats and pine marten are utilising the area, then disturbance effects cannot be ruled out at this stage.

13.2.2.3 Accidental Physical Injury

Accidental physical injury associated with operations is expected to be predominantly linked to the potential for road traffic collisions. However, this is not anticipated to exceed that already associated with the existing ferry service on the Ardgour side. The change in location of the slipway on the Nether Lochaber side will change the potential species interacting with traffic.

13.3 Mitigation

Due to the timeframes associated with the successful treatment of Japanese knotweed, and need to prevent the accidental spread, a Japanese knotweed eradication plan is currently being developed and will be implemented at earliest opportunity. This will minimise risk of further spread and prevent delays to construction works.

13.4 Proposed Impact Assessment

It is acknowledged that there are currently gaps in the baseline for terrestrial ecology, and therefore, further survey works will be required to gain understanding of how impacts associated with construction and operations might affect terrestrial ecological receptors. Therefore, impacts to protected fauna and flora associated with construction and operations will be **scoped in** to the EIA as detailed in Table 13.4.1.

Table 13.4.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Habitat Change	In	In
Habitat Degradation	In	NA
Spread of INNS	In	NA
Disturbance	In	In
Accidental physical injury	In	In

NA = Not applicable.

The following additional terrestrial ecological survey works are proposed to inform the EIAR. The surveys will be carried out as per species-specific best practice guidance at the time of survey and will include the scoping boundary and any suitable habitats within species-appropriate buffer zones:

- Appropriate bat surveys;
- Monitoring of features suitable for pine marten dens;
- Monitoring of features suitable for otter holts, couches and layups;
- Baseline condition assessment of habitats within the CFIIS site; and
- INNS survey

The more detailed baseline will be utilised to inform an Ecological Impact Assessment, which will be carried out in alignment with CIEEM's Guidelines for Ecological Impact Assessment (CIEEM, 2018).

With regard to biodiversity enhancement, the methodologies to be utilised in Scotland are still under development, it is however, anticipated that a biodiversity metric will aid in demonstrating that enhancement is achievable.

As Japanese knotweed is growing on the land, there is a legal responsibility to control the INNS and prevent it from spreading. Hence, the development of the Japanese knotweed eradication plan discussed in Section 13.3: Mitigation. A full INNS management plan will be developed and presented in the EIAR to detail how accidental spread of INNS will be avoided.

14 Marine Ecology

This section considers relevant, describes the baseline conditions for each specific topic and assesses the potential impacts on marine ecology associated with the CFIIS. The assessment to decide whether topics including benthic ecology, marine mammals and fish and shellfish should be scoped in or out of the EIA is based on the potential impacts arising from the design elements, construction techniques and operational activities of the proposed CFIIS (see Section 3: Characteristics of Development).

Similar to discussion on Terrestrial Ecology and Ornithology (see Section 13.2) changes in marine water quality could have knock on implications for marine ecology receptors. Potential impacts to water quality within the marine environment are discussed in Section 10: Water Quality. Pollution within the marine environment could directly affect benthic, fish, shellfish and marine species if they were to come into contact with it, or indirectly if, it was to impact their prey species. However, as discussed in Section 10.3.1.2 and 10.3.2.2, there are limited sources of pollution and sufficient mitigation to minimise the risks of changes to water quality have been identified in other Sections. Thus, the risks to marine ecology receptors are minimal and therefore do not warrant specifically considered within this section.

As discussed in Section 10.3.1.1 there are both on and offshore sources of solids which could enter the water column which can in turn give rise to sedimentation. Onshore sources can be avoided by mitigation as detailed in Section 10.6 and hence will not be considered further. Offshore sources of solids primarily due to dredging are likely to be limited, and effects localised however, effects on marine ecology cannot be entirely ruled out. Therefore, sedimentation effects are considered in benthic ecology (Section 14.1.3.2 & 14.1.3.2) and dredging effects are considered with for marine mammals (Section 14.2.3.3 & 14.2.3.3) and fish and shellfish (Section 14.3.3.4 & 14.3.4.3).

14.1 Benthic Ecology

14.1.1 Data and Information Sources

In order to conduct the baseline study, several sources of information were examined. These include the NBN Atlas (NBN Atlas, 2024), the European Marine Observation and Data Network (EMODnet), the Marine Life Information Network (MarLIN), the Joint Nature Conservation Committee (JNCC), the World Register of Marine Species (WoRMS) and survey data from NatureScot. A review of available scientific literature and Seasearch dive records was also conducted.

A benthic survey has been carried out across the development area between the 19th and 21st of November 2023 by OceanEcology and provided photographic and video footage of sampled transects and data from grab samples. Benthic surveys also aimed to ground truth the extent and location of any identified sensitive benthic habitats or benthic habitats of particular biodiversity value in the Corran Narrows (e.g. kelp).

14.1.2 Baseline

14.1.2.1 Desk Study

The Corran Narrows is a highly energetic tidal stream environment within Loch Linnhe, located in a narrow channel between the areas of Corran and Ardgour. The fast currents that run through the narrows dictate the environmental conditions of the seafloor and subsequently the benthic biotopes and species that are present. As such, within the Corran Narrows the representative biotope was identified from a 2013 study as '*Alcyonium digitatum* with dense *Tubularia indivisa* and anemones on strongly tide-swept circalittoral rock' (CR.HCR.FaT.CTub.Adig), associated with coarse gravel, cobbles and small boulders and dense cover of dead man's finger (*A. digitatum*), sea anemones (*Urticina sp.*), encrusting serpulids (*Spirobranchus sp.*) and the clonal plumose anemone (*Metridium senile*; Nickell *et al.*, 2013). It is worth noting that only one video transect was conducted by Nickell *et al.* (2013) to determine this biotope, and it is possible other species may have been present in the area. Strong currents usually facilitate the presence of other filter feeding species in this biotope, including jewel anemones (*Corynactis viridis*) and sponges (Stamp and Williams, 2021).

During field visits to the CFIIS location, kelp was identified growing on and nearby the Corran and Ardgour slipways. The species and extent of this kelp is currently unknown, however, kelp beds are listed as a PMF due to their importance to other species in providing food and shelter and their role in recycling nutrients within the marine environment. It can be noted that in the aforementioned CR.HCR.FaT.CTub.Adig biotope, the presence of cuvie (*Laminaria hyperborea*) is common in the upper infralittoral region (JNCC, 2022). This kelp species can grow to 3.5 m in length and is often covered in various epifaunal and floral species (Tyler-Walters, 2007).

In addition, a seagrass (*Zostera sp.*) bed has recently been discovered approximately 1 km northwest from the proposed development (Project Seagrass, 2023). Seagrass beds are designated PMFs, UK BAP features and OSPAR designated threatened and declining habitats. The seagrass bed has been preliminarily mapped, however surveys to determine full extent, health and other metrics have not yet been conducted.

In terms of freedom from invasive marine species, SEPA classifies Loch Linnhe North and Loch Linnhe South as having 'high' and 'good' status respectively (SEPA, 2015).

14.1.2.2 Benthic Survey

The benthic survey included photographic and video footage from Drop Down Camera (DDC) transects and four kelp transects allowing for ground truthing across the potential development footprint and surrounding area as shown in Figure 14.1.2. The kelp transects were proposed in order to ground truth areas of kelp identified during field visits to the CFIIS location, as described in Section 14.1.2.1. The benthic survey resulted in the collection of 415 still images and 27 videos which were analysed to identify the Broad Scale Habitat (BSH) and biotopes across the survey area. Images were then further assessed to inform on the distribution and extent of any protected and/or sensitive habitats and species (e.g. Annex 1 reef features/PMFs). It should be noted that three Scottish and Southern Energy (SSE) seabed power cables in the area, as shown in Figure 14.1.2, meant that there were some survey limitations due to a 50m exclusion zone on either side of the one energised sub-sea cable and a 15m exclusion zone either side of the two de-energised sub-sea cables. Full details of the benthic survey and drawings can be found in the OceanEcology, 'Corran Ferry Ground Investigation Surveys: Technical Report' in Appendix 5.

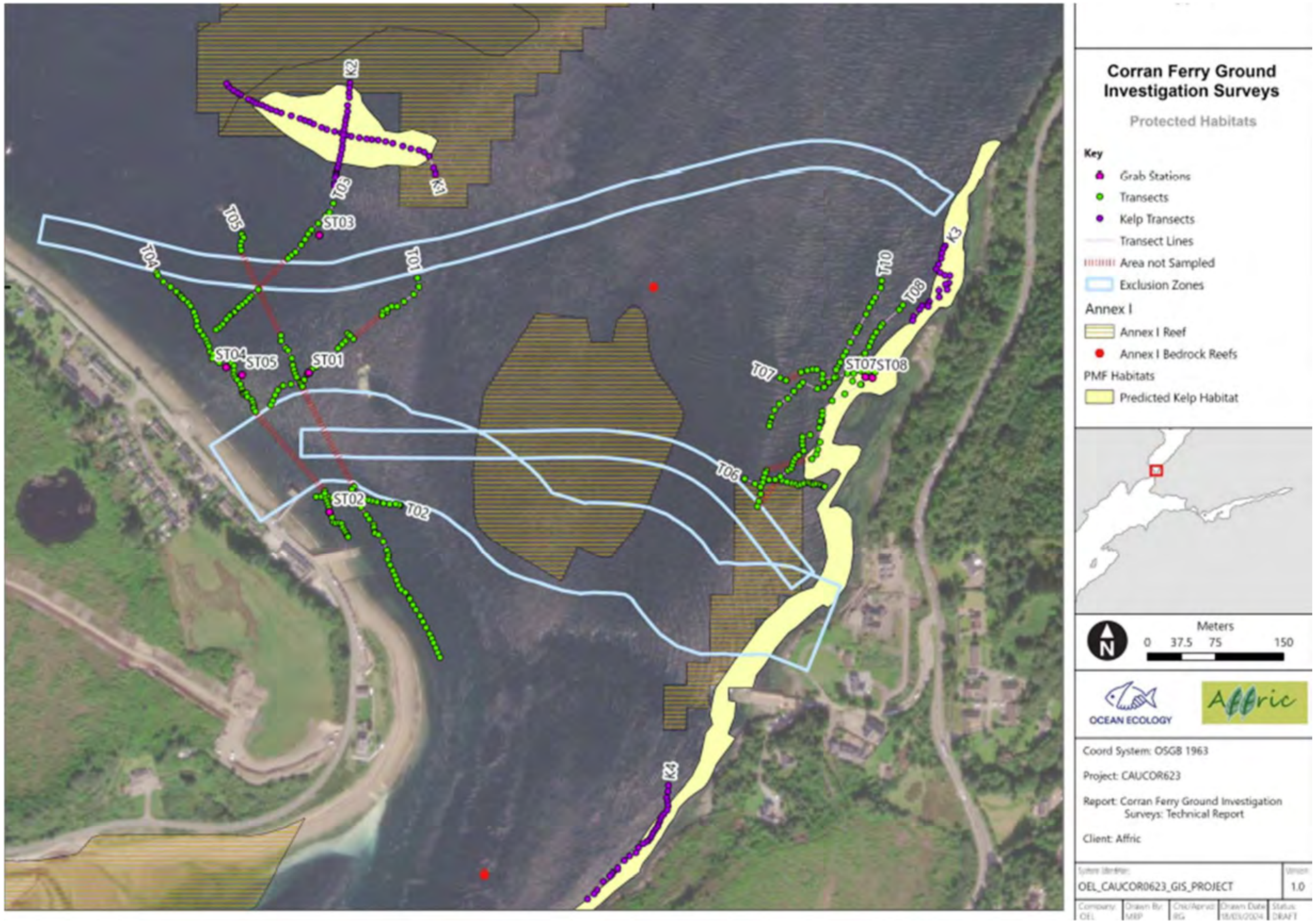

Figure 14.1.2: Survey Design including Kelp Transects and Grab Sampling Stations and PMF and Annex 1 Habitats Occurring within and in the Vicinity of the Survey Area (OceanEcology, 2024)

A total of eight BSHs, four EUNIS (European Union Nature Information System) Level 4, thirteen EUNIS Level 5, and six EUNIS Level 6 were identified in the seabed imagery collected. The dominant BSH identified was A5.5, characterised as 'subtidal macrophyte dominated sediment.' This classification was identified at six of the DDC transects, and within three of the kelp transects. The most frequently identified EUNIS biotope across these transects was A5.521, described as '*laminaria saccharina* and red seaweeds on infralittoral sediments' which includes the PMF habitat, 'kelp and seaweed communities on sublittoral sediment.' The second dominant BSH observed was A5.4 'subtidal mixed sediment.' This was identified at six DDC transects and on one of the kelp transects within the survey area. The most commonly identified EUNIS habitat at these transects was A5.43 'Infralittoral mixed sediments.'

The most common epifauna and macroalgae observed in the seabed imagery for the DDC transects included tube worms *Serpulidae*, macroalage including reds (Calcareous), and browns (*Laminaria sp.* and *Saccharina latissima*) and the bryozoan *Electra Pilosa*. This was similar for the kelp transects.

An assessment of Annex 1 reef habitat was also carried out through assessing the collected imagery. Annex 1 reef was observed within 111 of the transect images throughout the survey area.

The PMF habitats 'kelp beds' and 'kelp and seaweed communities on sublittoral sediment' were identified within 52 and 137 images respectively. The biotope A3.322 '*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock' was identified in three images on Transect T01 and was the biotope component of PMF habitat 'low or variable salinity habitats.' The biotopes A3.222 'mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids,' and A3.126 '*Halidrys siliquosa* and mixed kelps on tide-swept infralittoral rock with coarse sediment' were identified in 12 images from two transects (T02 and T04) and were the biotope components of the PMF habitat 'tide-swept algal communities.'

In addition to video transects, seven sediment samples were taken and analysed for full particle size classification. Sediment was heterogeneous across the survey area, characterised by contributions of sand and gravel at all stations with mud present in minimal quantities. Four of the seven stations sampled were representative of EUNIS BSH A5.4 (Mixed Sediment) and all of which were classified by the textural group Muddy Sandy Gravel (msG). The other three stations were representative of EUNIS BSH A5.1 (Coarse Sediment) and included the textural groups Gravelly Sand (gS) and Sandy Gravel (sG).

Two species classified as invasive and non-native species were identified during the survey: the arthropod *Crassicorophium crassicorne* and the mollusc *Mya arenaria*. *C. crassicorne* was recorded on three occasions across two stations (ST02 and ST03) and two *M. arenaria* individuals were recorded at ST03.

14.1.3 Potential Construction Effects

During the construction of the CFIIS, several possible impacts from construction activities on benthic ecological receptors have been identified:

- Habitat changes
- Sedimentation; and
- Introduction of marine Invasive Non-Native Species (INNS).

14.1.3.1 Habitat Changes

The CFIIS will involve removal of area of seabed, temporarily and permanently. Land reclamation and construction of permanent infrastructure will result in certain permanent loss of benthic habitat. Dredging and rock stripping (and potentially blasting) will also include habitat loss, but this would be expected to be temporary. The removal of seabed will result in displacement and destruction of sessile species which are present.

As noted in Section 14.1.2, the EUNIS biotope was A5.521 which includes the PMF habitat, 'kelp and seaweed communities on sublittoral sediment' was identified frequently within the kelp transects along with Annex 1 reef habitat identified within many of the transect images. The significance of habitat change to these biotopes and other noted habitats as a result of the CFIIS needs to be further understood.

A seagrass bed was identified to the north of the proposed CFIIS however, there are no development plans in this area or in close proximity and it will therefore not be considered further.

14.1.3.2 Sedimentation

In addition to dredging removing areas of habitat, there is a potential for seabed materials to drop back to the seafloor. Sedimentation can produce smothering effects to benthic organisms and habitat depending on their resilience (Miller *et al.*, 2002). The attenuation of light as a result of sedimentation can prevent photosynthetic benthic flora from obtaining energy (Pineda *et al.*, 2016). The effect of this on benthic habitats identified within the dredge and reclamation areas are not considered as they will be lost at least temporarily as discussed in Section 14.1.3.1. However surrounding habitat may be impacted by sedimentation.

As outlined in Section 11.2.1: Seabed, the material to be dredged comprises largely coarse sands and gravels with some cobbles and silty sands on the Ardgour side, and predominantly bedrock on the Nether Lochaber side. The predominantly coarse nature of the seabed means that any material suspended in the water column would likely drop out of suspension quickly, however, due to the high energy water currents through the narrows (as discussed in Section 11.2.2) it is likely that sedimentation will affect benthic habitats adjacent to the dredge areas.

14.1.3.3 Spread of Marine Invasive Non-Native Species

An INNS is defined as a species that is non-native to the ecosystem under consideration and whose introduction may cause economic or environmental harm. Invasive species can be introduced to an area by ship ballast water or biofouling. The risk of non-native species colonisation on hard surfaces may be dependent on the material (e.g., metal, concrete). While introduction of non-native species is often detrimental to natural biotopes, their establishment is dependent on optimal environmental conditions. The high-energy tidal stream environment of the Corran Narrows is a specialised habitat where only specifically adapted species may survive, lessening the chance of marine INNS establishment. However, there is potential for structures in more sheltered areas to be colonised by marine INNS.

All vessels associated with CFIIS construction will be contracted from countries adhering to the International Maritime Organisation (IMO) Convention and MARPOL compliant. Only vessels adhering to the IMO 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Species will be used in line with Highland Council policy. This embedded mitigation will act to minimise the risk of introduction of INNS. However, as noted in Section 14.1.2, INNS have been identified in the development area and mitigation measures will need to be assessed with the specific species in mind, taking account of construction activities including for example vessel movements associated with deliveries.

14.1.4 Potential Operational Effects

During the construction of the CFIIS, several possible impacts from the operational phase activities on benthic ecological receptors have been identified:

- Habitats Changes
- Sedimentation; and
- Introduction of marine Invasive Non-Native Species (INNS).

14.1.4.1 Habitat Changes

Habitat changes associated with operations are due to the presence of the new infrastructure and may occur if maintenance dredges are required.

The permanent infrastructure associated with the operational CFIIS may modify the existing benthic habitat by creating additional surfaces which could be colonised by marine species. Rock armour, piles, slipways, and other submerged surfaces will become colonised over time and can have a positive impact on the overall biodiversity of the area. It is unclear to what extent this may occur at the CFIIS, however, it is likely it will depend on the species and habitats present and would not have a significant detrimental effect on the existing habitat and species.

The habitat may also be modified during the operational phase through sediment removal associated with maintenance dredging (if required) to maintain water depth for the vessels. As in the construction phase, removal of sediment (and habitat) would have a negative but highly localised effect on habitats and species.

The construction of inter- and sub-tidal infrastructure may change the hydrodynamics of the area, and subsequently impact the benthic habitats present in localised areas. Hydrodynamic modelling of the current movement expected post-construction will allow for a better understanding of the potential impacts (refer Section 11: Seabed, Coastal Processes and Flooding).

14.1.4.2 Sedimentation

During infrequent maintenance dredges (if required) sedimentation effects could occur in the same way they would during the initial capital dredge, see Section 14.1.3.2. It is expected that maintenance dredging (if required) would be highly localised, though further consideration will be required as to the significance of the impacts on benthic ecology including protected features, as noted in Section 14.1.3.2.

14.1.4.3 Spread of Marine Invasive Non-Native Species

As noted in Section 14.1.2, the presence of INNS has been recorded in the development area. As discussed in Section 14.1.3.3, INNS can be introduced to an area by ship ballast water and biofouling. The infrastructure has the ability to support additional vessels and therefore there is the risk of the introduction of INNS, or spread of INNS from Corran elsewhere when vessels are for example sent away from maintenance.

Only vessels adhering to the IMO 2011 Guidelines for the Control and Management of Ships' Biofouling will be utilised on the Corran Ferry crossing. This embedded mitigation will act to minimise the risk of spread of INNS. However, as noted in Section 14.1.2, it is prudent to specifically consider the INNS species identified during the initial survey works (see Section 14.1.2.2.

14.1.5 Proposed Impact Assessment

It is proposed that habitat changes, sedimentation and the spread of marine INNS are **scoped in** for both the construction and operational phases of the CFIIS. A summary of effects scoped in is outlined in Table 14.1.5.

The impact assessment will be informed by the site-specific benthic surveys which have already been carried out. These surveys included benthic video transects and grab sampling for benthic analysis, with methodology developed in consideration of the draft guidance, 'Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland Volume 5: Benthic Habitats' (Saunders *et al.*, 2011) (see Appendix 5 for full details). An intertidal survey is proposed to provide additional detail to inform habitat mapping.

The impact assessment will utilise the habitat maps, which will be developed from extrapolating data from the desk study, benthic and intertidal survey transects and grab samples. With regard to the spread of Marine INNS, it is proposed that a site specific Biosecurity Management Plan is developed and presented as an Appendix to the EIAR.

Table 14.1.5: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Habitat Changes	In	In
Sedimentation	In	In
Spread of Marine INNS	In	In

14.2 Marine Mammals

14.2.1 Data and Information Sources

In order to conduct the baseline study, several sources of information were examined. These include the NBN Atlas (NBN Atlas, 2024), the Hebridean Whale and Dolphin Trust (HWDT) WhaleTrack app (HWDT, 2024), and the Special Committee on Seals (SCOS) (SCOS, 2021). A review through available scientific literature was also conducted.

14.2.2 Baseline

14.2.2.1 Designated Sites

As detailed in Table 12.1.1, two marine qualifying features associated with designated sites will be considered further within this section. These are:

- Harbour seal (*Phoca vitulina*) associated with Eileanan Agus Sgeiran Lios Mór SAC; and
- Harbour porpoise (*Phocoena phocoena*) associated with Inner Hebrides and the Minches SAC.

The features listed above will be considered further in Sections 14.2.2.8 and 14.2.2.3 respectively.

14.2.2.2 Cetaceans

Of the approximately 32 species of cetacean (whales, dolphins, and porpoise) found in UK waters, four species of cetacean have been identified as potentially occurring near the proposed CFIIS location. These include harbour porpoise, bottlenose dolphin (*Tursiops truncatus)*, short-beaked common dolphin (*Delphinus delphis*) and minke whale (*Balaenoptera acutorostrata*).

A summary of the cetacean species that are most likely to be present in the Corran Narrows is provided in Table 14.2.1. This table also outlines the likelihood of occurrence for each species, density estimates retrieved from the SCANS III report (Hammond *et al.*, 2017), and the estimated group size based on the information retrieved from sightings data (HWDT, 2023).

Table 14.2.1: Cetacean Baseline Summary

Species	Likelihood of Occurrence	Density Estimate per km^2 (SCANS III)	Estimated Group Size (HWDT Sightings Map)
Harbour Porpoise	Very likely	0.336	1 – 7
Bottlenose Dolphin	Unlikely	0.1206	2 – 3
Short-Beaked Common Dolphin	Possible/Occasionally	NA	2 – 6
Minke Whale	Extremely Unlikely	0.0271	1

14.2.2.3 Harbour porpoise

Harbour porpoise (*Phocoena phocoena*) are distributed throughout temperate and subarctic waters of the North Pacific and North Atlantic oceans and are the most abundant cetacean to occur in northwest European shelf waters. They are the UK's smallest, and most abundant cetacean, with the highest densities occurring along the North Sea coast, around the Northern Isles and the Outer Hebrides (Reid *et al.*, 2003). Harbour porpoise are found within Scottish waters throughout the year (Evans *et al.*, 2003; HWDT, 2023), with limited information on seasonal movements (Reid *et al.*, 2003).

At the mouth of Loch Linnhe lies the Inner Hebrides and the Minches SAC which is designated for harbour porpoise. The nearest boundary of the SAC is 25 km away from the CFIIS location. The SAC protects porpoise habitat of approximately 32% of the population found on the west coast of Scotland and contains the highest density of harbour porpoise in Scotland (NatureScot, 2020b).

There have been numerous sightings of harbour porpoise in Loch Linnhe according to the HWDT Sightings Map (HWDT, 2023) and NBN Atlas records (NBN Atlas, 2024), with sightings in almost every month between 2018 and 2022 (not consecutively). Sightings data also demonstrates that harbour porpoise have been sighted to the north and south of the Corran Narrows as well as transiting the areas of high flow within the Narrows themselves. Based on the sightings data available, harbour porpoise are expected to be the cetacean most likely to be encountered in the vicinity of CFIIS.

14.2.2.4 Bottlenose dolphin

Bottlenose dolphins are present in UK waters all year round and can often be seen close to shore. Infrequent sightings records of bottlenose dolphins have been identified within Loch Linnhe, south of the Corran Narrows (HWDT, 2023). The nearest sighting was recorded near Ballachulish (HWDT, 2023), approximately 3 miles seaward of the Narrows.

There are no records of bottlenose dolphins within or north of, the Narrows according to the HWDT Sightings Map and as shown in Table 14.2.1, bottlenose dolphin abundance was estimated at 0.1206 per km^2 (Hammond *et al.*, 2017). As such, this species is unlikely to travel into the upper reaches of Loch Linnhe and through the Corran Narrows, based on the available data.

14.2.2.5 Short-beaked common dolphin

The short-beaked common dolphin tends to be a summer visitor to Scottish waters, mainly recorded between May and October, when food is most abundant (HWDT, 2018). However, sightings have been reported within Loch Linnhe across every month since 2014 (HWDT, 2023). Common dolphins are one of the most abundant cetacean species and they are the most numerous offshore cetaceans in the north-east Atlantic (Reid *et al.*, 2003).

According to the HWDT Sightings Map, short-beaked common dolphins have been identified within Loch Linnhe in low numbers (<6 individuals) on eleven occasions since 2017 (HWDT, 2023). No density estimates for short-beaked common dolphin in the survey block which includes Loch Linnhe were provided as part of the SCANS III surveys.

It can be anticipated that short-beaked common dolphins may, on occasion, be within close proximity of the proposed CFIIS location based on sightings data.

14.2.2.6 Minke whale

The minke whale is the most common baleen species recorded in British shelf waters, and high densities are present off the west coast of Scotland, particularly in the Minch (Reid *et al.*, 2003). However, insufficient data on population size has made it difficult to establish the conservation status of minke whales and as such, this is unknown (Marine Scotland Science, 2020).

Based on the HWDT Sightings Map there has been one sighting of a minke whale within Loch Linnhe between 2010 and 2022 (HWDT, 2023). This sighting was recorded in August 2019, approximately 5.8 miles southwest of the Corran Narrows. In addition, as shown in Table 14.2.1, the abundance estimate for minke whale was very low at 0.0271 minke whales per km^2.

While minke whales are considered a coastal species, often occurring within 7km of the coast (Macleod *et al.*, 2004), it is extremely unlikely they would be in close proximity to the Corran Narrows, based on sightings data.

14.2.2.7 Grey seal

Grey seals (*Halichoerus grypus*) use coastal sites for breeding, pupping, and hauling out and use both inshore and offshore waters to forage and feed. Grey seals are present year-round in UK waters, breeding in Scotland during the autumn/winter season between September and December (Marine Scotland, 2020). The UK contains around 38% of the total world breeding population of grey seals and 88% of those breeding in Scotland, with major concentrations in the Outer Hebrides and Orkney. In 2020, the total UK grey seal population was estimated to be 157,300 individuals (SCOS, 2021). However, it appears that grey seals are not common in

Loch Linnhe and the surrounding areas. The NBN Atlas shows only three records of the species between 2007 and 2017. Population counts in 2019 identified only 6 individuals within the West Scotland 'Seil to SW Loch Linnhe' Seal Management Unit (SMU) subunit (Morris *et al.*, 2021). No grey seal haul-outs are identified near the Corran Narrows or within Loch Linnhe. It is therefore considered highly unlikely that grey seals will be in the vicinity of the CFIIS.

14.2.2.8 Harbour seal

Like grey seals, harbour seals also use coastal sites for breeding, pupping, hauling out and use both inshore and offshore waters to forage and feed. In UK waters, harbour seals are widespread around the west coast of Scotland, and present year-round. The breeding season in Scotland is between June – July, and the moult occurs in August when population counts are conducted (Hammond *et al.*, 2003).

Harbour seal numbers within the West Coast SMU, within which the CFIIS sits, are increasing. The population estimate for the West Scotland SMU in 2020 was approximately 15,500 individuals (SCOS, 2020), with 503 harbour seals estimated within the Seil to SW Loch Linnhe subunit (Morris *et al.*, 2021).

The nearest designated haul out site for the harbour seal is the eastern end of the Sound of Mull, approximately 37km south west of the proposed development. In addition, the Eileanan agus Sgeiran Lios Mór SAC designated for the species is approximately 19km from the CFIIS and was last assessed as 'Favourable Maintained' in 2014 (NatureScot, 2024). The most recent population count of seals in the SAC was conducted in 2018 and found to be 238 animals. This was deemed as fairly stable compared to previous years, but it was also identified that due to natural variation at the site it was not a good indicator of seal presence throughout the wider area (Morris *et al.*, 2021).

The species is commonly sighted within Loch Linnhe, with wildlife tour companies regularly noting their presence particularly on the tidal skerry known as 'Black Rock' located on the eastern side of upper Loch Linnhe approximately 4.5km NE from the CFIIS development. As such, the presence of harbour seals near the proposed CFIIS location is considered likely.

14.2.3 Potential Construction Effects

During the construction of the CFIIS, several possible impacts from construction activities for marine mammal receptors have been identified:

- Underwater Noise;
- Vessel and Construction Activity Interaction; and
- Dredge Activity Interactions.

14.2.3.1 Underwater Noise

The latest marine mammal auditory injury criteria provided by Southall *et al.* (2019) groups marine mammals into functional hearing groups and applies filters to the unweighted noise to approximate the hearing response of the receptor (Table 14.2.2). Southall *et al.* (2019) also presents acoustic injury onset-thresholds for both unweighted sound pressure level peak criteria (SPLpeak) and cumulative (i.e., more than a single sound impulse) weighted sound exposure level criteria (SELcum). This is presented as the received level thresholds which onset permanent threshold shift (PTS), where unrecoverable hearing damage may occur, and temporary threshold shift (TTS), where a temporary reduction in hearing sensitivity may occur for marine mammal species. Noise emissions may also cause disturbance, behavioural and physiological impacts (Richardson *et al.*, 1995). Marine mammals are typically sensitive to noise at frequencies between 10 Hz and 180 kHz (Southall *et al.*, 2019).

Table 14.2.2: Impulsive criteria for PTS and TTS in marine mammals (Southall *et al.*, 2019).

Functional Hearing Group	Impulsive			
	Unweighted SPL_{peak} (dB re 1 μPa)		Weighted SEL (dB re 1 $μPa^2s$)	
	PTS	TTS	PTS	TTS
LF Cetaceans	219	213	183	168
HF Cetaceans	230	224	185	170
VHF Cetaceans	202	196	155	140

The species most likely to be present in the area around the CFIIS fall into the Low Frequency (LF; minke whale), High Frequency (HF; common dolphin and bottlenose dolphin) and Very High Frequency (VHF; harbour porpoise) categories, representing all functional hearing groups with a range of audible frequencies between 7 Hz and 160 kHz (Southall *et al.*, 2019). Underwater hearing thresholds for phocid seals have also been established and they are considered to have a broad hearing range with upper range limits up to 60 kHz (Southall *et al.*, 2019).

The main sources of underwater noise are discussed in Section 7. As detailed in Section 7.3, piling, rock stripping and potentially blasting could give rise to significant underwater noise levels with source noise levels likely to exceed levels that can cause auditory injury to marine mammals. The potential for auditory injury or disturbance to marine mammals depends on how close the marine mammal is to source, and how long they are exposed to increased noise levels. It is therefore proposed that underwater noise is modelled to provide sufficient understanding to allow the effects on marine mammals to be assessed and to inform Marine Mammal Protection Plan for noisy activities.

14.2.3.2 Vessel and Construction Activity Interaction

Construction of the CFIIS will involve increased vessel traffic associated with delivery of materials and installation of marine infrastructure.

Evidence for lethal injury from boat collisions with marine mammals suggests that collisions with vessels in Scotland is very rare (Cetacean Stranding Investigation Programme, 2011). Out of 478 post-mortem examinations of harbour porpoise in the UK carried out between 2005 and 2010, only four (0.8 %) were attributed to boat collisions. While this may indicate that collision with vessels infrequently occur, care must be taken when drawing conclusions from strandings data for overall population mortality, as many carcasses sink or drift at sea where they are not recorded.

Nonetheless, the Corran Narrows and nearby areas have consistent and frequent vessel presence associated with recreational and commercial craft entering/exiting upper Loch Linnhe, fish farm boat traffic and the frequent movement of the existing ferry service. Therefore, it is likely that marine mammal receptors, particularly those most common in the area (harbour porpoise and harbour seal) are regularly exposed to the presence of vessels. Subsequently, it is unlikely that medium-term increases in vessel traffic due to CFIIS construction activities will have a significant effect on marine mammal receptors. It should be noted that any vessels delivering materials to be used in construction would follow standard shipping routes and would be expected to be slow moving operating primarily in shallow waters and therefore reducing the risk of disturbance and collision.

The CFIIS marine construction works are located either in the intertidal areas, or in shallow waters close to shore, areas less frequented by marine mammals. Due to the location of the works and the presence of construction equipment and people, it is unlikely that there will be any physical interaction between the works and marine mammals.

14.2.3.3 Dredge Activity Interactions

The construction dredge is likely to involve:

- Vessel movements in the dredge and land reclamation areas;
- Potential vessel movements to a dredge disposal site;
- Rock stripping and potential blasting;
- Removal of materials from the seabed;
- Deposit of dredge spoil in the land reclamation areas; and
- Potential deposit of dredge spoil to a dredge disposal site.

Vessel movements are considered in Section 14.2.3.2, the main concern associated with rock stripping and potentially blasting is underwater noise which has been considered within Section 14.2.3.1.

As discussed in Section 10.3.1.1, the seabed sediments have a low silt fraction, hence any dredge spoil entering the water column during dredge or infill activities is expected to drop back to the seabed quickly. As such no impact on marine mammals' ability to forage due to changes in water turbidity are expected.

Marine mammals are highly unlikely to be in the vicinity of the land reclamation works as discussed in Section 14.2.3.2 hence, physical interaction with dredge vessels or spoil material while dredge spoil is being placed in the land reclamation area is not deemed credible.

There does, however, remain a low risk that if dredge material is to be disposed at sea and a marine mammal were to be under the dredge vessel at the time of the deposit, it could be physically harmed by spoil material dropping through the water column. At this point it is thought unlikely that material will be disposed of to sea but that will be confirmed as the design develops and the BPEO is completed. If dredge disposal is required, Marine Mammal Risk Assessments for dredge disposal will be completed. These will inform the Marine Mammal Protection Plan, which is likely to include the requirement for observations to ensure no mammals are in the vicinity of the vessel during dredge disposal. With this in place the risk of harm is reduced to non-significant levels.

14.2.4 Potential Operational Effects

During the operational phase of the CFIIS, two possible impacts on marine mammal receptors have been identified:

- Underwater noise; and
- Vessel Interaction.

1.1.1.1 Underwater Noise

As discussed in Section 7.4., there are no operational activities predicted to increase noise levels such that they would have a noticeable, adverse impacts on marine mammal receptors.

As identified in Section 7.4.1, electric ferries are considered to produce less noise than conventional diesel-powered ferries, hence, the proposed NEV will reduce the amount of underwater noise generated by ferry journeys across the Corran Narrows. Reduction of noise would be beneficial to marine mammal receptors in this context, due to reduced possibility of signal masking and behavioural/physiological impacts from noise exposure.

Whilst the NEV is expected to result in lower underwater noise levels than the existing diesel ferries, the diesel-operated MV Corran will still be in use occasionally as the back-up vessel. As such a slight non-significant beneficial effect on marine mammals is predicted due to the introduction of the NEV.

14.2.4.1 Vessel Interaction

As outlined in Section 3.5: Operational Scenarios, the main activities associated with the ferry service will not change due to the CFIIS although the proposed service route in the operational phase is expected to lengthen slightly from approximately 420m to an estimated 550m. The current crossing is relatively short and is located approximately 150m away from the proposed new route. The new proposed ferry route is still relatively short and located close to the existing route. It is therefore, not expected that this would be considered a significant change and therefore unlikely to increase vessel interactions such that it would have an impact on marine mammals.

14.2.4.2 Dredge Activity Interactions

Maintenance dredging may be required to ensure the required water depths for operations are maintained. It should be noted that maintenance dredging during operations will likely result in disposal at sea and therefore, a Marine Mammal Risk Assessment would be required, and a Marine Mammal Protection Plan developed. As discussed in Section 14.2.3.3, this Marine Mammal Protection Plan is likely to include a requirement for observations to ensure that no mammals are in the vicinity of the vessel during dredge disposal. With this in place, the risk of harm is reduced to non-significant levels.

As discussed in Section 14.2.3.2, it is likely that marine mammal receptors, particularly those most common in the area (harbour porpoise and harbour seal) are regularly exposed to the presence of vessels. Subsequently, and in line with the implementation of mitigation as noted in Section 14.2.5, it is deemed unlikely that there will be any significant risk of disturbance, vessel strike or injury from dredge spoil disposal during any maintenance dredging and disposal.

14.2.5 Mitigation

To minimise the potential impact of the CFIIS on marine mammals due to interactions with construction works all vessels, including vessels under 10m in length, will adhere to the general principles in the Scottish Marine Wildlife Watching Code (SMWWC) when undertaking their activities.

Mitigation measures have been captured in the ISoM (Section 24) for implementation during construction.

14.2.6 Proposed Impact Assessment

It is proposed the potential impact of underwater noise on marine mammal receptors be **scoped in** to the EIA for the construction phase of the CFIIS.

It is proposed that vessel (and construction activity) interaction is also **scoped out** of the EIA due to no significant effects being anticipated with the implementation of mitigation as outlined in Section 14.2.5.

Operational impacts of underwater noise are not anticipated to be significant and hence are proposed to be **scoped out** of the EIA. During the operational phase, no significant effects from vessel interactions are anticipated with the implementation of mitigation as outlined in Section 14.2.5. It is therefore proposed vessel interactions are **scoped out** of the EIA.

If the project design and BPEO identify that there is a need to dispose of dredge spoil to sea, then a Marine Mammal Risk Assessment for dredge disposal will be completed and presented within the EIAR. A similar approach would be required for maintenance dredging. However, it is more appropriate for this risk assessment to be completed at the time of the dredge works so that specific plans can be taken in account. As such, consideration of harm to marine mammals during maintenance dredge disposal is **scoped out**.

Table 14.2.6 summarises the effects being scoped in and out of the EIAR.

Table 14.2.6: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Underwater Noise	In	Out
Vessel (and Construction Activity) Interaction	Out	Out
Injury due to Dredge Disposal at Sea.	In (if disposal to sea is required)	Out

The impact assessment for the construction phase will be informed by the outcome of the underwater noise modelling which will be presented in the Underwater Noise chapter of the EIAR (refer Section 7.5). The impact assessment will utilise publicly available marine mammal data, similar to that presented in Section 14.1.2, to understand the potential occurrence of marine mammals. Current PTS and TTS criteria, such as that presented in Table 14.2.2, will be utilised to understand whether harm could occur. Mitigation required to minimise effects including disturbance to marine mammals will be proposed in the EIAR and within Marine Mammal Protection Plans for noisy activities.

It is anticipated that an EPS licence will be required for some activities and hence, a Marine Mammal Risk Assessment will also be produced, this will be supported by the Marine Mammal Protection Plan for the EPS licence application.

14.3 Fish and Shellfish

14.3.1 Data and Information Sources

To understand the occurrence and distribution of fish species within the project area, several sources were used. NBN Atlas (NBN Atlas, 2024) and iRecord from the Centre for Ecology & Hydrology was used to examine distribution of anadromous fish species. Scientific literature was also explored to identify research on freshwater and marine fish species in the area.

14.3.2 Baseline

14.3.2.1 Diadromous fish

There are two categories of diadromous fish, anadromous and catadromous: anadromous fish reproduce in freshwater rivers but spend the rest of their adult lives in salt water, while catadromous fish reproduce in saltwater, and spend the rest of their lifecycle in freshwater. On the Scottish west coast, anadromous fish are represented by Atlantic salmon (*Salmo salar*) and sea trout (*Salmo trutta morpha trutta*). Catadromous fish include the European eel (*Anguilla anguilla*). All species are listed as UK BAP priority species, while salmon and eels are also PMFs. Additionally, salmon are protected under Schedule 3 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

No sites within Loch Linnhe near the CFIIS are designated for diadromous fish, however, the area has several rivers that are important habitats. The Corran Narrows are an important transit site for migrating diadromous fish species, as they must pass through this area to leave or enter the upper reaches of the loch.

14.3.2.1.1 Atlantic Salmon

The Atlantic salmon (*Salmo salar*) starts its life in freshwater. Adult fish spawn in natal rivers during the autumn months where the eggs are laid in scooped out nest hollows in fine gravel known as 'redds'. The young salmon hatch (termed 'alevin') and quickly grow into 'parr' through a diet of freshwater invertebrate species. Parr remain in the river for two to three years, after which they begin to physiologically change in a process known as 'smoltification' prior to their migration to the sea where they spend their adult lives. Multi-sea winter salmon, or individuals which spend multiple years at sea, are listed as a UK BAP species (NatureScot, 2023b).

Atlantic salmon stocks have experienced consistent declines throughout their range. Between 1983 and 2016, numbers of salmon fell by more than half, with 43% of river populations at risk. Of the rivers surveyed, 7% no longer had viable salmon populations (NASCO, 2019).

The numbers of Atlantic salmon returning to natal rivers on the Scottish west coast are also in decline (Lochaber Fisheries Trust, 2008). Indeed, in 2017 the salmon population in the River Awe system (which enters Loch Linnhe from Loch Etive) was reported to have collapsed (Salmon and Trout Conservation, 2017). Counts and stock reports are unavailable for the region encompassing the Corran Narrows at the time of writing (Lochaber Fisheries Trust, 2023). With upper Loch Linnhe (north of the Corran Narrows) and Loch Eil, the Rivers Lochy, Loy and Lundy support salmon (Sim, 2023). Observations of salmon were also made at the mouth of the Rivers Righ, Gour, Chreagain and Scaddle, as well in Loch Eil (NBN Atlas, 2024). It is worth noting that any salmon migrating to or from these natal rivers will transit the Corran Narrows.

In addition, a MOWI operated finfish farm, 'Linnhe' (Site ID: FS0240), is located approximately 400m north-west of the CFIIS site. Atlantic salmon are farmed at this site.

14.3.2.1.2 Sea trout

Sea trout (*Salmo trutta morpha trutta*) are the anadromous forms of brown trout (*Salmo trutta*). It was previously believed sea trout were a different species or subspecies, but it's now widely accepted as an ecological form with different migratory behaviour (Tanguy *et al.*, 1994). Like Atlantic salmon, sea trout may spend a variable number of years in freshwater habitats prior to migrating. Sea trout post-smolts may stay within estuaries for extended periods of time, prior to moving into the wider sea (Malcolm *et al.*, 2010). Research by Pemberton (Pemberton, 1976) concluded sea trout post-smolts move from rivers to sea lochs/estuaries between April and early June, prior to moving to the open sea in late June to July, eventually returning in August to September. This study, however, was very localised with overall knowledge of post-smolt migratory movement limited.

Immature sea trout, regionally called 'finnock', are young sea trout that return to freshwater after only one year within the sea. These are common in Scottish estuaries, where they move in and out with the tides to feed (Scottish Government, 2017a). Finnock may move to large freshwater bodies to over-winter, prior to returning to sea during the spring months (Malcolm *et al.*, 2010; Scottish Government, 2017a).

As with Atlantic salmon, sea trout numbers have declined across the Scottish west coast (Lochaber Fisheries Trust, 2008). The species has been recorded at the mouths of the Rivers Righ, Gour, Scaddle, Kiachnish, Chreagain, Nevis and Lochy, however many of these observations are older than 20 years (NBN Atlas, 2024). Lochaber Fisheries Trust records from 2008 indicate the species was found in the Rivers Lochy and Nevis (Lochaber Fisheries Trust, 2008).

14.3.2.1.3 European eel

The European eel (*Anguilla anguilla*) is catadromous, spawning and emerging as 'glass eels' at sea, and entering river systems to grow to adult size. European eels spawn in the Sargasso Sea, undertaking extensive migrations as both adults and juveniles, however, no migratory eels (known as 'silver eels') have been caught at sea (NatureScot, 2023c). When eels enter freshwater, they are termed 'yellow eels' and may remain resident in water bodies for >20 years (NatureScot, 2023c).

The species has suffered large declines across Europe and recruitment of glass eels remains low (OSPAR, 2022). As such, the European eel is listed by the International Union for Conservation of Nature (IUCN) as Critically Endangered (Jacoby and Gollock, 2014). Populations of European eel on the Scottish west coast are poorly understood (Lochaber Fisheries Trust, 2008). Multiple observations of European eel are listed on the NBN Atlas, including near the mouths of the Rivers Righ, Scaddle, Gour, Chreagain, Lochy and Nevis (NBN Atlas, 2024).

14.3.2.2 Marine Fish and Shellfish

There are few up-to-date published records of the marine fish species that inhabit Loch Linnhe. Juvenile herring (*Clupea harengus*) surveys were conducted up until the mid-1980s (Berx *et al.*, 2015), after which west coast herring stocks collapsed. Both upper and lower Loch Linnhe are included as potential spawning grounds for European sprat (*Sprattus sprattus*; Coull *et al.*, 1998).

Baited Remote Underwater Video (BRUV) surveys conducted around the island of Lismore within Loch Linnhe found juvenile whiting (*Merlangius merlangus*), gurnard (Triglidae), flatfish sp., and thornback skate (*Raja clavata*; Sim, 2021), however the site is >27km from the Corran Narrows and may not be representative of species within that area.

There are no commercial fisheries in operation within Loch Linnhe, however, lobster and Norway lobster (*Nephrops norvegicus*) creeling does take place (Berx *et al.*, 2015). Anecdotal angling reports from fishing spots within 15km of CFIIS suggest that catshark species, rays, skate, gadoids, and mackerel may be present. This suggests the loch is typical of other large sea lochs in Scotland.

There are two records of basking shark occurrence in upper Loch Linnhe and in Loch Eil, made in 2003 and 2005 (NBN Atlas, 2024), and it appears that this species is uncommon in the area.

14.3.3 Potential Construction Effects

Sources of impacts on fish and shellfish associated with the proposed CFIIS in the construction phase include:

- Habitat loss;
- Construction Activity Interactions; and
- Underwater noise.

14.3.3.1 Habitat Changes

The installation of structures associated with the CFIIS may cause permanent or temporary habitat loss which could affect both fish and shellfish receptors. Permanent habitat loss will occur where infrastructure is installed on the seabed or in the water column, such as the slipways, breakwater, land reclamation and the overnight berthing structure. Temporary loss may occur where the seabed is disturbed during dredging and for installation of components but where recovery is possible post-installation.

Species that currently utilise the habitat around the existing ferry infrastructure may be displaced during construction activities that remove habitat. While there may be temporary displacement during construction, the relatively small footprint and localised works, in conjunction with the surrounding area being typical of other larger Scottish sea lochs and therefore likely to provide ample alternative and suitable habitat, it is not expected that impacts would affect population levels of any fish or shellfish species.

14.3.3.2 Underwater Noise

Sources of underwater noise associated with the construction phase of the CFIIS are described in Section 7: Underwater Noise. Piling and rock stripping with potential blasting are the main sources of underwater noise likely to impact upon ecological receptors. Sensitivity to underwater noise is species-specific and dependant on frequency and levels. Underwater noise may cause behavioural changes, hearing damage, physiological effects, masking of biologically significant sounds or in extreme cases, mortality (Popper *et al.*, 2019).

The threshold for impact varies slightly between fish species that possess a swim bladder with those that use it for hearing being the most sensitive to noise. Those that do not use their swim bladder for hearing are slightly less sensitive to noise. Fish without a swim bladder are least sensitive to noise of the three categories of fish.

Atlantic salmon can detect low frequency acoustic stimuli below 380Hz, coinciding with the most common frequencies produced during impact piling operations between 100Hz and 2kHz. A recent study found evidence of a response to higher frequency sounds between 400 and 800Hz. The same study found that a cohort of Atlantic salmon used in an experiment did not perceive pile driving playback noise as a stressor. This has been explained as potentially centring on the hearing ability of Atlantic salmon in that, compared to other species such as Atlantic cod (*Gadhus morhua*) and herring (*Clupea harengus*), salmon are particularly sound insensitive, lacking in secondary hearing modifications linking the swim bladder to the auditory system. This reduces the species sensitivity and bandwidth to detect a noise stimulus, resulting in a poorer ability to detect specific acoustic cues from background noise (Harding *et al.*, 2016) and therefore move away from the source.

Basking sharks do not have swim bladders, making them less sensitive to underwater noise than the diadromous receptors. They perceive sounds through particle motion and are considered able to detect frequencies between 20 – 1500 Hz (Chapuis *et al.*, 2019). No studies have yet documented changes to stress levels or mortality rates due to sound exposure (Wilson *et al.*, 2020). The species is afforded legal protection from disturbance within The Wildlife and Countryside Act 1981 and therefore requires a licence for activities that may cause disturbance. However, as basking sharks are not expected within the Corran Narrows or adjacent areas, it is unlikely this will be required.

The specific equipment and techniques utilised will determine source noise levels as discussed in Section 7. Noise dissipates rapidly with distance, the area in which noise levels are likely to be of a level that could cause harm or mortally to fish will be limited (actual distances will be confirmed by underwater noise modelling as discussed in Section 7.5). Fish are a mobile species and hence, have the ability to move away from sound sources. This is not the case for farmed fish, they are unable to move beyond the confines of their pens. As such it is imperative to fully understand the predicted noise levels from the construction works, to identify if, mitigation is required to prevent harm to fish within the fish farm.

The impacts of underwater noise on shellfish are poorly understood, however, they may show responses to noise from particle motion or sediment vibration. Invertebrates may change their behaviour when subjected to noise, with one study showing that Norway lobster moved and buried less frequently under ex situ exposure to 100 Hz-2 kHz noise at continuous SPLs between 135-140 dB re 1 μPa and impulse SELs of 150 dB re 1 μPa2s (Solan *et al.*, 2016). Construction phase noise modelling (see Section 7.5) will give more detail with regard to the expected noise levels and hence potential effects on shellfish.

14.3.3.3 Construction Activity Interactions

Marine construction works including land reclamation and the installation of marine structures of the CFIIS (i.e., overnight berthing structure, slipways, and breakwater) is unlikely to cause injury or incidental loss to mobile receptors such as fish. Shellfish may be at more risk. While individuals would be at risk of injury or loss from construction phase activities, the small footprint associated with the proposed CFIIS infrastructure suggests such impacts will be localised and have negligible population level impacts overall.

14.3.3.4 Dredge Activity Interactions

The main activity associated with dredging is outlined in Section 14.2.3.3. Fish are much more agile than marine mammals, and also considerably smaller, and as such, are unlikely to interact with vessels, hence collision risks for fish aren't typically considered.

The main concern associated with rock stripping and potentially blasting is underwater noise which has been considered within Section 14.3.3.2. Removal of materials from the seabed in terms of loss of habitat is discussed in Section 14.3.3.1.

As discussed in Section 10.3.1.1, the seabed sediments have a low silt fraction, hence any dredge spoil entering the water column during dredge or infill activities is expected to drop back to the seabed relatively quickly. As such no impact on fish ability to forage due to changes in water turbidity are expected.

It is highly unlikely that solids associated with dredging activities would reach the fish farm and hence, impact upon fish in pens. Not only are materials expected to drop out of the water column quickly and hence not move far but the predominant water flow in the area, on both spring and ebb tides, is anti-clockwise away from the fish farm and towards the area to be dredged.

14.3.4 Potential Operational Effects

Sources of impacts on fish and shellfish from the proposed CFIIS during the operational phase are limited. Some habitat loss occurring during construction will be permanent and hence continue into the operational phase of the project. It is not appropriate to consider it twice and hence habitat loss isn't considered during the operational phase.

14.3.4.1 Habitat Changes

The operational phase of the CFIIS may create new habitat through the creation of hard surfaces. Some evidence suggests that coastal infrastructure can negatively impact fish assemblages (Munsch *et al.*, 2017), particularly with materials such as concrete which is homogenous in design and may leach chemicals which can have deleterious consequences to marine life (McManus *et al.*, 2017). Other studies indicate that presence of slipways and harbour infrastructure can provide refuge or foraging opportunities for fish species (Porter *et al.*, 2018). Ecologically sensitive design and construction materials have been shown to improve the biodiversity and species richness surrounding the infrastructure (Morris *et al.*, 2018; Perkol-Finkel *et al.*, 2017). The overall effect on the ecosystem is complex and is likely to be site and species-specific. The scale of the marine works associated with the CFIIS are such that significant effects, benefits or adverse associated with additional habitats are unlikely.

14.3.4.2 Underwater Noise Effects

As discussed in Section 14.2.4.1 for marine mammals there is a potential reduction in underwater noise due to the NEV, however, this minor localised change in soundscape is unlikely to benefit fish or shellfish.

14.3.4.3 Dredge Activity Interactions

Maintenance dredges are an infrequent activity and as discussed in Section 14.3.3.4, are not expected to give rise to significant effects on fish.

14.3.5 Proposed Impact Assessment

Habitat changes are proposed to be **scoped out** for fish and shellfish receptors due to the localised nature of the works and the small footprint. In addition to this, where displacement may occur, it is expected that this will only be temporary, and that the surrounding area provides vast and ample alternative habitat for fish and shellfish.

While fish and shellfish individuals would be at risk of injury or loss from construction phase activities, the small footprint associated with the proposed CFIIS infrastructure suggests such impacts will be localised and have negligible population level impacts overall. As such, it is proposed injury or incidental loss is **scoped out** of the EIA. No significant operational impacts on fish are predicted.

It is unknown at this stage if, underwater noise during construction would result in significant effects to fish or shellfish receptors, and hence it is proposed that underwater noise is **scoped in** to the EIA. The impact assessment for the construction phase will be informed by the outcome of the Underwater Noise chapter of the EIAR (see Section 7.5). It will specifically consider effect on Salmon associated with the Linnhe fish farm.

Table 14.3.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Habitat Changes	Out	Out
Underwater Noise Effects	In	Out
Construction Activity Interactions	Out	NA
Dredge Activity Interactions	Out	Out

NA = Not applicable.

15 Materials and Waste

This section considers the potential impacts associated with the consumption of materials and resources and the production, management and disposal of waste associated with the construction phase of the CIIFS. It also covers the anticipated resource use and waste streams expected once the CIIFS is operational.

Note item 1(c) of Schedule 4 of the marine and terrestrial EIA regulations refers to 'the nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used'. As impacts on water, land, soil and biodiversity 'resources' are covered by other sections of this report (i.e. Section 10: Water Quality, Section 9: Geology, Land and Soils, Section 13: Terrestrial Ecology and Ornithology and Section 14: Marine Ecology), this section will consider the consumption of 'materials'.

As per the IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020b), 'materials' are physical resources that are used across the lifecycle of a development. Examples include concrete, steel, aggregate, bituminous material, bricks and timber, but also excavated arisings, including soil, rock or similar resources generated by excavations. This IEMA guidance also states that materials are, in their own right, sensitive receptors, and consuming materials impacts upon their immediate and (in the case of primary materials) long-term availability. This results in the depletion of natural resources and adversely impacts the environment. For waste, the sensitive receptor is landfill capacity, which is also a finite resource.

IEMA defines waste as 'any substance or object which the holder discards or intends or is required to discard'. Ongoing disposal of waste requires continued expansion or development of landfill facilities, depleting natural and other resources which, in turn, adversely impacts the environment (IEMA, 2020b).

15.1 Legislation, Policy and Guidance

Legislation relevant to the management of resources and waste includes:

- Section 34 of the Environmental Protection Act 1990 (as amended) (UK Government, 1990);
- The Waste (Scotland) Regulations 2012;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended (CAR);
- The Environmental Protection (Duty of Care) (Scotland) Regulations 2014; and
- Control of Substances Hazardous to Health (COSHH) Regulations 2002 (referred to hereafter as 'COSHH Regulations').

It is recognised that other waste management legislation may be applicable to specific waste items and activities that could arise; these would be considered on a case-by-case basis as appropriate.

In 2010, the Scottish Government published Scotland's Zero Waste Plan (Scottish Government, 2010), which sets out the government's vision for a sustainable and resource efficient future. While the sustainable resourcing aspect of the vision is still to be brought into legislation, developments should strive to fulfil the following two components of the vision:

'Individuals, the public and business sectors - appreciate the environmental, social and economic value of resources, and how they can play their part in using resources efficiently'; and

'Reduce Scotland's impact on the environment, both locally and globally, by minimising the unnecessary use of primary materials, reusing resources where possible, and recycling and recovering value from materials when they reach the end of their life.' (Scottish Government, 2010).

Zero waste policy principles are captured in Policy 12 of NPF4, for which the policy outcomes are:

- *'The reduction and reuse of materials in construction is prioritised.*
- *Infrastructure for zero waste and to develop Scotland's circular economy is delivered in* appropriate locations.'

Relevant Scottish Government policy as part of Scotland's NMP includes:

- **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; and

- **GES 11**: Properties and quantities of marine litter do not cause harm to the coastal and marine environment (Scottish Government, 2015a).

Other relevant guidance sources used in this section include:
- GPP 2: Above Ground Oil Storage (NIEA, DEFRA, SEPA and NRW, 2018a); and
- GPP 5: Works and Maintenance in or Near Water (NIEA, DEFRA, SEPA and NRW, 2018c);
- GPP 6: Working at Construction and Demolition Sites (NIEA, DEFRA, SEPA and NRW, 2023);
- Guidance on Applying the Waste Hierarchy (Scottish Government, 2017b);
- Managing Waste in New Developments (THC, 2013b);
- Sustainable Design Guide (THC, 2013c); and
- IEMA guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020b).

15.2 Baseline

Operations for the Corran Ferry service, in its existing state, involves a relatively low consumption of materials. The primary consumable utilised is diesel. Water use is addressed in Section 10: Water Quality.

When fully operational, the existing Corran Ferry service consumes approximately 850 litres of diesel per day, or just over 310,000 litres per year. Refuelling of the existing diesel ferries is undertaken by driving a fuel tanker lorry onto the vehicle deck of the ferry to refill the fuel tank onboard.

Waste generated from the service of the Corran Ferry is primarily associated with passengers' activities on the vessels and within the marshalling areas. Food and packaging waste is managed by the provision of general waste and recycling bins near the Ardgour slipway and on the vessel decks. Small general waste bins are provided in the existing toilet block in Corran. This waste is collected and disposed by Highland Council services.

15.3 Potential Construction Impacts

Potential impacts associated with materials and waste have been considered in line with guidance of IEMA's guide to: Materials and Waste in Environmental Impact Assessment (IEMA, 2020b).

15.3.1 Materials

Construction of the proposed CFIIS is expected to include management of the following bulk materials:

- Metals for the maritime structures including piles, fendering support steelwork and fixtures (bollards, barriers, handrailing, ladders, grab rails etc), alignment structure steelwork frames, lighting columns, signage and reinforcing within the concrete elements;
- Plastics and rubber for drainage, ducting and the fendering system;
- Imported rock and aggregates for rock armour, infill and earthworks/landscaping;
- Excavated arisings (i.e., rock and soils);
- Bituminous material for surfacing of marshalling areas, roads and paths;

- Concrete, primarily for the slipways, overnight berthing structures, retaining walls, foundations, thrust blocks, steps and kerbing;
- Timber for linear fenders, copes and roof trusses; and
- Bricks and tiles for buildings.

Impacts associated with materials in the CFIIS may include:

- Consumption of resources and materials;
- Material storage and use;
- An intrinsic carbon cost of materials. Note that carbon calculations are considered in Section 22: Climate Change and are therefore not discussed further in this section; and
- Impacts associated with the transport of materials, namely carbon emissions and traffic impacts and dust arising from traffic movements. Carbon emissions are considered in Section 22: Climate Change, impacts on roads and traffic is considered in Section 18: Traffic, Transport and Access, and impacts from dust associated with transport of materials is considered in Section 6: Air Quality. As such, these impacts are not discussed further in this section.

15.3.1.1 Consumption of Resources and Materials

The materials listed above are all finite resources, although some metals such as steel may have a recycled component. They have however, been selected for their structural suitability, durability and lack of degradation over the considerable operational lifetime expected of the CFIIS infrastructure. The consumption of these materials for the CFIIS has an inherent, though relatively small, environmental cost.

Where possible, electricity may be taken from the local grid for construction welfare and office facilities, lighting and small power tools. If grid connection is not available, diesel will be utilised to power generator(s) for the supply of electricity for these purposes.

The consumption (i.e. loss) of excavated arisings (i.e., rock, soils) is discussed in Section 3.4: Geology, Land and Soils.

15.3.1.2 Material Storage and Use

Consumables used during CFIIS construction works will include fuels, oils, paints and other hazardous substances which, in addition to being a consumption of resources (see Section 15.3.1.1), could, if released to the environment, cause harm to human health or pollute the environment.

Furthermore, the storage of materials such as soils and aggregate can give rise to dust as discussed in Section 6: Air Quality or give rise to silty water run-off as discussed in Section 10: Water Quality. As such, it is important to ensure that materials are appropriately managed to ensure that any potential impacts are minimised (see Section 15.5 for proposed mitigation).

The effects of loss of containment of materials to air, ground or water are addressed in Section 6: Air Quality, Section 9: Geology, Land and Soils and Section 10: Water Quality, respectively.

15.3.2 Waste

Waste arisings during construction of the CFIIS are expected to include:

- Dredge spoil;
- Excess excavated arisings;
- Steel, concrete and potentially infill material from demolition of the Ardgour small pier;
- Arisings from welfare facilities (i.e., food waste, packaging and sewage);
- Various other miscellaneous materials such as packaging and cable off-cuts from general construction activities; and
- Hazardous materials (e.g., cement washings, paints, oils, etc. May include biological hazardous materials such as soil contaminated with INNS).

Waste management will align to the waste hierarchy of prevention, reuse, recycle, recover other value and disposal, in line with Guidance on Applying the Waste Hierarchy (Scottish Government, 2017b) and Managing Waste in New Developments (THC, 2013b).

The proposed dredging operations are anticipated to give rise to a volume of dredge spoil up to 25,000m^3. In accordance with the waste hierarchy, the preference is to re-use dredge material where practicable, for example as infill material. This is however, dependent on the cut and fill calculations (refer Section 15.5) and suitable properties of the spoil material, though results of the ground investigations imply the spoil material will be largely suitable for re-use. Should material not be of a suitable composition for re-use, or if spoil volumes are in excess of what can be re-used, it may be considered for at-sea disposal at a licensed dredge disposal site. This will be determined as part of a BPEO assessment undertaken in support of any Marine Licence application for the CFIIS.

As discussed in Section 9: Geology, Land and Soils, excavated arisings (rock, soils etc) will be re-used as part of CFIIS construction where material suitability allows. The intent is to reuse the soils in the reprofiling of the surrounding areas where practicable, although a cut and fill calculation has not yet been completed (see Section 15.5: Mitigation) and hence, there is potential for excess excavated material to be disposed or re-used offsite.

Demolition of the existing Ardgour pier as part of the construction phase is also expected to generate waste material. Where suitable, materials recovered from the demolition (e.g. crushed concrete, infill) will be re-used in the scheme. It is expected the steel will be suitable for recycling.

Other construction waste arisings will be segregated and if not suitable for onsite reuse, then will be recycled offsite. As a last resort, these may be disposed of to landfill. Hazardous wastes will be disposed of via an appropriately by a licenced contractor.

Within the footprint of the scheme on the Nether Lochaber side is a patch of an INNS, Japanese Knotweed (refer Section 13: Terrestrial Ecology and Ornithology for further details and mitigation). The management plan for INNS will consider any specific disposal requirements for plant or soil material arisings, taking account of the specific risk and need to prevent spread of INNS.

Inappropriate management of waste from welfare facilities or other miscellaneous construction activities could give rise to litter in the terrestrial or marine environment, waste will be managed as per the mitigation in Section 15.5.

15.4 Potential Operational Impacts

15.4.1 Materials

15.4.1.1 Consumption of Resources and Materials

As with existing operations, the primary material consumable for the operational phase of the CFIIS will be diesel.

As discussed in Section 2.6: Design Development, it was confirmed through consultation with SSEN that a suitable upgrade to the existing grid was required (to be undertaken by SSEN) and a temporary diesel generator could be used for overnight charging of the NEV in the interim while awaiting this grid upgrade and connection.

Diesel will be required in the short to medium term to run the temporary generator used to charge the NEV until a grid upgrade is complete and connection provided. Volumes of diesel consumption are expected to be approximately 850 litres per day, similar to existing operations. In addition, the NEV will house a small diesel generator on board to be utilised only for emergencies (such as network power failure preventing overnight battery charging) and to potentially provide additional power generation capacity and/or transit to maintenance or repair facilities. Therefore, once power for NEV charging is supplied from the grid, diesel consumption for the CFIIS (and Corran Ferry service) will be greatly reduced compared to the current operation of a primary diesel vessel.

15.4.1.2 Material Storage and Use

Diesel for the generator will be stored in alignment with CAR General Binding Rule 28. As such, no significant effects from this storage are expected.

15.4.2 Waste

15.4.2.1 Generation and Disposal of Waste

Although the marshalling area provides increased capacity, an increase in passengers and users can be attributed to increased demand for the ferry service, rather than as a result of the CFIIS. The material procurement and construction strategy of the CFIIS will seek to maximise recycling opportunities and minimise potential adverse effects on the local surroundings and landfill capacity through consideration of material re-use (where practicable) and effective waste management in line with the legislation and guidance outlined in Section 15.1. Details will be captured in a Waste Management Plan (refer Section 15.5).

Maintenance dredging, if required, at the overnight berthing structure and/or slipways, may result in dredge spoil material in need of re-use or disposal. Maintenance dredges, if required, are expected to be infrequent and disposal of this waste will be manged in line with the marine licensing process and BPEO assessment.

15.5 Mitigation

A Materials Management Plan will be put in place to detail the storage and handling requirements of materials that have a potential to affect the environment. This will take into account the requirements of relevant legislation and guidance as detailed in Section 15.1.

All waste not able to be reused will be appropriately segregated to facilitate recycling. Waste removed from site will be disposed of by a licensed waste contractor in line with the waste hierarchy and applicable policy and guidance included in Section 15.1.

A Waste Management Plan will be put in place for the construction works, this will be included within the CEMD. It will take account of relevant legislation and guidance, including alignment to the waste hierarchy. There will be an emphasis on the need for good waste management practices to minimise risks of litter.

As discussed in Section 13, the INNS management plan will include consideration with regard to the handling of waste.

It is recognised that the mitigation identified within this section works hand in hand with mitigation identified in other sections of this report to minimise waste arisings (e.g., reuse of materials on site as detailed in Section 9.5). Pollution risks to air, soil and water are discussed in Section 6: Air Quality, Section 9: Geology, land and Soils and Section 10: Water Quality, respectively.

15.6 Proposed Impact Assessment

With the implementation of mitigation outlined in Section 15.5, impacts associated with materials and waste will not result in any significant effects. Therefore, an assessment of effect significance will not be undertaken in the EIAR chapter. Instead, it is proposed that the EIAR chapter for Materials and Waste identifies and quantifies construction materials in terms of volume and environmental lifecycle cost and details the waste strategy for the CFIIS. This information will be utilised to inform the detailed design and procurement process so that, wherever possible, quantities of materials consumed, and waste generated can be minimised.

Detailed designs and construction planning will seek to reduce the volume of materials consumed, where practicable reuse materials on site to achieve a cut and fill balance, to minimise the consumption.

A summary of scoping is outlined in Table 15.6.1.

Table 15.6.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Consumption of Materials and Resources	In	Out
Materials Storage and Use	Out	Out
Waste Management	In	Out

16 Landscape and Visual

This section addresses the potential direct and indirect effects of the proposed CFIIS on landscape, seascape, and visual interests. These are defined respectively within the Landscape Institute and IEMA Guidelines (2013) for Landscape and Visual Impact Assessment (GLVIA) as:

'The constituent elements of the landscape, its specific aesthetic or perceptual qualities and the character of the landscape';

'Landscapes with views of the coast or seas, and coast and adjacent marine environments with cultural, historical, and archaeological links with each other'; and

'The people who will be affected by changes in views or visual amenity at different places'.

Note, the potential for impacts from scheme lighting on human health and protected fauna species are discussed in Section 21: Human Health and Section 13: Terrestrial Ecology and Ornithology, respectively. Development can also have effects on sites of cultural or historical significance. Landscape and visual impacts with regard to setting of these features are discussed in Section 17: Archaeology and Cultural Heritage.

16.1 Policy and Guidance

Relevant policy for landscape and visual assessment includes:

- PAN 60: Planning for Natural Heritage;
- Policy 61 of the HwLDP which states: '*New developments should be designed to reflect the landscape characteristics and special qualities identified in the Landscape Character Assessment of the area in which they are proposed*';
- The WHILDP (THC, 2019) which references Special Landscape Areas; and
- NMP general policies and GES, including:
    - ***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* (Scottish Government, *2015a)*.

Landscape and visual guidance referenced in this section includes:

- Visualisation Standards for Wind Energy Developments (THC, 2016a);
- Pre-application Advice for Major Developments pack (THC, 2023a); and
- Institute of Lighting Professionals Guidance Note GN01:21: The Reduction of Obtrusive Light (Institute of Lighting Professionals, 2021).

16.2 Baseline

The Corran Narrows are situated in the region of Lochaber, within the Landscape Character Type (LCT) of Lochs with Settled Edges (NatureScot, 2023d). This LCT includes the 'ribbon lochs' of Loch Leven; Loch Linnhe, and Loch Eli along the Great Glen. This landscape type is characterised by a flat landscape contained between steep slope loch slides and open water and is anecdotally acknowledged as being a region of considerable natural visual amenity. The LCT is distinguished by its relatively high density of settlement, including farms and crofts, towns and villages and main road links.

The Ardgour Special Landscape Area (SLA) is adjacent (within 100m) to the existing Ardgour slipway (THC, 2019). SLAs are landscapes that are seen as being of regionally significant landscape and visual quality. As per guidance from THC Planning in the Pre-application Advice for Major Developments pack (THC, 2023a), it is reasonable to treat the CFIIS location as being within the SLA. As stated in the Assessment of Special Landscape Areas (THC and SNH, 2011), 'The Ardgour peninsula has a distinctive identity comprising rugged interior mountains contrasting with the wooded and sheltered shorelines of Loch Linnhe. Located on the quiet side of Loch Linnhe this area has an almost island sense of detachment even though it is part of the mainland'. Notably, it is clear from key characteristics of the Ardgour SLA that ferry arrival is important to the sense of place, that is, the peninsula character is reinforced be the sense of remoteness and the typical mode of arrival in the area – by either the Corran Ferry or via a long circuitous land route.

National Scenic Areas (NSA) are areas of nationally important landscape with special qualities that are designated for safeguarding and enhancement through national and local policy (NatureScot, 2023e). The Corran Narrows are approximately 1.4km north/north-west from the Ben Nevis and Glen Coe National Scenic Area.

Ardgour represents a small historic, seaside settlement. In comparison, the shorefront of Corran consists of some modern 'new build' houses. The existing ferry infrastructure (i.e., slipways, Ardgour small pier) is relatively low lying (≤6.1mCD), near the level of MHWS, with the exception of some light posts and signage. Marshalling lanes are flush with the A861 in both settlements. Ground level of seafront houses and commercial properties in both Ardgour and Corran are situated at +5.6mCD or higher, often with floor levels and window panes notably higher still. As such, existing infrastructure has minimal visual impacts on these receptors, although the existing ferry infrastructure is visible from each settlement opposite the narrows and from the ferry during crossings.

Forming part of the spectacular Caledonia Way long-distance route, National Cycle Network Route 78 runs throughout the Argyll and Bute, Great Glen and Highland areas in the west and north of Scotland (Sustrans, 2024). National Cycle Route 78 utilises the Corran Ferry crossing, with the ferry service allowing cyclists coming from the north, on the west shore of Loch Linnhe, to continue their journey through Ardgour and Corran to continue south, now on the east shore of Loch Linnhe, and vice versa.

Receptors sensitive to the changed foreshore appearances will include local residents with views of the development, ferry users and visitors. Design of the CFIIS has, and will continue, to take into account the visual amenity of the area for residents and visitors alike, as the area functions as a popular tourist passage.

16.3 Potential Construction Effects

Construction activities are expected to be complete in 12 – 18 months. Whilst construction effects on visual and landscape amenity are generally adverse, impacts will be of a relatively short duration.

The majority of development on the Nether Lochaber side will be located north of the Corran settlement within an area of woodland. Retained trees will provide a natural visual screen between the construction works and visual receptors in this settlement, resulting in minimal, if any, visual impacts. Construction activities on the Nether Lochaber side will, however, be visible for most houses at Ardgour, most of which are between 0.5km – 1km distance away.

Due to the sloping elevation profile, minor construction works for the shared-use path in Corran may be visible to approximately 13 houses in the settlement. These construction activities will be of short duration, and effects temporary.

Construction at Ardgour will be predominantly low-lying, although visible to a number of houses and commercial receptors in the village along the A861 and North Corran. Ardgour construction activities will be visible to up to 10 houses of Corran across the narrows (0.5km – 1km distance). Vessel activities associated with construction is also expected to have adverse, though short-term, effects on visual amenity to the receptors at Ardgour.

The construction compounds on both sides of the Narrows have been located in consideration of visual effects on receptors. Trees, vegetation and/or land elevation provide considerable screening of construction activities at these locations, hence adverse visual effects are unlikely to be significant for the temporary duration of use of construction compounds.

16.4 Potential Operational Effects

Development at both Ardgour and Corran has the potential for long-term landscape and visual effects to local receptors, both beneficial and adverse. As previously mentioned, CFIIS design is being undertaken in consideration of visual amenity, landscape character and setting. The CFIIS is considered in keeping with the current use of the area and landscape character.

Whilst the CFIIS will be predominantly low lying in the landscape, the tallest components of the scheme will be the lighting columns (up to 20m in height) and the NEV, which is conservatively estimated to be 20m in height, to the tallest aerial. Whilst operation of the new vessels is outwith the scope of the CFIIS, it is acknowledged the berthing of vessels on a shorefront structure at Ardgour (as opposed to current practice of moorings), will result in a change to landscape and visual effects. Furthermore, the NEV to be introduced will be larger than the existing vessels.

The exact location of scheme components and services (e.g., temporary diesel generator) will be determined during detailed design, however these will be located within the scoping boundary and less than 10m in height. Hence these will not change the proposed impact assessment (refer Section 16.5 for details).

The CFIIS infrastructure will be highly visible for residents and businesses at Ardgour, shorefront properties of Corran and passengers of the ferry service. New infrastructure could have beneficial and/or adverse landscape and visual effects on these receptors. CFIIS development north of Corran, specifically involving the opening up of woodland areas, may result in positive landscape and visual effects by creating a new public viewpoint.

A number of individual dwellings at Corran and Ardgour will have views of ferry traffic pre- and post-boarding. Traffic impacts are considered in Section 18: Traffic, Transport and Access, however in term of visual impacts, relocating the ferry infrastructure to the north of Corran will divert ferry traffic out of the settlement and hence, reduce the volume (and subsequent adverse effects) of visible traffic to Corran receptors. Slight relocation and change in height of the Ardgour slipway and approach may result in a slight change in traffic visibility to Ardgour or Corran receptors which will be considered during the impact assessment (see Section 16.5).

16.5 Proposed Impact Assessment

Potential landscape and visual impacts during the construction phase will be temporary (up to 18 months) and reduced by the siting of the construction compounds. Subsequently, no significant effects on landscape and visual amenity during the construction phase of the CFIIS are expected. As such, it is proposed Landscape and Visual is **scoped out** of the EIA for the construction phase.

Due to the scale of change and potential for long-term impacts as a result of the CFIIS, it is proposed that Landscape and Visual is **scoped in** to the EIA process for operations.

A full Landscape and Visual Impact Assessment (LVIA) will be undertaken, in accordance with the THC's Visualisation Standards for Wind Energy Developments (THC, 2016a). The LVIA, including visualisation panoramas (i.e., photomontages), informed by desk-based studies and a site field visit. The LVIA will be completed by a Landscape Architect, who will carry out their fieldwork in clear weather conditions. In addition to carrying out the assessment, the Landscape Architect will work with the design team, to identify ways in which to minimise landscape and visual impacts and where possible identify enhancement.

The LVIA will be included as part of the EIAR. As an overview, the objectives of the LVIA would be to:

- Describe the methodology and criteria used to inform the assessment process;
- Identify the landscape related policy context and guidance;
- Identify and assess the key landscape and visual baseline conditions and associated sensitivities;
- Identify design principles and other mitigation measures embedded into the design of the project to help minimise any likely significant adverse effects; and
- Identify and evaluate any residual landscape, visual and cumulative effects, including direct and indirect, based on the worst-case parameters as currently known.

Although inter-related, landscape effects are assessed separately to the effects on views and visual amenity. Visual effects are primarily concerned with the changes in people's views through intrusion or obstruction and whether important opportunities to enjoy views may be improved or reduced. Landscape effects consider the fabric, character and quality of the site and surrounding landscape and are concerned with:

- Landscape elements (e.g. hedgerows, trees and woodlands);
- Landscape character (local and regional distinctiveness); and
- Special interests and values (e.g. designations, conservation areas and cultural associations).

The significance level assessment for landscape and visual effects will include a detailed viewpoint assessment and be based on pre-defined criteria outlined in the LVIA. Field survey assessment tables will provide a framework that helps to ensure consistency and transparency in the decision-making process but are not used as prescriptive tools, allowing for the exercise of professional judgement in determining sensitivity, magnitude and significance.

Operational lighting schemes are still to be developed and potential effects are not fully understood at this time, hence potential visual effects from operational lighting will be discussed in the LVIA.

Proposed Viewpoints for LVIA have been determined utilising Zones of Theoretical Visibilities (ZTVs). Bare Earth and Screened ZTVs have been developed for the CFIIS outline design and are depicted in Drawings 99_DRG_09 and 99_DRG_10. ZTVs were based on a very conservative 10m high box across the footprint of all scheme infrastructure and 20m height of berthed vessels. Only lighting columns have the potential to be designed and installed above 10m, however, these will be narrow and not affect the ZTV output. A 5km radius study area was proposed for the ZTVs in consideration of the conservative maximum height allocations and low-lying location.

Drawing 99_DRG_10 is a 'screened' ZTV, which takes into account screening from vegetation and existing buildings that alters visibility through the landscape. Note, the actual percentage visibility will be much lower in all cases, as the 10m high components on the site are the lighting columns, which take up a much smaller space in the vista than the solid 10m high box modelled.

Drawing 99_DRG_10 depicts proposed viewpoints for photomontages to inform the LVIA. These viewpoints have been selected with regard to the potential effects on receptors as outlined in Table 16.5.1. The number of proposed photomontages, as well as photomontage direction and target subject(s) are also included in Table 16.5.1.

Table 16.5.1: Details of Proposed Viewpoint Selection and Photomontages for the LVIA

Viewpoint Number	Viewpoint Name	Receptors	Proposed Number of Photomontages	Photomontage Direction and Target Subject(s)
VP 1	Linnhe Picnic Area	Recreational receptors.	1	SW towards CFIIS development on both sides of the Narrows.
VP 2	Corran Existing Slipway	Residential settlement and road users on the A82 and A861.	2	NNE towards CFIIS development on Nether Lochaber side.
				WNW towards CFIIS development on Ardgour side.
VP 3	Ardgour South	Residential settlement, road users on the A861 and National Cycle Route 78 and ferry users.	2	ENE towards CFIIS development on Nether Lochaber side. Photomontage will present the view across Loch Linnhe, to show the CFIIS on the Nether Lochaber side for ferry passengers embarking at Ardgour.
				NNW towards CFIIS development on Ardgour side.

Viewpoint Number	Viewpoint Name	Receptors	Proposed Number of Photomontages	Photomontage Direction and Target Subject(s)
VP 4	Ardgour Village	Residential settlement and road users on the A861 and National Cycle Route 78.	1	East, toward CFIIS development on both sides of the Narrows. Direction will be subject to visible field of view due to close proximity of infrastructure.
VP 5	A861, North of Ardgour	Road users on the A861 and National Cycle Route 78.	1	SE towards CFIIS development on both sides of the Narrows.
VP 6	New slipway on Nether Lochaber side	Recreational receptors and ferry users.	1	WSW towards CFIIS development on Ardgour side. Photomontage will present the view across Loch Linnhe, to show the CFIIS on the Ardgour side only for ferry passengers embarking from the Nether Lochaber side. Note, new infrastructure proposed for the Nether Lochaber side will not be represented in the foreground to avoid obscuring views from immediate proximity.
VP 7	North of CFIIS on Nether Lochaber side	Transitory receptors on the A82 trunk road.	1	South, towards CFIIS development on Nether Lochaber side. Viewpoint will focus on the development on the Nether Lochaber side only. Viewpoint is anticipated to be taken from the loch foreshore due to lack of accessible photography locations on the A82 with visibility of the proposed development.

As discussed in Section 12, there is likely to be a need for compensation tree planting, due to the felling of woodland on the Nether Lochaber side. The details of compensation planting have not yet been confirmed, as such it is not yet fully understood if the planting will change views from any of the receptors. Hence, once the tree planting plans are developed, the potential viewpoints that may be influenced will be identified. For these viewpoints, photomontages will be produced to show the proposed tree planting at year 1 and year 10.

Whilst the vessels are out of scope of the CFIIS, it is acknowledged the ferry use of the infrastructure is an integral part of operations. The CFIIS will result in vessels no longer being moored on offshore swing moorings, but berthed on the overnight berthing structure, hence vessels on their berths will contribute to the visual effects of the infrastructure scheme. For photomontages/visualisations depicting the berthing structure, predicted view sheets will be produced for two scenarios; the proposed development as infrastructure only, and the proposed development with the addition of one berthed ferry vessel. One vessel will be shown on the berth only, noting that during operational hours, one vessel will be in use, and hence the berthing of two vessels concurrently is predominantly only applicable overnight.

Consultation from relevant statutory agencies including THC Planning, the MD and NatureScot is requested on both study area size and viewpoint selection with regard to the LVIA. A summary of the scoping outcomes for landscape and visual effects is included in Table 16.5.2.

Table 16.5.2: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Landscape Effects	Out	In
Visual Effects	Out	In

17 Archaeology and Cultural Heritage

The United Nations Educational, Scientific and Cultural Organization (UNESCO) defines cultural heritage as 'the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations'. Historic environment interests cover world heritage sites, scheduled monuments and their setting, gardens and designated landscapes, Category A listed buildings and their setting, battlefields and their respective inventories, Historic Marine Protected Areas and marine archaeology.

17.1 Legislation, Policy and Guidance

The statutory framework for heritage in Scotland is outlined in the Town and Country Planning (Scotland) Act 1997, as amended, in the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 and the Ancient Monuments and Archaeological Areas Act 1979, both of which are modified by the Historic Environment (Amendment) (Scotland) Act 2011. Given that works will take place around Corran Ferry and within Loch Linnhe the Merchant Shipping Act 1995 and the Marine (Scotland) Act 2010 may also apply.

The implications of these Acts with regard to planning policy are described within NPF4 (Scottish Government 2023), Historic Environment Policy for Scotland (Historic Environment Scotland 2019), PAN2/2011 (Scottish Government, 2011c) and Policy 57 of the HwLDP (THC, 2012). For heritage assets found in a marine context, policies are contained within Scotland's NMP (2015) and Policy 49 of the HwLDP. Any aircraft lost while in military service is automatically protected under the Protection of Military Remains Act 1986 including aircraft lost at sea.

The Historic Environment Policy for Scotland (Historic Environment Scotland, 2019) sets out the Scottish Government's policy for the sustainable management of the historic environment.

Guidance relevant to the assessment and utilised in this section includes:

- Historic Environment Scotland's (HES) Managing Change in the Historic Environment series and particularly the guidance on setting (HES, 2016 updated 2020);
- Scottish Natural Heritage (now NatureScot) and HES published guidance on undertaking EIA in their EIA Handbook (SNH and HES, 2018);
- Highland Historic Environment Strategy (THC, 2013e); and
- Pre-application Advice for Major Developments pack (THC, 2023a).

17.1.1 Data and Information Sources

A preliminary review of the following datasets has been undertaken in order to inform the baseline:

- National Record for the Historic Environment (NRHE) as held by HES online; For designated and non-designated terrestrial and marine heritage asset data, including Canmore Maritime (HES, 2024);
- National Map Library (2024): For old Ordnance Survey maps (1st and 2nd Edition, small- and large-scale), pre-OS historical maps, pre Hydrographic Office (HO)/United Kingdom Hydrographic Office (UKHO) charts and historic HO/UKHO charts.
- UKHO Marine Data Portal (UKHO, 2024) For UKHO Register of Wrecks.

17.2 Baseline

17.2.1 Study Areas

In order to assess the potential for effects on cultural heritage assets resulting from the CFIIS, the following study areas, as depicted in Drawing 01/27114/Sco/01/01, have been identified:

- A core study area, shown as 'site boundary' in Drawing 01/27114/Sco/01/01, which includes the land and marine area, which will be subject to assessment for potential direct effects. This study area will be subject to a detailed walkover survey whereby cultural heritage assets which may be directly impacted by the scheme will be identified.
- A 1km study area for the identification of all known heritage assets and known previous archaeological interventions in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the site and thus be impacted by the scheme.
- A 2km study area for the assessment of potential effects on the settings of all designated heritage assets including Scheduled Monuments, listed buildings, inventoried gardens and designed landscapes and battlefields, Conservation Areas, and assets deemed to be of National Significance in the Historic Environment Record.
- A 5km study area for the identification of all marine heritage assets. This is due to the nature of the wrecking process and the standard protocol for recording wrecks which means that the position of wrecking of a marine craft or ship is often an approximate position.

Drawing 01/27114/Sco/01/01 shows the location of heritage assets within 2km of the proposed development as per the outlined study areas above. Whilst it is recognised the proposed site boundary for scoping has slightly changed since these study areas were established, there has been no change to the development location that would materially change the study areas and hence these are still considered valid. The inclusion of construction compounds does not change the study area extents but will be considered in the EIA (refer Section 17.5: Proposed Assessment).

17.2.2 Terrestrial Features

HES record four Category C Listed Buildings in the village of Ardgour. In the south of the core study area, they are a group of three 1860's Stevenson designed buildings; a lighthouse (LB1689; NRHE NN06SW 14); a lighthouse dwelling (LB1690; NRHE NN06SW 14.02).01); and a storage building, Cuil Righ, (LB1691; NRHE NN06SW 14.02). Also in the village is the Inn at Ardgour, an early 19th century hotel (LB1686; NRHE NN06SW 29), which incorporates two 18th century cottages.

The NRHE identifies four non-designated assets at Ardgour; the disused Corran of Ardgour pier (NN06SW 13); the west slipway (NN06SW 11); a pair of late 19th century cottages (NN06SW 32)(including the ferry office) and the surviving concrete foundation remains of a first World War royal marine battery (NN06SW 35). The Corran of Ardgour pier (NN06SW 13) was built by Thomas Telford.

The possible loss of the vessel (NRHE NN06NW 8004), known as Backwash, is recorded at the existing Ardgour slipway.

One non-designated heritage asset is recorded within the core study area at Nether Lochaber; the existing slipway (NRHE NN06SW 12). In addition, the location of a walkover survey undertaken in 2020 are recorded by the NRHE (NRHE NN06SW 50.00 & 51.00) as indicated by two points; one within the northern portion of the Nether Lochaber core study area and one immediately south. The walkover survey recorded the remains of a dwelling structure and a scooped settlement however, the grid references recorded for those assets are located outwith the 1km study area (Lewis, 2021).

A Category B Listed Building (LB1688); composed of two elements Ardgour Parish Church (NRHE NN06SW 8) and associated churchyard (NRHE NN06SW 8.01), is located within the north-western portion of the 1km study area. The Church was constructed in the early 19th century and has a north-east facing principal elevation.

Historic records and previous archaeological surveys have identified three prehistoric assets (two cists (NN06SW 4 & NN06SW 5) and a cairn (NN06SW 7)), a 12th century coin hoard (NN06SW 6) and numerous later residential, funerary, administrative and educational structures within the 1km study area.

The Ordnance Survey map published in 1874-5 depicts the route of the Corran Ferry. Corran Light House, a flag staff, a collection of buildings to the west of two piers and to the east of a lochan are illustrated in what is now Ardgour. Corran Inn, a pier, a roughly north-south aligned road and a roofed building are annotated on the Nether Lochaber side of the Corran Narrows. The foundation remains of the roofed building within a plot of land as depicted on the historic Ordnance Survey map has been identified within the woodland north of Corran (Figure 17.2.1).

Figure 17.2.1: Foundation Remains of a Roofed Building North of Corran

The Inventory Garden and Designed Landscape known as Ardgour House (GDL00020) extends into the western portion of the 1km study area and was developed from the 18th century around the Category B Listed Ardgour House (LB1687).

There are no World Heritage Sites, Scheduled Monuments, Category A Listed Buildings, Inventoried Battlefields or Conservation Areas within 1km of the CFIIS location.

There is one Scheduled Monument, Onich, fort, Ballachulish (SM2894/ NN06SW 2) to the south-east of the scheme within the 2km study area. The Scheduled Fort, typified by the NRHE as a dun, is set on a south-west facing slope commanding extensive views down Loch Linnhe.

The Category B Listed Walled Garden at Cuilcheanna House (LN7076) is located to the south of Corran in the 2km study area and was built in the 19th century.

17.2.3 Marine Features/Wrecks

Within the 1km study area, Canmore Maritime records the loss or wreck of at least fifteen 19th and 20th century vessels. There are no known finds or remains relating to submerged prehistoric landscapes within the core study area or within the 1km study area.

The nature of the wrecking process means that the position of wrecking of a marine craft or ship is often an approximate position. This is especially true in periods prior to the 20th century and the development of modern navigational systems that allow for more accurate positions of ships and craft to be charted. Ships or marine craft that have been wrecked may also not sink straight away; they may shift with the tides and weather conditions before finally coming to rest on the seabed; elements of the wreck may be scattered over several locations on the seabed with wreckage coming ashore in the inter-tidal zone. Therefore, there is a degree of uncertainty as to whether wrecks with unknown or approximate positions of wrecking may have their final wreck sites within a specific area, in this case the Corran Narrows. Furthermore, where wrecks have tentative locations, the NRHE tends to assign the record of their loss to the lower left corner of a 1km OS grid square.

As a number of wrecks within the 5km study area have locations that are tentative, this raises the possibility that their actual site(s) of wrecking may be close to or within the core study area. Notes associated with some wrecks reference Corran Ferry and Loch Linnhe suggesting a geographical proximity to the CFIIS, although the exact location of each wreck is not well documented.

17.3 Potential Construction Impacts

The CFIIS is in the vicinity of a number of listed buildings as described in Section 17.2: Baseline. Hence, depending on the nature and detail of the works, there is the potential for adverse effects on the Listed Buildings and their settings.

There is the potential for minor infrastructure to be installed in the yard of the non-designated Corran Ferry cottages (NN06SW 32) at Ardgour (i.e. the ferry office). However, as no changes will be made to the building itself, no adverse impacts on any surviving historic architectural remains are expected.

The CFIIS layout has been designed to date to avoid non-designated heritage assets are far as practicable, minimising direct impacts which may result in a reduction in their cultural heritage value. However, the foundation remains of the roofed building north of Corran are within the proposed footprint of the new marshalling area and hence, the scheme will directly impact this feature. Where non-designated heritage assets are impacted by the CFIIS, mitigation to ensure their preservation by record will be undertaken.

There are a number of historic marine wrecks recorded within the 5km study area, including at least one associated with the Ardgour slipway. The dates of these potential wrecks indicate the vessels were wooden, and hence, it is unlikely any material of historic or cultural value remains. Similarly, the strong currents, shallow sediment and steep seabed bathymetry of the Corran Narrows would suggest archaeological remnants would have been washed into the deeper channel or transported away over time. There remains however, low potential that dredging works and marine construction works of the CFIIS could impact unknown remains of wrecks surviving on the seabed.

Similarly, there is the potential that both terrestrial and marine hitherto unknown remains survive within core study area, for which there is the potential for the CFIIS to have an adverse effect on any such surviving remains.

17.4 Potential Operational Impacts

Potential operational effects associated with the CFIIS are largely limited to the scheme's impact on the setting of designated heritage assets within 2km of the development.

Due to the nature of the scheme, and the nature of the setting of the heritage assets within close proximity (i.e., within coastal villages on the route of a ferry crossing), it is considered that significant adverse effects on the settings of heritage assets would be unlikely. However, this will be considered in detail as part of the EIA (See Section 17.5).

17.5 Proposed Impact Assessment

Due to the potential for direct impacts and impacts on setting from the CFIIS, it is proposed archaeology and cultural heritage is **scoped in** to the EIA. The EIAR chapter will fully describe the baseline historic environment conditions and will assess the potential for adverse effects upon archaeology and cultural heritage.

The EIA baseline data will be collated from the following sources:

- The National Record for the Historic Environment (NRHE) as held by HES;
- The Historic Environment Record as supplied by THC;
- National Library of Scotland for published historic and Ordnance Survey maps;

- National Collection of Aerial Photography (NCAP) as held by HES for vertical and oblique aerial photographs;
- Jim Bone Collection of Aerial Photography;
- Published archival sources;
- Scottish Palaeoecological Archive Database (SPAD) for information regarding the palaeoecological and paleoenvironmental potential of the Site and surrounding landscape;
- Historic Land-Use Assessment Data for Scotland (HLAMap);
- UKHO Marine Data Portal;
- Site LIDAR. Note No LiDAR data and imagery held by the Scottish Remote Sensing Portal is available for the study area(s);
- A walkover survey of the site (including all areas within the scoping boundary, including locations proposed for the construction compounds); and
- A setting assessment visit to designated assets and informed, where relevant, by ZTVs and/or appropriate visualisations (see Section 16).

The assessment will consider both the potential for direct impacts upon heritage assets, including buried or submerged archaeological remains, and the potential for impacts upon the setting of designated heritage assets within the surrounding area. In order to do so, the assessment will establish:

- The significance of heritage assets in question;
- The sensitivity of those assets to changes (either direct physical change or to changes to their settings);
- The magnitude of impacts;
- The level of effect and whether or not that effect is considered significant in EIA terms; and
- Impacts upon integrity of setting where Scheduled Monuments are concerned, in line with Policy 7h(ii), 46) of NPF4 (Scottish government, 2023).

The setting assessment will be undertaken with reference to NPF4 and HES' Managing Change Guidance on setting, and will aim to establish the current setting of the identified heritage assets, how that setting contributes to the understanding, appreciation and experience of those assets and how the Proposed Development could impact upon this.

In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as 'significant' in the assessment will have the potential to significantly adversely impact integrity of setting. Where no significant effect is found it is considered that the integrity of an asset's setting will remain intact.

Where significant effects are found, a detailed assessment of adverse impact upon integrity of setting will be undertaken. The assessment of adverse impact upon the integrity of an asset's setting, where required, will be a qualitative one.

The following matters are proposed to be scoped out of the EIA:

- Direct impacts on cultural heritage assets outwith the scoping boundary will be scoped out of the assessment, as no direct impacts are expected;

- Impacts on the settings of non-designated cultural heritage assets and features as these assets are generally considered less sensitive to changes in their settings and are judged to be unlikely to be subject to significant settings effects; and
- Impacts on the settings of heritage assets beyond 2km of the core study area as depicted in Drawing 01/27114/Sco/01/01.

Table 17.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Direct impacts on terrestrial and marine cultural heritage assets (designated and non-designated) within the scoping boundary.	In	In
Impacts on the settings of designated cultural heritage assets, features within the 2km study area.	In	In
Direct impacts on cultural heritage assets outwith the scoping boundary.	Out	Out
Impacts on the settings of non-designated cultural heritage assets and features.	Out	Out
Impacts on the settings of heritage assets beyond 2km of the score study area.	Out	Out

18 Traffic, Transport and Access

The focus of this section is the potential impacts on the surrounding transport networks during construction and operation of the proposed CFIIS. Note, marine traffic, transport and access is considered in Section 19: Navigation, and potential noise impacts associated with CFIIS traffic are considered in Section 6: In-Air Noise and Vibration.

A separate scoping exercise was undertaken as part of the supporting Transport Assessment and the traffic surveys were agreed with The Highland Council (THC) (Infrastructure, Environment and Economy) and Transport Scotland. The Transport Assessment Scoping Report is provided in Appendix 6.

18.1 Policy, Guidance and Resources

Policy relevant to traffic, transport and access associated with Corran Ferry Infrastructure Improvement Scheme (CFIIS) includes:

- HITRANS Regional Transport Strategy (Updated) (HITRANS, 2018); and
- National Planning Framework 4 (Scottish Government, 2023).

The following guidance documents have been utilised in this section:

- IEMA Environmental Assessment of Traffic and Movement (IEMA, 2023);
- IEMA Guidelines for Environmental Impact Assessment (IEMA, 2005);
- IEMA Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993);
- Design Manual for Roads & Bridges (DMRB), LA 104 Environmental Assessment and Monitoring (Revision 1) from Highways England, Transport Scotland, Welsh Government & Department for Infrastructure (2020);
- Transport Scotland’s Transport Assessment Guidance (Transport Scotland, 2012);

- THC's Roads and Transport Guidelines for New Developments (The Highland Council, 2013); and
- Planning Advice Note (PAN) 75: Planning for Transport (Scottish Government, 2005).

18.2 Baseline

The following baseline information has been collated from an initial desk based review to inform the scoping exercise.

18.2.1 Ferry Operations

The Corran Ferry service operates 361 days of the year and carries over 270,000 cars each year. The timetabled service, which changes seasonally, includes scheduled crossings every 20 to 30 minutes, from early morning to late at night. However, during busy periods, the service will effectively run a shuttle service, making more frequent crossings to relieve traffic congestion in the marshalling areas. The crossing takes about 5 minutes.

During periods when the Corran Ferry is not operating, there is still a road route connection between Ardgour and the Corran settlement via Fort William. However, this road route is approximately 40 miles and includes a bridge with a 3.6m height restriction at Loch Eil.

18.2.2 Traffic and Roads

On the Nether Lochaber side, access to the existing slipway in Corran is from the A861 via a priority junction with the A82 trunk road. On the Ardgour side, the slipway to Corran Ferry is accessed from the A861.

The A82 forms part of the trunk road network and comprises a two-way single carriageway road. It provides connections from Glasgow to Inverness via Fort William and is mainly subject to the national speed limit, which reduces when travelling through towns and villages. The section of the A82 that transits past Corran has a speed limit of 50 mph between Onich and Fort William. The A82 appears to be in generally good condition and is managed by BEAR Scotland, on behalf of Transport Scotland.

Through the settlement of Corran, the A861 comprises a two-way single carriageway road with three marshalling lanes which are located beside the south-west bound lane (refer Section 18.2.3 for details).

On the Ardgour side, the A861 comprises a two-way single carriageway road to the south of the existing slipway and a single track with passing places to the north of the slipway. Within Ardgour, the A861 is subject to a speed limit of 30 mph which increases to the national speed limit when leaving Ardgour. The A861 appears to be mainly in good condition and is maintained by THC.

18.2.3 Ferry Access and Marshalling

In Corran, cars in effect use the A861 for marshalling, with the queue starting adjacent to the existing toilet block. Additional marshalling space in the form of three marshalling lanes is provided near the junction with the A82. A total of 172m is provided for ferry vehicle queueing in Corran including formal marshalling land and pre-lane space. Traffic queueing in excess of the formal marshalling area has a further 20m of A861 carriageway before directly impacting the A82 trunk road. Queueing traffic is known to occasionally back up onto the A861 at Ardgour in particular, i.e., during the Summer or bank holiday weekends.

On the Ardgour side of the crossing, there are three marshalling lanes that are accessed directly from the A861. Formal marshalling also consists of approximately 170 lane metres. There is also an approximately 120m² area which is 'boxed out' adjacent to the A861 and is generally used for larger vehicles queueing for the ferry crossing. Traffic queueing in excess of the formal marshalling directly impacts the A861.

18.2.4 Active Travel Network

The National Cycle Network (NCN) Route 78 utilises the Corran Ferry service to maintain network connection. NCN Route 78 is located along the shared path, beside the A82, to the south of the Corran Ferry Junction bus stop (Sustrans, 2024). The NCN Route 78 then connects to the Corran existing slipway via a traffic-free shared path between the A82 and the A861. NCN Route 78 recommences on the opposite side of the Corran Narrows in Ardgour, along the A861, continuing northbound.

NCN Route 78 comprises The Caledonian Way which is 378 km in length and runs from Campbeltown to Inverness. The small, approximately 200m, section of NCN Route 78 along the traffic-free path and the A861 in Corran is also a designated core path (THC, 2024).

18.2.5 Public Transport

On the Nether Lochaber side, three bus stops are located within 400m of the Corran Ferry slipway. Two bus stops are located south of the existing junction to the Corran Ferry infrastructure and comprise bus shelters with flagpole and timetable information. There is also a bus stop for routes to and from the western peninsula at the Information Point beside the slipway.

On the Ardgour side, a school bus service is available during the school term from Corran Gardens, approximately 250 m north-west of the existing Ardgour slipway. A bus shelter is provided at Corran Gardens for school bus users.

18.2.6 Accidents and Incidents

A review of Crashmap (2024) indicates that there were no recorded personal injury accidents recorded along the A861, in Corran, Ardgour or surrounds between 2018 and 2022 (2022 being the most recently available information on the website, at the time of writing).

Accident information for a section of the A82 in proximity to the A861/A82 Corran junction (between Keppanach and Corrychurrachan) was obtained from Transport Scotland for the most recently available five year period, between 2019 and 2024. The review found that a total of six accidents were recorded within the Study Area over the five year period of which one was recorded as moderately serious, one as less serious and four as slight. A total of four of the recorded accidents were recorded within approximately 100m to the north of the A861/A82 priority junction leading to the existing Corran slipway.

18.2.7 Receptor Summary

In terms of traffic and transport impacts, the receptors are the users of the road network in the vicinity of the CFIIS and the locations through which those roads pass. The following sensitive receptors have been identified following the initial desktop review:

- A861 Road Users;
- A82 Road Users;

- Ferry Users;
- Corran Residents (Nether Lochaber side);
- Corran Residents (Ardgour side);
- Core Paths; and
- National Cycle Network.

It should be noted that the above list of receptors is not exhaustive and further receptors may be identified during the EIA.

18.3 Potential Construction Effects

Potential effects associated with traffic, transport and access may be experienced by road users and local residents during the construction phase of the CFIIS. Temporary increases in traffic volume occur due to the delivery of materials, staff commuting and the movements of construction plant and vehicles. Construction works and associated traffic management on the road network, primarily the A82 and A861 (on both the Ardgour and Nether Lochaber sides), may impact the use of these roads. Construction effects on traffic, transport and access are expected to be temporary, and may be felt in different locations as the project construction progresses.

In accordance with the IEMA guidelines, potential effects of increased traffic to road users and local residents during the peak construction month will be assessed in relation to the following:

- Severance – refers to when transport infrastructure or motorised traffic divides space and people in communities. This may involve an increase or reduction in severance effects;
- Driver delay – may involve an increase or reduction;
- Pedestrian delay – may involve an increase or reduction in delays to pedestrians, wheelers and other non-motorised users;
- Non-motorised user amenity – the ability for pedestrians, wheelers and other non-motorised users to access the services, facilities and amenities of an area;
- Fear and intimidation – may be experienced by road users and residents resulting from increases in traffic flow;
- Road safety – may involve an increase or reduction;
- Road Safety Audits – applicable to the existing and new junction on the Nether Lochaber side; and
- Large loads – for any abnormal indivisible loads.

These effects and considerations will be screened for consideration during the impact assessment process as discussed in Section 18.5.

18.4 Potential Operational Effects

Once operational, access to the ferry infrastructure on the Nether Lochaber side will be via a new junction with the A82 and a new access road, leading into the marshalling area which has an increased vehicle capacity compared to the existing situation. The aim of this design, in line with the project requirement outlined in Section 2.4, is to ensure that the marshalling area can accommodate the expected increases in the volumes of ferry traffic in the future. Public transport accesses and active travel have also been incorporated into the design, including retaining NCN Route 78 connection to the Corran Ferry.

Operational changes on the Ardgour side will be much less than those on the Nether Lochaber side, as the majority of the existing arrangements will continue to be utilised. The CFIIS will result in changes to vehicle movements associated with access to the new slipway and overnight berthing structure, and potentially a change to access arrangements to the existing slipway at Ardgour.

As per the construction phase, the potential effects of increased traffic to road users and local residents will be assessed in relation to the following during the operational phase of the CFIIS:

- Severance;
- Driver delay;
- Pedestrian delay;
- Non-motorised user amenity;
- Fear and intimidation;
- Road safety;
- Road Safety Audits; and
- Large loads.

To ensure the CFIIS provides the intended improvements to traffic, transport and access, the above aspects will be screened for consideration within the EIA as discussed in Section 18.5.

18.5 Proposed Impact Assessment

The impact assessment for effects listed in Section 18.3 will be informed by detailed design, construction phasing, delivery strategies and other aspects of the CFIIS not fully defined at the time of Scoping. As such, it is proposed impacts on Traffic, Transport and Access be **scoped in** to the CFIIS EIAR for both construction and operational phases.

The Traffic, Transport and Access Chapter of the EIAR will consider likely significant effects on receptors along the transport routes in a proposed Study Area resulting from vehicle movements associated with the CFIIS. The Chapter will discuss the effects and considerations of Sections 18.3 and 18.4 and will be supported by a Transport Assessment report.

18.5.1 Study Area

The Study Area for the Traffic, Transport and Access Chapter of the EIAR will include the road network that will be used for import of raw materials, construction staff commuting and the users of the ferry services to the development site. The Study Area is therefore proposed to include:

On the Nether Lochaber side:

- A82, between Keppanach and Corrychurrachan;
- A861, between A82 and Corran Ferry slipway; and

On the Ardgour side:

- A861, between Clovullin and Ardgour Parish Church.

18.5.2 Traffic Survey

Baseline traffic flow data for the A82 and A861 will be obtained from new Automatic Traffic Count surveys completed in 2024. Baseline turning movements will be obtained from turning count surveys at the following locations:

On the Nether Lochaber side:

- A82 / A861 priority junction;

On the Ardgour side:

- A861 / access to Ardour marshalling area: and
- A861 / junction at the existing Ardgour slipway.

18.5.3 Transport Assessment

As agreed with THC and Transport Scotland during the scoping of the Transport Assessment, construction traffic movements on the public roads associated with the construction phase will be based on the proposed development design. Traffic generation will take into account the import of construction materials and the movement of equipment, construction plant and labour required. The distribution of construction related trips will be based on the location of material suppliers.

The operational assessment will be based upon traffic generation estimates derived from information received from THC. The distribution of operational trips will be based on the observed ratio of movements calculated from the turning count surveys.

Peak traffic flows will be identified to assess a worst case scenario for the construction and operational phases.

The following rules taken from the relevant guidance outlined in Section 18.1 will be used as a screening process to define the scale and extent of the assessment:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2: Include highway links of high sensitivity where traffic flows have increased by 10% or more.

Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the CFIIS will therefore be assumed to result in no discernible environmental impact and as such no further consideration will be given to the associated environment effects listed in Sections 18.3 and 18.4).

The estimated traffic generation of the CFIIS will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage increase in traffic.

Potentially significant environmental effects will then be assessed where the thresholds as defined above are exceeded. Suitable mitigation measures will be proposed, where appropriate.

Committed development traffic, i.e. those from proposals with planning consent, will be included in baseline traffic flows, where traffic data for these schemes is considered significant and is publicly available. Developments that are proposed or at Scoping will not be included.

A review of the online planning portal will be undertaken to identify any relevant committed developments.

Standard mitigation measures that are likely to be included in the assessment include:

- Production of an outline Construction Traffic Management Plan (CTMP);
- The design of suitable access arrangements with full consideration given to the road safety of all road users; and
- A Construction Staff Travel Plan.

Additional mitigation measures to minimise adverse impacts will be identified and discussed in the EIAR.

A summary of scoping outcomes for the Traffic, Transport and Access topic is presented in Table 18.5.1.

Table 18.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Traffic, Transport and Access Effects on Road Users and Local Residents	In	In

19 Navigation

The focus of this section is the potential impacts of the proposed CFIIS on vessel navigation, during both the construction and operations phases.

19.1 Legislation, Policy and Guidance

Relevant legislation applicable to the Corran Ferry service and CFIIS includes:

- International Regulations for Preventing Collisions at Sea as amended (International Maritime Organization, 1972); and
- The Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996.

The NMP has a section on Shipping, Ports, Harbours and Ferries, with policies relevant to the proposed CFIIS (Scottish Government, 2015a) including:

- **TRANSPORT 1**: Navigational safety in relevant areas used by shipping now and in the future will be protected, adhering to the rights of innocent passage and freedom of navigation contained in UN Convention on the Law of the Sea (UNCLOS); and
- **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. Developments will not be consented where they will unacceptably interfere with lifeline ferry services.
- **TRANSPORT 6:** Marine planners and decision makers and developers should ensure displacement of shipping is avoided where possible to mitigate against potential

increased journey lengths (and associated fuel costs, emissions and impact on journey frequency) and potential impacts on other users and ecologically sensitive areas.

The UK Port Marine Safety Code (UK Government, 2016) sets out a national standard for every aspect of port marine safety. Its aim is to enhance safety for everyone who uses or works in the UK port marine environment. The Code is applicable to statutory harbour authorities and other marine facilities which may not have statutory powers, and as such it is intended to be flexible enough that any size or type of harbour or marine facility will be able to apply its principles in a way that is appropriate and proportionate to local requirements. The Code states that it is strongly recommended that organisations or facilities which are not a statutory harbour authority, such as marine berths and terminals, seek a proportionate compliance with this Code. This may be through the adoption of a formal risk assessment process and the implementation of a marine safety management system which complies with this Code or any alternative, similar standard applicable to their sector.

19.2 Baseline

The baseline conditions with regard to navigation have been compiled from desk-based research and personal communications with THC's ferry operations team.

Loch Linnhe is part of the navigational channel that, linked by the Caledonian Canal, forms a passage through northern Scotland from one side of the country to the other, for both leisure and commercial vessels. The restricted nature of the loch, and especially the Corran Narrows, brings all types and sizes of vessels into relatively close proximity and care is needed to avoid an incident. Loch Linnhe is classed as 'unregulated waters' in that marine traffic is able to navigate the waters of the Loch without being subject to the control of a Harbour Authority. Vessels on the loch are subject to the normal rules and regulations that apply to vessels at sea and each vessel has the responsibility to navigate safely and avoid collisions.

19.2.1 Navigational Features

In respect of aids to navigation, NLB own and operate the Corran Point Lighthouse at Ardgour. The lighthouse was one of the first in Britain to become automatic in 1898 (NLB, 2024), and is now operated remotely by NLB. A White/Red/Green sector light shines both up and down Loch Linnhe and works in conjunction with two Precision Directional Lights installed either side of the Narrows (Corran Narrows NE and Rubha Cuil-Cheanna). The location of the navigation channel (in yellow) and Corran Point Lighthouse (by the blue arrow) is shown in Figure 19.2.1

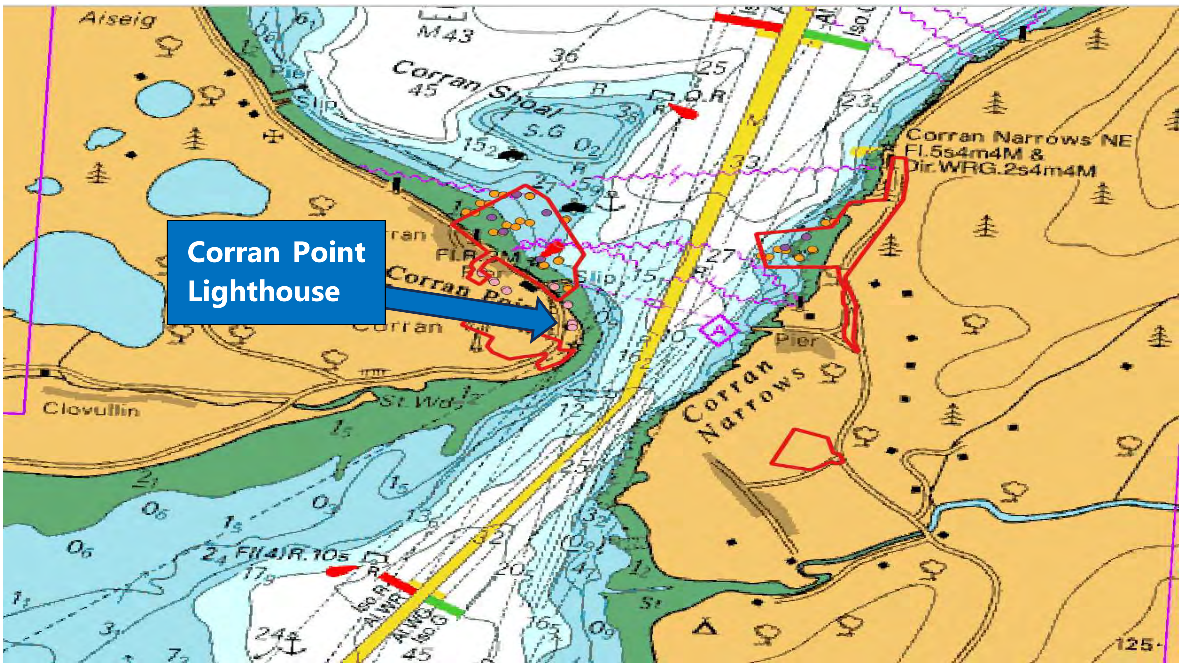

Figure 19.2.1: Navigation at Corran Narrows and Location of Corran Point Lighthouse. Raster data source: EMAPSITE (EMAPSITE, 2022)

19.2.2 The Corran Ferry

As described in Section 2.2, the Corran Ferry service provides an essential connection for the western peninsular communities to and from Lochaber, as well as for those on the Isle of Mull via the Fishnish – Lochaline route. The existing ferry service runs an approximately 420m crossing between the Ardgour and Corran (see Figure 2.1.2) with the crossing taking about 5 minutes. The service operates from early morning to late at night, 361 days of the year. The timetabled service includes scheduled crossings every 20 to 30 minutes. However, during busy periods, the service will effectively run a shuttle service.

The service is owned and operated by THC ferry operations team. Safety and operations protocols are outlined in Ferry Operations Manuals and Safety Management Systems for each vessel in operation. These documents outline all elements of operational safety, including protocols of navigation and management of navigational risks. Safety protocols also give consideration to conditions (i.e., environmental) which may result in the temporary suspension of the ferry service. Operational risk assessments are also utilised where required.

The Code of Practice for Safe Navigation in Upper Loch Linnhe (THC, 2005) is the primary navigational code for vessels in upper Loch Linnhe. The Code specifically dictates:

- *'Vessels must call up Corran Ferry, Corran Narrows before approaching and passing through the Narrows.'*

Communication with other vessels is conducted using standard radio protocols and other practices in accordance with International Regulations for Preventing Collisions at Sea (International Maritime Organization, 1972).

Currently, the ferry crew access the vessels on swing moorings, which requires transfer via a small boat. This is an outdated practice and a known maritime safety risk. The small boat is moored alongside the small existing pier at Ardgour when not in use. This pier is utilised solely by the Corran Ferry operations team for this purpose.

19.2.3 Other Loch Users

As well as the Corran Ferry, the types of vessels typically using Loch Linnhe are cruise liners, coastal cargo vessels, leisure craft, ferries, fishing boats, aquaculture and various other miscellaneous vessels (THC, 2016b). North of the Corran Narrows, there are berthing and mooring facilities at Fort William and cargo and haulage associated with piers at Corpach.

As mentioned in Section 10.2.9, MOWI Scotland Ltd operate a number of finfish farms in Loch Linnhe. The nearest is the 'Linnhe' fish farm, located approximately 400m north-west of the CFIIS scoping boundary. Vessels accessing this fish farm do so from a MOWi-owned small pier north-west of the CFIIS. Note, the potential for socioeconomic effects on businesses operating in Loch Linnhe (unrelated to navigational effects) are considered in Section 20: Population and Socioeconomics.

19.2.4 Maritime Incidents

There are two known incidents in relation to the Corran Ferry service relating to steering issues. The most notable of these was in July 2017, where ferry steering failed causing the vessel to collide with rocks on the Nether Lochaber shoreline. The vessel was subject to 5 days of damage assessment before re-entering service (THC, 2023c).

A desk-based search for other maritime incidents in Loch Linnhe in recent years identified one incident of a cargo ship running aground at Corpach (at the northern extent of Loch Linnhe), in 2015 due to high winds (MarineLink, 2015) and one incident of a leisure yacht drifting ashore in 2017 (The Press and Journal, 2017).

No vessel-to-vessel collision incidents have been identified from publicly available sources. In 2019, the Lochaber Committee published a report assessing the potential viability of a Harbour Authority for Loch Linnhe (THC, 2016b). Within this report are consultee responses from 2016, stating that maritime operations in the loch had continued for decades with no serious incidents. It should be noted that the report concluded a Harbour Authority in Loch Linnhe would not be justified on safety grounds and would not be self-sustaining in the short to medium term, and as such, no Harbour Authority was established from these findings.

19.3 Potential Construction Effects

During the construction phase of the CFIIS, there will be additional vessel movements, mostly associated with dredging, piling and the delivery of materials (some of which may be by sea) and a change in marine infrastructure.

Potential effects may therefore include:

- Disruption to the Corran Ferry service;
- Disruption to other loch users;
- Potential for collision incidents between vessels;
- Potential for collision incidents with new infrastructure; and
- Impacts on Corran Point lighthouse.

19.3.1 Disruption to the Corran Ferry Service

The existing slipways on both sides of the Narrows will be retained for continued operations of the MV Corran and the current stand-by vessel, the MV Maid of Glencoul, during the construction phase of the CFIIS. Even during the operational phase, these slipways will be retained for contingency operations as described in Section 3.6: Decommissioning. Construction vessels will be required to give way to the Corran Ferry and utilise standard radio communication protocols with ferry operators whenever necessary.

The majority of vessel movements for the CFIIS construction will take place north of the existing ferry route, within the Scoping boundary, though vessels will be required to transfer through the Narrows from time to time. Delivery routes by sea and landing of materials will be situated away from the existing slipways so as not to interfere with the ferry service. Subsequently, no disruption to the Corran Ferry service is envisaged due to navigational impacts.

As mentioned, the ferry crew use a small boat to access the vessels on their swing moorings, and this small boat is moored at the small, existing pier at Ardgour when not in use. Appropriate construction phasing will ensure demolition of this pier is only undertaken once alternative arrangements are in place for tie-up of the small boat (e.g., at the proposed overnight berthing structure). This is to ensure continuous safe access to, and operation of, the small boat for the ferry crew, until ferry berthing can take place on the overnight berthing structure.

19.3.2 Disruption to Other Loch Users

Construction activities and vessel movements can cause disruption to other loch users (e.g. other vessels) by causing delay or obstruction to navigational passage.

Vessel movement associated with construction works will be greatest within the CFIIS Scoping boundary, with some crossing of the Narrows anticipated. The Scoping boundary does not impinge on the navigation channel, providing a minimum of at least 90m clearance on both sides (as shown in Figure 19.2.1). As such, this navigation channel and a sufficient buffer will remain available to other loch users. Standard radio communication protocols will be utilised between other users and construction traffic as appropriate.

It is noted vessels of the MOWI fish farm may be operating in relatively close proximity to CFIIS construction activities, and therefore MOWI vessels may be transiting through the Corran Narrows. Co-operation between the project and fish farm personnel will therefore be required to avoid where possible, or minimise any adverse impacts on fish farm operations (e.g., potential for disruption or delays to vessel passage) as far as practicable. This will be supported though good communication and consultation on behalf of the project. Proposals for communication and consultation regarding the need for collaboration with the fish farm are discussed further in Section 20.5.

19.3.3 Potential for Collision Incidents Between Vessels

The construction phase of the CFIIS will introduce additional vessel traffic which can be considered as new navigational hazards. As mentioned previously, construction vessel movement will primarily be operating on either side of the Narrows within the Scoping Boundary, leaving a navigational channel of sufficient clearance through the narrows. When CFIIS activities may overlap this channel, standard radio communication protocols will be utilised to manage navigational risks. Construction vessels (including barges) will display navigational lighting in line with maritime rules and regulations.

19.3.4 Potential for Collision Incidents with New Infrastructure

Infrastructure under construction for the CFIIS will be installed within the Scoping boundary, well outwith the navigation channel. There is no known reason for vessels un-associated with the CFIIS to be transiting in close proximity to the construction footprint. Hence, the risk of non-CFIIS vessels colliding with new infrastructure is already low.

To further minimise this risk, Notices to Mariners will be issued as necessary prior to, and during the construction phase. All installations in the marine environment will be adequately marked with aids to navigation as agreed through consultation with the NLB. THC's Corran Ferry operations team will be consulted and kept updated throughout the project construction phase. As such, any effects associated with the potential for collision incidents with new infrastructure during the construction phase are not deemed to be significant.

19.3.5 Impacts on Corran Point Lighthouse

Construction lighting will be required for the CFIIS, introducing new light source potentially competing or conflicting with light sectors of the Corran Point lighthouse. Although scheme lighting will not be of a sufficient wattage to compete with light sectors, strong lighting directed down the navigational channel could cause some nuisance to vessel skippers. As part of the detailed design, construction lighting for the CFIIS will be directional and trained towards the infrastructure. Residual light spill into the seascape or navigational channel will therefore not be of a sufficient brightness to have any adverse impact on the light sectors of the Corran Point lighthouse.

19.4 Potential Operational Effects

The following effects on navigation may result from the operational phase of the CFIIS:

- Effects on the Corran Ferry service;
- Disruption to other loch users;
- Potential for collision incidents between vessels;
- Potential for collision incidents with new infrastructure; and
- Impacts on Corran Point lighthouse.

19.4.1 Effects on the Corran Ferry Service

The scheme infrastructure has been designed specifically with regard to local environmental conditions and input from the THC ferry operations team to reduce navigational challenges. As described in Section 3.1: Scheme Overview, the new scheme infrastructure and NEV will work in combination to increase service capacity and resilience. The overnight berthing structure will allow for safer crew access to and from the vessels, the breakwater will provide protection to the more exposed slipway on the Nether Lochaber side from wave, current and wind conditions and the attached alignment structure will provide vessel support in adverse current and weather conditions. The CFIIS is therefore expected to minimise the service disruption risk whilst the NEV will result in reduced risk of downtime for breakdowns and maintenance in comparison to the existing, aging vessels. Hence, the CFIIS is expected to result in beneficial effects to the Corran Ferry service. This benefit is not expected to be significant to current operations, but rather the CFIIS is a safe-guard against future scenarios of increased service outage.

19.4.2 Disruption to Other Loch Users

The vessel movements of the Corran ferry service during operations will interact with other loch users (i.e., other vessels) potentially causing disruption through delays to navigational passage. As outlined previously in Section 3.5: Operational Scenarios, no material changes to the ferry service are envisaged. The operating vessel will continue to transit between slipways across the Narrows on a timetable or in shuttle-mode at peak times. Although the proposed service route in the operational phase is expected to lengthen slightly (from approximately 420m currently to an estimated 550m) and be relocated slightly north of the existing route (approximately 150m north), this is not considered a material change and therefore, unlikely to cause significant disruption to the passage of other loch users.

19.4.3 Potential for Collision Incidents Between Vessels

In the operational phase of the CFIIS, the Corran Ferry service will still operate with frequent crossings in a very similar trajectory across the Narrows, perpendicular to the navigational channel. As mentioned previously, the ferry route is expected to lengthen slightly and be located slightly north of the existing route. Changes to the operational scenario and route are minimal, and hence not expected to result in any material increase in the risk of collision incidents between vessels.

It is recognised however, that there is a small potential additional risk to navigation when the change in service route is first introduced. Therefore, good communications, including this issue of Notices to Mariners, will be employed to adequately inform other loch users of any changes to Corran Ferry operations or routes, as required. The NEV will display appropriate navigational lighting and markers in line with maritime rules and regulations. Subsequently, the CFIIS in its operational phase will not result in any significant effects with regard to risks of vessel collisions.

19.4.4 Potential for Collision Incidents with New Infrastructure

As mentioned in Section 19.3.4 for construction effects, CFIIS infrastructure will be installed well outwith the navigation channel. Similarly, there is no known reason for vessels un-associated with the Corran Ferry service to be transiting or operating in close proximity to the infrastructure during the operational phase, and therefore the risk of other vessels colliding with new infrastructure is low.

All infrastructure in the marine environment will be adequately marked with aids to navigation as agreed through consultation with the NLB. As built drawings will be communicated to authorities for updating navigational charts. Infrastructure will also be lit appropriately for safe navigation at the overnight berthing structure and slipways with input from THC Corran Ferry operations team where required. As such, no significant effects with regard the potential for collision incidents with new infrastructure are expected.

19.4.5 Impacts on Corran Point Lighthouse

Similar to construction effects, the CFIIS permanent lighting scheme will introduce new light sources, which, if poorly directed, could cause a nuisance to vessel skippers trying to navigate the channel. Wattage of permanent scheme lighting will be less than that of construction, and similarly signalled to be directional to infrastructure. Scheme lighting will be designed and installed to meet health and safety requirements and minimise unnecessary light pollution. Any residual light spill will have negligible effects on navigational aids in Loch Linnhe.

19.5 Proposed Impact Assessment

Although no significant impacts on navigation are anticipated from either the construction or operational phases of the CFIIS, it is acknowledged that no formal navigational risk assessment has been undertaken at this stage of the project. It is therefore proposed Navigation as a topic be **scoped in** to the CFIIS EIA. Rather than present a significance assessment however, it is proposed that the EIA chapter will consider navigational effects scoped in as per Table 19.5.1 as 'risks' and identifying mitigation to reduce these risks as far as reasonably practicable.

This risk assessment will be informed by consultation with other parties, including, but not limited to:

- NLB;
- MCA;
- Royal Yachting Association;
- THC ferry operations team; and
- MOWI fish farm operations team.

The risk assessment will also capture the need for additional communications for CFIIS construction and operations to other user groups of Loch Linnhe, including, but not limited to:

- Marine tourism businesses;
- Lochaber Yacht Club;
- Glencoe Boat Club;
- GaelForce Marine, Fort William; and
- Corpach Marina.

Mitigation outlined for risks associated with the construction phase of the CFIIS will then be carried forward for project implementation via the CEMD. Mitigation (i.e., controls) determined for operational risks will be managed by THC ferry operations team.

Table 19.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Disruption to the Corran Ferry Service	In	Out
Disruption to Other Loch Users	In	Out
Potential for Collision Incidents Between Vessels	In	In
Potential for Collision Incidents with New Infrastructure	In	In
Impacts on Corran Point Lighthouse	Out	Out

20 Population and Socioeconomics

The focus of this section is the potential impacts of the proposed CFIIS development on population and socioeconomics in the local area. Consideration is given to both the construction and operational phases of the project. As discussed in Section 2.3: Project Need, the importance of resilience in the Corran Ferry service for providing transport for local communities, tourists, goods, and services to and from the Ardgour side of the Corran Narrows is one of the main drivers for the CFIIS.

20.1 Policy and Resources

The CFIIS will align to Scotland's NMP, and in particular, the following socioeconomic policies relevant to the development include:

- **GEN 2 Economic benefits**: *Sustainable development and use which provides economic benefit to Scottish communities is encouraged when consistent with the objectives and policies of this Plan*; and
- **GEN 3 Social benefits**: *Sustainable development and use which provides social benefits is encouraged when consistent with the objectives and policies of this Plan* (Scottish Government, 2015a).

The NPF4 sets out the national planning policies for Scotland. Relevant policy themes associated with the CFIIS are Energy and Rural Development.

Under the theme of 'Energy', Policy 11(c) of the NPF4 states that:

> *"Development proposals will only be supported where they maximise net economic impact, including local and community socioeconomic benefits such as employment, associated business and supply chain opportunities"*.

Furthermore, under the theme of 'Rural Development', Policy 29 (a) of NPF4 states:

> *"Development proposals that contribute to the viability, sustainability and diversity of rural communities and local rural economy will be supported, including essential infrastructure"*.

At a regional policy level, the HwLDP sets out West Highland and Islands priorities, in particular that by 2030, the West Highland and Islands area will be better connected; under the HwLDP Vision, better ferries, better active travel, and access to greenspace and schools is noted as priorities underpinning this. Policy 43: 'Tourism' of the HwLDP supports the contribution of tourism to the Highland Economy and details the desire to promote proposals which safeguard responsible access to areas visited by tourists, and to increase the length of peoples stay.

A range of publicly available data sources have been used for this section, including:

- National Records of Scotland for life expectancy and population data;
- Scotland's Census 2022 results;
- Office for National Statistics for employment data;
- Highland and Island Enterprise research outputs; and
- National Marine Plan Interactive (NMPi) (Scottish Government, 2024a) and South-West Coast Regional Inshore Fisheries Group.

20.2 Baseline

According to the 2022 Census, the Highlands supports a population density of 9.2 people per km^2 (Scotland's Census, 2023) which is the second lowest council area population density in Scotland. Western peninsular communities of Ardgour, Sunart, Ardnamurchan, Moidart, Morar, Morvern and the Isle of Mull beyond are experiencing population trends that point towards an aging population (Stantec, 2022). The combined population of the peninsular communities in 2021 was 4809 (2019 Mid-Year Estimates, National Records of Scotland, 2024).

As of 2022, the region of Lochaber had a population of 23% aged 65 years and over and 16.3% children aged 0-15 years. Between 2002 and 2021, there was a 39% increase in the 65+ age group and a 10% reduction in the population under 16 years of age, whereas the population aged 16-64 years increased by only 4% (NHS Highland, 2022).

Highlands and Islands Enterprise (HIE) have suggested that this is due to limited employment opportunities on the peninsula. The requirement for younger people to move away for further and higher education means that there is often a 'brain drain'. Whilst some young people may return after they complete further/higher education, or at a later stage in working life when wider personal circumstances permit, it is more common for them not to return, or not to do so until they are reaching retirement age themselves (HIE, 2018).

In order to understand the productivity of a region, or area, Gross Value Added (GVA) is used to undertake statistical analysis. GVA is a metric used to measure the productivity (per head) contribution to an economic area or region. In GVA per head terms, Lochaber, Skye and Lochalsh, Arran and Cumbrae and Argyll and Bute are grouped together in the most recent Office for National Statistics data release. This area was in the top third of areas in Scotland in 2017, with a GVA per head of £27,614, sitting between £21,744 for the Outer Hebrides and £35,495 for the Shetland islands, comparing other island or isolated communities in the Highlands and Islands Region. (Office for National Statistics, 2024).

The top three employment sectors in Lochaber, Skye and Wester Ross in 2020 were:

- Accommodation & food services (25.0%);
- Wholesale and retail (12.8%); and
- Human health and social work (12.5%) (HIE, 2020).

The employment rate (for 16-64 recognised working age) was noted as 73% in 2020; similar to the national employment rate at the time (HIE, 2020). As noted in the Area Profile for Lochaber, Skye and Wester Ross by HIE, there is potential for exposure to the negative economic effects from both COVID-19 and Brexit in terms of employment and GVA per head (HIE, 2020), although the longer-term effects are uncertain.

20.2.1 Tourism

The tourism sector is an important part of the Lochaber economy, supporting business activities and employment opportunities across the area. Tourism is a diverse industry, with a range of subsectors such as hotels, camping sites and other provision of short stay accommodation, restaurants, bars, and recreational and cultural activities. In addition, other sectors in the local economy, for example retail and transport, benefit directly and/or indirectly from the tourism industry.

The trend across the Highland Local Authority Area is for increasing GVA for tourism businesses; £278million in 2022 up from £254million in 2008 (Scottish Tourism Observatory, 2023). In the latest data release of growth sector statistics for 2023, there were 1455 registered businesses in sustainable tourism in Highland (Scottish Government, 2024b). In 2019 the Highlands attracted 17% of all overnight trips and 13% of the total overnight tourism expenditure in Scotland, and this trend is set to continue, particularly driven by domestic tourism (VisitScotland, 2024). There are two businesses providing accommodation in Corran, The Corran Bunkhouse and The Corran serviced accommodation and one in Ardgour, The Inn at Ardgour.

Employment in the Accommodation and food services sector in Lochaber, Skye and Wester Ross (21.1%) was more than double that of the Highlands and Islands (10.0%) and Scotland (7.9%) in 2018, highlighting the importance of the tourism sector in the area (HIE, 2019). Between 2016 and 2018, the most popular activity undertaken as part of a day trip in the Highlands was to go for a meal in a restaurant, cafe, hotel, or pub establishment, followed by sightseeing on foot (VisitScotland, 2024). Food and drink establishments are found scattered across the western highland's peninsula, and further afield on Mull, catering to the tourist demand. The Inn at Ardgour and the Nomad café located in The Inn at Ardgour car park provide food and drink, and on the Nether Lochaber side of the Narrows, there are several food and drink establishments located on the A82 towards Ballachulish.

Loch Linnhe is located at the southern end of the Caledonian Canal, a route which attracts tourists on water-based activities such as boat charters, wildlife cruises, and paddle-sports. Consequently, tourism-related vessels pass through the Corran Narrows either towards Fort William, or into lower Loch Linnhe heading towards Mull and Oban. It is noted that the closest business offering boat charters or cruises are based at Fort William. There is also an active programme of cruise vessels transiting through the Corran Narrows to visit Fort William, with 17 cruise vessels scheduled for 2024 (FWMSCIC, 2024).

20.2.2 Fish Farming

A finfish farm 'Linnhe' (Site ID: FS0240), is located approximately 400m north-west of the CFIIS site. Atlantic salmon are farmed at this site, with a maximum permitted biomass of 2,500 tonnes. This site has been licenced since 1983. As discussed in Section 10.2.7, there are other fish farms in the vicinity, however, none of which are close enough to be directly affected by the development.

20.2.3 Fishing

Scotmap data from 2013, indicates that only Nephrop (Norwegian lobster) pots fishing is carried out in upper Loch Linnhe with, in the region of four boats operating. The monetary value of catches in the data block covering the Corran Narrows is very low, which would suggest that the majority of pots and associated catches are located further northeast in upper Loch Linnhe (Scottish Government, 2024a). This is as expected as Nephrops favour soft sediments, living in shallow burrows commonly in grounds with fine cohesive mud which is stable enough to support their unlined burrows (Marlin, 2008). As discussed in Section 11.2.1, the seabed in the area of the CFIIS is ether rockhead, or sands and gravels, neither of which are ideal habitat for Nephrops.

The Scotmap data shows a wider range of fishing activity is undertaken in outer Loch Linnhe including: scallop diving, nephrop trawling, nephrop, crab and lobster pots (Scottish Government, 2024a). Due to the lack of fishing activity in the vicinity of the CFIIS project, it is unlikely that there will be any interaction with the fishing sector, other than that already considered within topics such as navigation, see Section 19: Navigation. Hence, they are not considered further as a receptor in this section.

20.3 Potential Construction Impacts

The following effects on population and socioeconomics may result from the construction phase of the CFIIS:

- Creation of direct jobs;

- Creation of indirect jobs;
- Effects on the local community; and
- Effects on other businesses.

20.3.1 Direct Jobs

A range of roles requiring a variety of skills and expertise will be needed to construct the CFIIS including engineers, vessel skippers, plant operators and mechanical and electrical technicians. This will result in a temporary increase in direct employment in the area for approximately 12 to 18 months. It is anticipated that there may be up to 50 workers on site for a short duration at the peak of construction, however the number of workers on site is expected to be lower for the majority of the construction programme. These jobs may be taken up by local tradespeople or from workers relocating to the area for the duration of construction. Furthermore, there is a potential knock-on effect that employment is likely to provide training and upskilling opportunities, for example in the creation of apprenticeship positions.

The creation of direct jobs during the CFIIS construction will have a temporary positive impact on the economy, but not of a scale that is likely to be significant.

20.3.2 Indirect Jobs

It is recognised that additional direct jobs in the area may increase spending on goods and hospitality, which in turn can creation of indirect jobs, primarily associated with the service sector, such as hospitality, retail and accommodation. This is intrinsically linked to the number of workers, particularly those that may have moved to the area temporarily. Hence these indirect effects are deemed a positive. Goods and services required throughout the construction phase may be procured from local companies further adding to the potential for indirect employment creation in the area. Due to the relatively small scale and temporary nature of the construction works indirect job creation is not likely to be noticeable.

20.3.3 Effects on the Local Community

Effects on the local community may be realised through social interaction between the construction workforce and the local community, as noted in Section 21: Human Health. If a proportion of the workforce potentially moves to the area temporarily for the construction phase of CFIIS, this will include aspects such as housing, community identity and health care service provision. The impacts are expected to be non-significant due to only a proportion of the workforce likely to require temporary accommodation, and the availability of accommodation within a commutable distance to the Corran Narrows.

As those temporarily relocating to the area will be of working age and need a relatively good level of fitness to undertake construction activities, the workforce are unlikely to require extensive health care provision.

It is acknowledged that access across the Corran Narrows via the current Corran Ferry service will be maintained throughout the construction phase, enabling local communities and visitors to continue to access goods and services, and local facilities.

The construction works are located to the north of the Corran settlement and as such will have minimal effects on the local residents. On the Ardgour side, works will be carried out adjacent to the main road through the village, close to residential receptors. There are a range of potential effects on residents including dust, noise and impacts on access, although these will be considered in the specific topics (see Sections 8, 6 and 18 respectively), there is a need to understand the in-combination effects from a social perspective.

As such, there will be no impact to the local economy or socioeconomic landscape from this aspect of the construction as the service will remain unaffected.

20.3.4 Effects on Local Businesses

20.3.4.1 Tourism

As the ferry will remain operational during the construction phase of the CFIIS is not expected to have any significant adverse effect on the tourism sector businesses in the surrounding area such as accommodation, hospitality, or activity providers. The Corran Bunkhouse and The Corran serviced accommodation, are also unlikely to be directly affected by the construction works, as construction works on the Nether Lochaber side are to the north, with only minor works proposed adjacent to the settlement of Corran.

The Inn at Ardgour, and the Nomad café (a pop-up café located in the Inn at Ardgour car park) have been identified as direct receptors during construction, due to the proximity to the works and potential for disturbance or disruption to their business. General construction activities may give rise to impacts such as dust, in-air noise, and construction traffic-related impacts (as discussed in Sections 6, 8 and 18 respectively), potentially causing a disturbance to these businesses. Although these effects will be fully considered, and mitigation identified as part of the topic specific considerations it is prudent to consideration the in-combination effects on these two local tourism businesses.

Potential impact to other tourism related businesses in the area is limited to those that require passage through the Corran Narrows by vessel, such as boat charters, cruise vessels, paddle-sports providers and wildlife cruises. Effects on these businesses relate entirely to navigational impacts which will be fully considered under navigation as detailed in Section 19: Navigation. As it is envisaged that navigational effects can be fully mitigated, it is not expected that the CFIIS construction works would be detrimental to marine tourism businesses in the area. The need for clear communications with the marine tourism industry to ensure they are aware of the project and planned activities is however recognised.

20.3.4.2 Fish Farming

The Linnhe fish farm is in close proximity to the CFIIS and is considered a direct receptor. This is due to the potential impacts during the CFIIS construction phase on the live fish in the fish farm (discussed in Section 14.3), and potential navigational issues for fish farm vessels in the vicinity of the construction works (see Section 19). The relevant effects that could impact the fish farm will be fully considered, and mitigation identified as part of the topic specific considerations, however, the in-combination effects on the fish farm also needs to be considered.

20.3.4.3 Other Businesses

Other businesses that may require commercial vessel transit through Corran Narrows to deliver products and services, such as the forestry industry. Effects on these businesses relate entirely to navigational impacts which will be fully considered under navigation including as part of the assessment of disruption to other Loch Users as detailed in Section 19: Navigation. It is envisaged that navigational effects can be mitigated, hence it is not expected that the CFIIS construction works would be detrimental to other businesses in the area that move goods or provide services by vessel transit through the Corran Narrows. The need for clear communications with other businesses utilising the Corran Narrows to ensure they are aware of the project and planned activities is however recognised.

20.4 Potential Operational Impacts

During operations, CFIIS enables a resilient and reliable ferry service with a slight increase in capacity. The ferry upgrade primarily provides a sustainable long-term option to retain the existing transport linkage across the Corran Narrows between the local communities and for residents and visitors to the area. It ensures the vital income streams for the tourism industry and associated businesses, without losing the remote "island" feel of the peninsula. Growth in demand for the ferry service is predicted and accommodated by the CFIIS, but the CFIIS is not the reason for that growth. As such, although the CFIIS maintains resilience in the ferry service, it does not provide a positive change in socioeconomic terms as the service remains largely the same as is currently provided.

The following effects on population and socioeconomics may result from the operational phase of the CFIIS:

- Creation of direct jobs;
- Effects on the local community; and
- Effects on local businesses.

20.4.1 Direct and Indirect Jobs

The NEV ferry service is understood to require a similar number of operators as the present ferry service, and may present no, or few, additional direct jobs. Similarly, indirect jobs are unlikely to be created during the operational phase as the CFIIS enables a 'business as usual' ferry service for the longer term. As such, any associated effects to local population, local communities, or the economy of the area are recognised as negligible to no impact.

20.4.2 Social Effects on the Local Community

The CFIIS will retain access between Ardgour and Nether Lochaber for communities on either side of the Narrows by enabling the ferry service to continue, albeit as a more sustainable, reliable and resilient transport link. As such, it does not constitute a significant positive impact to the local communities by improving or adding to the existing service, rather that it enables similar level of service to be provided longer term and potential growth in demand to be accommodated. Although the CFIIS does not offer a significant enhancement or benefit to the local economy, without it, the ferry service would ultimately not be able to operate, and potentially lead to the loss of businesses and de-population of the western peninsular communities as a knock-on effect.

Once CFIIS becomes operational and the NEV arrives, the ferry service from the Nether Lochaber side will move out of the settlement of Corran. This is likely to reduce effects on local residents associated with ferry operations including reductions in traffic levels and associated noise. On the Ardgour side, the CFIIS is within the settlement, close to residential receptors. The potential effects on residents include changes to noise levels, traffic changes and views. As with construction, these effects will be considered in the specific topics (see Sections 8, 18 and 16 respectively), although there is a need to understand the in-combination effects from a social perspective.

20.4.3 Economic effects on Local Businesses

20.4.3.1 Tourism

The CFIIS enables a 'business as usual' scenario once constructed, granting businesses and service providers on either side of the Narrows a more reliable and resilient transport link for tourists, local communities, goods, and services.

Specific businesses located close to the CFIIS, maybe directly affected during the operational phase. On the Nether Lochaber side of the development, it is recognised that moving the ferry infrastructure away from the serviced accommodation may increase the amenity value for visitors staying overnight, due to a reduction in traffic movements. Accommodation providers in this location are unlikely to be reliant on passing trade, with the majority of people booking ahead. As such, these businesses will not be adversely affected by the operational stage of the CFIIS and will not be considered further.

Local businesses on the Ardgour side, in the immediate vicinity of the CFIIS, namely The Inn at Ardgour and the Nomad Café, may be affected by changes to the landscape as a result of the CFIIS ferry infrastructure, traffic movements and associated in-air noise effects as discussed in Sections 16, 18 and 6 respectively. As with the construction stage there is a need to understand the in-combination effects on these receptors.

20.4.3.2 Fish Farming

It is not expected that there will be any adverse effects to the Linnhe fish farm, once the CFIIS is operational.

20.4.3.3 Other Businesses

Once operational it is not predicted that the CFIIS or associated ferry use will cause disturbance to other loch users (see Section 19.4.2). Hence other businesses that may require commercial vessel transit through Corran Narrows will not be affected. Noting that any risks of vessel collision will be assessed for operations as detailed in Section 19.5. Hence no impact to other businesses is expected once the CFIIS is operational.

20.5 Proposed Impact Assessment

It is proposed that direct and indirect jobs are **scoped out** of the EIA for both the construction and operations phases. Any employment creation through the construction phase either directly or indirectly is recognised as short-term and non-significant in EIA terms for the local area, and as such does not require further consideration through EIA.

Potential social effects to local communities and effects to specific local businesses proposed as **scoped in** to the EIA for both construction and operational phases. This is to allow the in-combination effects resulting from the CFIIS to be considered holistically, drawing upon the findings of other topics assessments within the EIA. This approach will allow a full assessment of the socioeconomic impacts to be undertaken and a joined up approach to any proposed mitigation to be proposed.

Table 20.5: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Direct jobs	Out	Out
Indirect jobs	Out	Out
Social Effects on the local community	In	In
Economic Effects on local businesses – Tourism (Ardgour Receptors only)	In	In
Economic Effects on local businesses – Fish Farming ('Linnhe' only)	In	Out
Economic Effects on local businesses – Other Businesses	Out	NA

NA = Not applicable.

21 Human Health

As defined in the World Health Organisation's (WHO) constitution, health is a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity (WHO, 1946). From an EIA perspective, public health is considered in terms of both potential positive and negative impacts on the health of the population. Construction site health and safety for both employees and the general public is covered under compliance with the Health and Safety at Work Act 1974 and is not considered further within an EIA.

21.1 Policy and Guidance

The IEMA guide to Effective Scoping of Human Health in EIA was issued in 2022, and this sets out a framework for considering all aspects of Human Health through the EIA scoping process. This guidance has provided the framework for this scoping assessment. No external stakeholder engagement has been carried out, as input from the NHS Highlands Health Board has not been deemed appropriate at this stage due to the nature of the project and potential effects. The Scottish Public Health Observatory (ScotPHO) website has been utilised as a source of relevant information with regards to the health of the Scottish Public (ScotPHO, 2023).

The NPF4 sets out under 'Health and Safety' Policy 23:

> *'To protect people and places from environmental harm, mitigate risks arising from safety hazards and encourage, promote and facilitate development that improves health and wellbeing.' (Scottish Government, 2023).*

The Public Health Scotland's strategic plan 2022 to 2025 (Public Health Scotland, 2022) sets out a vision that health and wellbeing is promoted. This includes supporting action across Scotland to improve life expectancy and reduce health inequalities.

In a local context, the HwLDP Vision is that:

> *'By 2030, Highland will be one of Europe's leading regions. We will have created sustainable communities, balancing population growth, economic development, and the safeguarding of the environment across the area, and have built a fairer and healthier Highlands. Access to the outdoors is important to Highland for recreation, tourism and to*

help everyone maintain a healthy lifestyle. Achieving a Healthier Highlands is possible by providing for the development of places that contribute to increasing healthy lifestyles, opportunities for quality open space provision and access to enjoy the outdoors.'

Through the facilitation of the NEV, the CFIIS aligns with this vision as it ensures a viable, resilient link between the western peninsular populations and Lochaber. Healthy lifestyles can be promoted by providing access to a range of health services in Fort William and further afield, and access to enjoy the outdoors for those communities on either side of the Corran Narrows.

21.2 Baseline

As discussed in Section 2.1, the scheme is located at the Corran Narrows, approximately 7 miles south-west of Fort William. There are two small settlements in close proximity to the development; Ardgour on the western shore of Loch Linnhe, and Corran, on the eastern shore. Scoping will consider population health influencing factors such as behavioural, social, economic and bio-physical factors for the site-specific workforce for the CFIIS, the local populations of Ardgour and Corran and the wider regional populations on either side of the Corran Narrows.

Ardgour is a small settlement of approximately 30 houses and the Inn at Ardgour. Several settlements are located across the western Ardnamurchan peninsula, and all rely on either the Corran Ferry service or an alternative 40-mile journey, partly by single track road, to access vital health and wellbeing services.

There are a range of clinical, behavioural and lifestyle risk factors which impact upon human health. A 2009 report from WHO identified five behaviours which contribute to approximately 90% of the total burden of disease in high income country populations. These are noted as tobacco use, alcohol consumption, poor diet, physical inactivity and overweight and obesity, all of which have an impact on the health and wellbeing of people living in Scotland. For example, 63% of the adult population are categorised as 'overweight including obesity' resulting in health care impacts with an estimated economic cost of £4.6 billion per year (ScotPHO, 2023). The sum of these contributing factors results in Scotland having one of the lowest life expectancies in Western Europe, with the life expectancy at birth for males being 76.6 years on average and females being 80.8 years on average (ScotPHO, 2023).

In the Highland Council area, life expectancy is slightly higher than the Scottish average at 77.6 years and 82 years for males and females respectively. The population of the Highlands was 7th highest out of 32 council areas in Scotland in 2021, with a population of at 238,060. However, the population density is joint lowest in Scotland at 9 persons per square kilometre (National Records of Scotland, 2023). Although the Highland Council area covers a vast landscape encompassing isolated rural communities as well as the vibrant, expanding city of Inverness, the population of the Highlands is expected to remain stable over the next few years with a 0.5% forecast increase between 2018 and 2028. At a more local scale, the western peninsular communities are experiencing population trends that point towards an aging population and a 'brain drain' of younger people as mentioned previously in Section 20.2.

Deprivation also has an impact on health, wellbeing, and overall life expectancy. At present, almost one in five working-age adults in Scotland live in poverty (ScotPHO, 2023). However, none of the 20% most deprived areas of Scotland are found in the rural populations on the

Ardnamurchan Peninsula or within Ardgour or Corran settlements adjacent to the CFIIS (Scottish Government, 2020b), so this is not seen as a particular health concern for the project.

Medical practises are located at Morvern and Acharacle serving the rural populations on the western peninsula. Dentist care is available in Fort William, along with the provision of Accident and Emergency services at the Belford Rural District Hospital. The city of Inverness provides specialist medical clinics at Raigmore General District Hospital, and the National Treatment Centre. The Corran Ferry is utilised to provide a vehicular access service to the health facilities described in Fort William, as an alternative to the 40-mile additional road route.

21.3 Potential Effects

The IEMA Guide to Effective Scoping of Human Health in EIA proposes a list of determinants of health to be considered in scoping and a number of steps to be undertaken to identify whether any of the determinant factors should be scoped into the EIA. In the first instance, there needs to be a source – pathway – receptor linkage to make an impact likely. Where a determinant factor is likely to occur, then the scale of the change (be it positive or negative) needs to be assessed to identify if it could be significant. In the event that a negative effect could be significant, then committed mitigation can be taken into account to determine if the effect can be scoped out. In the event of a potentially positive effect, consideration is given to whether committed enhancements are sufficient to maximise the benefits. If so, the topic can be scoped out (IEMA, 2022b). Table 21.3.1 provides a list of determinants relevant to the CFIIS, identifies if there is a likelihood of an effect, considers significance and presents the committed mitigations/enhancements to inform the scoping in or out of each determinant.

Table 21.3.1: Consideration of Potential Human Health Effects

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
Health Related Behaviours	Physical Activity	Potential during operation.	The CFIIS will facilitate active travel by encompassing cycling and walking facilities in the design, contributing to the wider encouragement of participation in physical activities as described in Section 3: Development Description.	Positive – non-significant.		Out
	Risk Taking Behaviour	None.	The development does not have any elements which are likely to give rise to any direct change in risk-taking behaviours or diet/nutrition of the population.			Out
	Diet and Nutrition	None.				Out
Social Environment	Housing	Potential during construction.	Expected increased demand for accommodation in the Fort William area due to an influx of construction workforce. This could put pressure on rental housing availability in Fort William (as the closest larger settlement) and nearby towns, however this is not considered to be a significant impact due to the scale of the rental demand and duration of the construction period.	Negative – non-significant.		Out
		Potential during operation.	It is noted that there is not understood to be an increased demand for ferry operatives over and above current levels. Hence no change to the housing demand relating to the CFIIS.	No Change		Out
	Relocation	Potential during construction.	It is recognised that there may be a temporary relocation of workforce personnel associated with the CFIIS construction phase to the Fort William population catchment. Fort William has suitable leisure and social amenities to support the size of the CFIIS construction workforce, expected to be <50 people at any time during the construction period (some of	Negative – non-significant.		Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			whom will already live locally). Significant impacts are deemed unlikely due to the short term small-scale relocation into the area.			
	Open space, leisure and play	Potential during construction.	The development is not located in an area where it may impact significantly upon the availability of, or access to, open space, leisure or play facilities (e.g., the playground at Ardgour or foreshores of Corran Narrows). Operation of the Corran Ferry will continue throughout the construction phase, ensuring access to open space and/or leisure activities within the wider area is uninhibited.	Negative – non-significant.		Out
		Potential during operation.	The CFIIS facilitates the introduction of the NEV. The associated continued reliability of the ferry service will facilitate continued access in either direction for outdoor pursuits or organised leisure activities.	No Change		Out
	Transport modes, access and connections	Potential during construction.	The construction works will not affect the ability of the ferry to operate, hence connectivity will be retained. Works on the new junction onto the A82 could require local traffic management but not to an extent that it would affect access as discussed in Section 18.	Negative – non-significant	Mitigation identified as part of the Traffic, Transport and Access Assessment (see Section 18).	Out
		Potential during operation.	The scheme promotes sustainable methods of transport via cycle/footpath connectivity (including to the National Cycle Network and the bus stop) and electric-powered vessels and vehicles. The CFIIS facilitates the introduction of the NEV. The associated continued reliability of the ferry service will facilitate continued access to amenities including health	Positive – Non-Significant	Mitigation & Enhancement identified as part of the Traffic, Transport and Access	Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			services, social care and education for the Ardgour community and Ardnamurchan populations.		Assessment (see Section 18).	
	Community safety	Potential during construction.	No linkage between the scheme and human health related to crime risk. Construction health and safety risks will be managed by working in accordance with the Health and Safety at Work Act 1974 to ensure risk of injury to the public is minimised. Safety measures such as security fencing and signage will be in place to exclude unauthorised people.	None		Out
		Potential during operation.	The proposed CFIIS design will reduce the safety risk of crew transfer through the provision of an overnight berthing structure, eliminating the safety risks associated with vessel-to-vessel crew transfer. The new A82 road junction provides the opportunity for improved road safety at a known hazardous junction.	Positive – non-significant.	Mitigation & Enhancement identified as part of the Traffic, Transport and Access Assessment (see Section 18).	Out
	Community identity, culture, resilience and influence	Potential during operation.	As discussed in Section 2.2, the ferry has operated on the Corran Narrows for centuries, and hence is part of the community identity. This is particularly true on the Ardgour side, as it is the main access point onto the Peninsula. Provision of a resilient ferry service leads to the increased likelihood of retaining communities and populations across the Ardnamurchan peninsula, resulting in a positive (but not significant) impact in EIA terms.	Positive – non-significant.	Mitigation & Enhancement identified as part of the LVIA (see Section 16).	Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			Negative impacts on the Corran community associated with ferry traffic marshalling in the middle of the settlement, will be removed by the relocation of the ferry slipway to the north of the settlement. It is recognised that landscape and visual effects can impact upon community identity, this will be fully considered in Section 16: Landscape and Visual. Overall, the impacts on community are deemed to be positive.			
	Social participation, interaction and support	Potential during operation.	A reliable ferry service facilitated by the CFIIS will ensure ongoing connectivity to social networks, thus allowing communities from either side of the Corran Narrows to participate in community events for social engagement, and access family and/or social support networks.	No Change		Out
Economic Environment	Education and training	Potential during construction.	The CFIIS may provide opportunities for work experience placements, apprenticeships, and further training during the construction phase. This may have a positive (although not significant in EIA terms) health impact on the mental wellbeing of the local community.	Positive – non-significant.		Out
		Potential during operation.	The reliable ferry service facilitated by the CFIIS may help retain the populations on the Ardnamurchan peninsula and in turn, increase the viability of rural primary and secondary education providers. Rural populations may utilise the ferry service to attend the University of the Highlands and Islands	No Change		Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			(UHI) West Highland College campus at Fort William, enhancing and retaining skills within the rural populations on the western side of the Corran Narrows. Conversely, students from Lochaber may utilise the continued ferry service to access UNI courses at the UHI college building at Strontian.			
	Employment and income	Potential during construction.	CFIIS presents local employment opportunities during construction and within the wider supply chain, as noted in Section 20: Population and Socioeconomics. This will have a positive health impact (although non-significant in EIA terms) on the mental wellbeing of the local community.	Positive – non-significant.		Out
		Potential during operation.	The new ferry service facilitated by the CFIIS is noted as requiring similar staffing numbers as the current service, hence this is considered not to impact the employment potential or income for the local community.	No Change		Out
Bio-physical Environment	Climate change mitigation and adaptation	Potential during construction.	The construction works will not change flood risks to the village of Ardgour.	No Change		Out
		Potential during operation.	One of the primary drivers of the CFIIS is to reduce carbon emissions over the lifespan of the ferry service via the introduction of an NEV. Carbon emissions for operations has been proposed to be scoped in to allow for lifecycle carbon assessment; see Section 22: Climate Change. The design of the development takes into account the likelihood of more intense and frequent extreme weather events and aims to ensure it will not	Positive – unknown significance. No Change	Design to take account of flooding and climate change as detailed in Section 11; Seabed, Coastal Processes and Flooding.	Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			exacerbate the impacts of climate change on local communities.			
	Air quality	Potential during construction.	Human health impacts associated with air quality are considered in Section 8: Air Quality. Mitigation will be implemented to minimise any effects to air quality, and consequently any knock-on health implications through the exposure to dust. Hence, it does not require separate consideration.	Negative – non-significant.	Mitigation identified as part of the Air Quality Impact Assessment (see Section 8).	Out
	Water quality or availability	Potential during construction/ operation	Water quality is considered in Section 10 with no significant effects identified for either construction or operational phases, and therefore no knock-on human health implications.	Negative – non-significant.	Mitigation identified for Water Quality (see Section 10.6).	Out
	Land quality	Potential during construction/ operation.	Potential effects on geology, land and soil quality as a result of the CFIIS will not be significant, as noted in Section 9: Geology, Land and Soils. Any associated human health effects from land quality impacts are considered to be non-significant.	Negative – non-significant.	Mitigation identified for Geology, Land and Soils (see Section 9.5).	Out
	Noise and vibration	Potential during construction and operation.	The development has potential during both construction and operational activities to give rise to adverse in-air noise and vibration impacts, which can in turn have effects on human health. As in-air noise and vibration has potential to give rise to significant impacts to human health, this is proposed to be scoped in to the EIA, and addressed via a Noise Impact Assessment as discussed in Section 6: In-Air Noise and Vibration.	Negative – unknown significance.	Mitigation identified as part of the Noise Impact Assessment (see Section 6).	Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
	Radiation	None.	Electrical cables give rise to Electric and Magnetic Fields (EMF), however as these are undergrounded, they will be insulated from human receptors. Consequently, there will be no impact to human health.	None	All cables will be installed underground.	Out
Institutional and Built Environment	Health and social care services	Potential during construction.	The construction phase of CFIIS could give rise to a potential increase in demand due to the creation of employment, however, additional workforce will be working age and expected to be in good physical health in order to undertake construction site duties. This is therefore deemed a negligible impact to the provision of health and social care services	Negative – Negligible.		Out
	Built environment	Potential during operation.	Built facilities of the CFIIS have been designed in consideration of inclusivity and access-for-all (i.e., wheeler access where appropriate, disabled car parking bays and a changing places toilet.	Positive – non-significant.	Facilities included within the proposals, including (Changing place toilet).	Out
	Wider societal infrastructure and resources	Potential during operation.	The CFIIS will provide continuity and resilience in essential life-line services and social connectivity for isolated rural communities. The facilitation of electric-powered transport is hoped to promote future investment in local/sustainable energy generation projects and utilisation of more sustainable transport options, supporting public health and mental wellbeing.	Positive – non-significant.		Out

Categories	Wider Determinants of Health	Likelihood (Source, Pathway, Receptor)	Comments	Significance (Positive or Negative)	Committed Mitigation/ Enhancements	Scoped In/ Out
			The CFIIS layout has also been developed so as not to conflict with future council and community aspirations for a fixed link across the Corran Narrows.			

21.4 Mitigation Measures

As detailed in Table 21.3.1, mitigation and enhancements identified to minimise negative effects and maximise beneficial effects considered in other topics, such as Air Quality, will ensure the protection of human health. As such, no specific human health mitigation is required.

21.5 Proposed Impact Assessment

Through consideration of topics relevant to human health in these other sections, it is considered that sufficient assessment and mitigation will be outlined within the CFIIS EIAR to manage potential negative impacts on human health. As such, Human Heath is **scoped out** of the EIA for both CFIIS construction and operations as detailed in Table 21.5.1.

Table 21.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Impacts on Human Health	Out	Out

22 Climate Change

This section aims to identify potential environmental impacts from GHG emissions and/or savings from the construction and operational phases of the proposed scheme.

22.1 Legislation, Policy and Guidance

Scotland has its own national targets to reduce GHG emissions, which are set out in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. This Act aims to ensure Scotland contributes appropriately to the world's efforts to deliver on the Paris Agreement. Emissions Reduction Targets includes a reduction of all GHGs to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030, and 90% by 2040, as per the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

It is noted that the Climate Change Committee, an independent statutory body established under the Climate Change Act 2008, have since stated that continued delays to Scotland's Climate Change Plan (CPP) and further slippage in promised climate policies mean that the Climate Change Committee no longer believe that the Scottish Government will meet its statutory 2030 goal to reduce emissions by 75% (CCC, 2024). The Scottish Government have since recognised that a new CCP, with different targets within the existing legislation, is the most likely course of action.

With regards to international policy context, the UK is a signatory to a number of the United Nations Framework Convention on Climate Change agreements (UNFCCC, 2022), including:

- **The Kyoto Protocol -** transposed into the Climate Change Act 2008 (as amended), which committed the UK to achieving a net carbon account for the year 2050 to be 100 % lower than the 1990 baseline;
- **The Paris Agreement -** a legally binding international treaty agreed in 2016, that aims to limit global warming to below 2, preferably to 1.5 degrees Celsius, compared to pre-

industrial levels. It requires countries to reach global peaking of GHG emissions as soon as possible to achieve a climate neutral world by mid-century; and
- **Glasgow Climate Pact -** an agreement in which countries will intensify efforts to build climate change resilience, to curb GHG emissions and to provide the necessary finance for both.

The Scottish Government have a number of planning policies detailed in NPF4 which aim to deliver the aforementioned targets. NPF4 policies that are relevant to climate change and the proposed scheme are as follows:

- **Policy 1 – Tackling the Climate & Nature Crises:** When considering all development proposals significant weight will be given to the global climate and nature crises;
- **Policy 2 – Climate Mitigation & Adaptation:** To encourage, promote and facilitate development that minimises emissions and adapts to the current and future impacts of climate change;
- **Policy 11 - Energy:** To encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage;
- **Policy 13 – Sustainable Transport:** To encourage, promote and facilitate developments that prioritise walking, wheeling, cycling and public transport for everyday travel and reduce the need to travel unsustainably; and
- **Policy 20 - Blue & Green Infrastructure:** To protect and enhance blue and green infrastructure and their networks (Scottish Government, 2023).

The Scottish Government also has general policies as part of the Scotland's National Marine Plan which are in favour of sustainable development and use of the marine environment. Relevant policies to climate change and the proposed scheme are as follows:

- **GEN 5 - Climate Change:** Marine planners and decision makers must act in the way best calculated to mitigate, and adapt to, climate change; and
- **GEN 14 - Air Quality:** Development and use of the marine environment should not result in the deterioration of air quality and should not breach any statutory air quality limits (Scottish Government, 2015a).

In the local context, HwLDP policy relevant to climate change includes:

- **Policy 67 - Renewable Energy Developments:** Renewable energy development proposals should be well related to the source of the primary renewable resources that are needed for their operation. The Council will also consider:
    - the contribution of the proposed development towards meeting renewable energy generation targets; and
    - any positive or negative effects it is likely to have on the local and national economy (THC, 2012).

The following guidance and information were used to inform this section:

- IEMA Guide: Assessing GHG Emissions and Evaluating their Significance 2nd Edition (IEMA, 2022c);

- Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation (IEMA, 2020c);
- GHG Protocol Corporate Standard (World Resources Institute, 2015); and
- Pathways to Net Zero: Using the IEMA GHG Management Hierarchy (IEMA, 2020d).

22.2 Baseline

22.2.1 Greenhouse Gas Emissions

Since the mid-1800s, the human population has actively contributed towards the release of carbon dioxide and GHGs into the air, causing global temperatures to rise and long-term changes in climate patterns. This was mainly due to burning of fossil fuels during the Industrial Revolution (Met Office, 2023). Latest statistical data available shows that in 2021, Scotland's total emissions of GHGs were estimated to be 41.6 million tonnes carbon dioxide equivalent ($MtCO_2e$) (Scottish Government, 2021). Figure 22.2.1 illustrates the trend in Scottish GHG emission between 1990-2021.

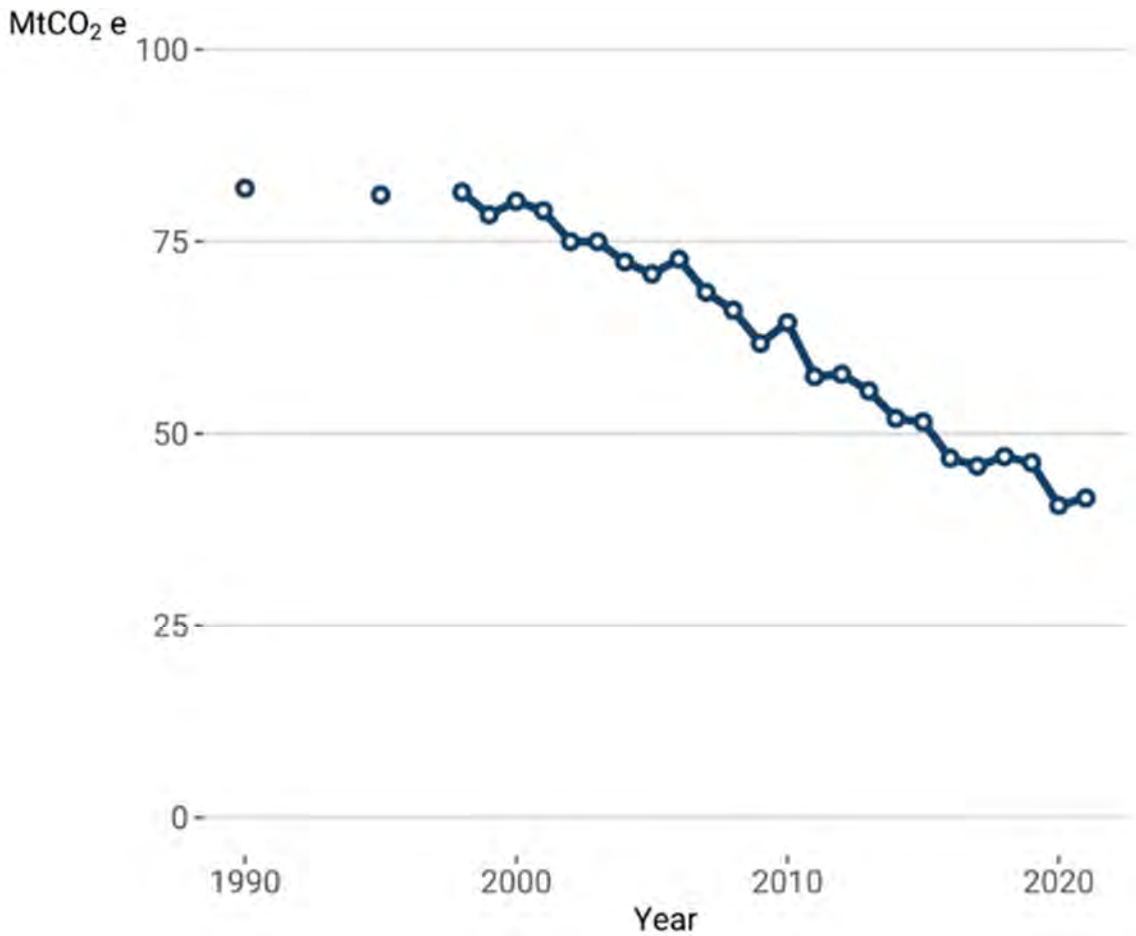

Figure 22.2.1: Scottish GHG Emissions, 1990-2021 (Scottish Government, 2021)

The Corran Ferry service currently consumes approximately 850 litres of diesel per day, or just over 310,000 litres per year. Emissions from Scottish domestic ferries, including council and private operators contribute towards 1.7% of total transport emissions which equates to less than 1% of total GHG emissions in Scotland (Transport Scotland, 2022).

22.2.2 Climate Change

As a result of carbon emissions since the start of the Industrial Revolution (1850) until 2022, the global mean temperature has increased by over 1 °C (Met Office, 2023).

It is predicted that by 2070:

- Winters will be between 1 and 4.5 °C warmer and up to 30 % wetter; and
- Summers will be between 1 and 6 °C warmer and up to 60 % drier (Met Office, 2023).

Scotland in general, has cool summers, mild winters, and rainfall throughout the year. However, in recent times, the climate has started to change as a result of global warming. Over the last few decades, Scotland has experienced a warming trend, with shifting rain patterns. It is expected that in the future, winters will be warm and wet, with summers being hot and dry (Scotland's Environment, 2023). To put this into context, Scotland has experienced 10 of its warmest years, since records began, since 1997. Furthermore, we can also expect an increase in the volume of extreme weather events, such as flooding, which may be more intense than previously experienced.

In the UK, coastal waters are also rising at rates of up to 2 millimetres (mm) per year due to climate change, and as a net result, the whole of Scotland is now experiencing sea-level rise (NatureScot, 2022b).

22.3 Potential Construction Effects

22.3.1 Greenhouse Gas Emissions

The carbon cost associated with the proposed scheme can arise from a multitude of activities, such as:

- Intrinsic carbon cost associated with raw materials – metals, concrete, wood and plastics;
- Carbon emissions as a result of vehicle and vessel movements associated with delivery of construction materials and transport for the construction workforce; and
- Carbon emissions from construction plant use.

The aforementioned impacts will be minimised, where practicable, by the reuse of material on site, for example, rock and dredge material as infill. Similarly, materials will be responsibly sourced, with consideration and preferentially utilising locally sourced materials, recycled materials over raw materials. Transport carbon emissions will be minimised by effective scheduling of construction works and material and plant delivery.

22.3.2 Climate Change

Construction activities associated with the CFIIS are not expected to contribute to an increase in extreme weather events and flooding. Extreme weather is a possibility during construction and may hamper progress of works, for example high winds can restrict the pilling works, the use of cranes and other tall plant items. In addition, high winds can generate adverse wave conditions which may impact construction activities for the marine works. The construction management team will need to consider both seasonality and weather restrictions to minimise delays where possible. Weather forecasts will be used to predict extreme weather events, to inform planning, to ensure the site is 'made safe' ready for a given event. This may involve the stowing away or tying down of plant and equipment. Although a consideration, impacts as a result of extreme weather are unlikely to be significant to the outcome of the CFIIS or the surrounding area.

22.4 Potential Operational Effects

22.4.1 Greenhouse Gas Considerations

The following operational activities will change GHG emissions:

- Ferry operations;
- Lighting and onshore operations; and
- EV charging and active travel.

CFIIS facilitates the introduction of an NEV, which will reduce the GHG emissions associated with the operation of the ferry service over the use of diesel-powered vessels. It is acknowledged the diesel-powered MV Corran may continue to operate the ferry service in the short-medium term and as a backup vessel. Additionally, a temporary diesel generator may be utilised to charge the NEV battery system until a suitable grid connection is finalised. Ultimately, the proposed NEV will lead to lower total emissions when in use, using modern technology, efficient design and with the opportunity to be powered from the national grid which has a growing portion of renewable energy sources connected.

It is recognised that there will still be GHG emissions associated with the lighting and onshore operations of the CFIIS. Electricity will be required for the proposed EV charging units, new scheme lighting, the purser's kiosks and toilet block. Although the fossil fuel contribution to electricity provided by the national grid continues to reduce, electricity in the UK still has a GHG cost.

The proposed electric EV charging stations and connectivity to the active travel network will encourage and facilitate public use of 'greener' methods of transport. Providing facilities for electric vehicles will encourage their usage. Maintaining the connection to the active travel network will continue to encourage the use of bikes and will discourage the use of cars and other fossil fuel powered vehicles. The active travel network is discussed further in Section 18: Traffic, Transport and Access.

The CFIIS facilitates the introduction of the NEV, the vessel itself is not part of the project. However, it is recognised that there is a carbon cost associated with construction of the new vessel, but the carbon cost of a vessel, regardless of whether it is a NEV, or diesel powered, would be similar.

In summary, the operations of the CFIIS, by nature, will result in a positive effect on GHG emissions over the life to the project, as the project will encourage the use of renewable electricity over the burning of fossil fuels. Operational GHG emissions will still require further assessment within the EIA to gain a greater understanding of the overall carbon cost of the development.

22.4.2 Climate Change

The design of the development will take into consideration the likelihood of sea level rise and more intense and frequent extreme weather events, including flooding. Wave and tidal modelling that has been undertaken thus far, has taken extreme weather events into consideration, in order to inform the current design. Various elements of the scheme have been incorporated to improve ferry service resilience in adverse weather, including the introduction and locations of the alignment structures, fendering, breakwater and the overnight berthing structure. Purser kiosks also provide a benefit to staff members during adverse weather events, providing a safe shelter from the sun, rain or cold weather. Therefore, it is expected that there will be no significant adverse environmental impacts of climate change on CFIIS operations. It is recognised that there is a link between climate change and coastal processes (extreme storms) and flooding (including sea level rise), these are considered in Section 11: Seabed, Coastal Processes and Flooding.

22.5 Proposed Impact Assessment

One of the primary drivers of the CFIIS is to reduce carbon emissions over the lifespan of the ferry service through the introduction of a NEV, whilst providing infrastructure for a reliable transport service for tourists and locals alike. As such, it is proposed that GHG emissions for both the construction and operational phase are **scoped in** to the EIA to provide an in depth understanding of impacts and their significance.

It is proposed that construction and operational phase climate change impacts are **scoped out** of the CFIIS EIA. By design, the project will consider effects of climate change, namely sea level rise and an increase in intensity and frequency of extreme weather. Hence, no significant effects on the scheme are expected. However, it is recognised in Section 11: Seabed, Coastal Processes and Flooding that flooding requires further assessment, inclusive of flooding caused by climate change. A summary can be seen in Table 22.5.1.

Table 22.5.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
GHG Emissions	In	In
Climate change impacts	Out	Out

Carbon dioxide equivalent (CO_2e) calculations will be undertaken for all stages of the development, to allow a lifecycle carbon assessment to be undertaken in alignment with the GHG Protocol Corporate Standard (World Resources Institute, 2015). This will not consider the cost of construction of the new vessel. Where appropriate the current UK Government GHG Conversion Factors for materials and activities will be utilised (UK Government, 2023a).

23 Major Accidents and Disasters

The IEMA guidelines on Major Accidents and Disasters in EIA (IEMA, 2020e) provide the following statements which have been used in for the purpose of scoping:

- A major accidents is '*an event (for instance a train derailment or major road traffic accident), that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the client or its appointed representatives (i.e., contractors) to manage*';
- Major accidents can be caused by both man-made and natural hazards;
- A disaster is '*a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident*'; and
- A significant environmental effects in relation to a major accidents and/or disaster assessment '*could include the loss of life, permanent injury and/or temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration*'.

23.1 Legislation and Guidance

Various legislation is in place to as part of the governance structure of activities which could give rise to major accidents. This is to help ensure major man-made accidents do not occur. Relevant legislation is discussed as required in Section 23.3.

The guidance utilised in the production of this section is:

- Major Accidents and Disasters in EIA: A Primer - IEMA Guidelines (IEMA, 2020e).

23.2 Baseline

23.2.1 Biological Hazards

As the COVID-19 pandemic has highlighted, the spread of communicable diseases through the population can pose a high risk to people on both local and global scales. Although the Corran Ferry service provides a highly-utilised transport connection between the communities of the western peninsula and the Isle of Mull with those of Lochaber and the wider region, the communities on either side of Loch Linnhe (and beyond) are still connected by other, transport links. As such the Corran Ferry service is not identified as a notable contributor toward the spread of communicable diseases.

During the COVID-19 pandemic, the Corran Ferry service remained operational as an essential service provider. Throughout the period that government COVID-19 measures were in place, the Corran Ferry service continued to provide transport services for the local community and businesses by implementing protocols compliant with federal government guidance to ensure the health and safety of its employees and members of the public. This included a period in which passengers were not charged a fare for the ferry, so as to reduce the risk of disease transmission. No issues requiring further incident management with regards to COVID-19 arose in relation to Corran Ferry operations. There are currently no COVID-19 management measures in force in the UK (UK Government, 2023b).

Biological hazards may also be considered in terms of infestations by fungal pathogens, insects etc. There are no known occurrences or current sources identified, that could be transferred by the ferry.

23.2.2 Fire

There are no records or anecdotal evidence of fires associated with the ferries or ferry infrastructure having occurred. There are, however, flammable materials including fuels and oils stored and used on the ferries. These are appropriately managed in line with CAR and COSHH Regulations.

23.2.3 Transport and Navigation Incidents

The A861 through Ardgour, although an 'A' road, is a single carriageway from the existing ferry slipway to the south, and a single track road with passing places from the slipway to the north. The A861 has a 30 mph speed limit through Ardgour past the Inn at Ardgour and the existing ferry infrastructure.

On the Nether Lochaber side, the A82 trunk road, is a single carriageway of two-way traffic, with a 50 mph speed limit in proximity to the CFIIS scoping boundary. Hence, transport incidents in proximity to the CFIIS would be unlikely to be of a scale to be classed as major accidents due to the volume of traffic and speed of traffic flow.

As discussed previously, the A82 junction with the A861 through Corran is a known regional hotspot for traffic accidents. Six incidents have occurred in the vicinity of the A82 junction between 2017 and 2022 (refer Section 18.2.5 for further information) although none of these would have been classed as a major accident. It is noted a road traffic accident that blocks the A82, may result in lengthy diversions for traffic due to a lack of local alternative road routes.

As outlined in Section 19.2.4, only a few maritime incidents were identified in Loch Linnhe in the recent past, none of which would be considered major accidents.

23.2.4 Natural Disasters

Storm events bringing strong winds are a relatively regular occurrence in western Scotland. Whilst storm wind and wave conditions in the Corran Narrows are slightly subdued by the low lying, sheltered nature of location compared to more exposed land, the existing ferry service is particularly at the mercy of adverse weather. Hence, in considerably adverse weather conditions, the Coran Ferry service can be suspended due to safety considerations. Consequently, there is no risk of major accident occurring during storm events.

While earthquakes are occasionally recorded in Scotland, most are of a low magnitude (<2) on the Richter scale and subsequently go unnoticed by the general population. A study by Musson (2007) shows that historically, the Great Glen Fault (on which the Corran Narrows are located) appears to act as the locus for an assemblage of faults that produce minor earthquakes. However, none of these minor faults are of uniquely important status and Musson (2007) goes on to say that it would be incorrect to state that the Great Glen Fault is an "active fault" for seismic activity. The most recent record of an earthquake in Scotland was recorded as originating at Moidart, West Highland in 2017. This was classified as Light (measuring 4.0 on the Richter Scale). The most recent record of a Moderate earthquake (measuring 5.0 on the Richter Scale) was in 1901 near Inverness (British Geological Survey, 2023).

23.3 Potential Impacts

New development and/or aspects of construction and operational scenarios have the potential to vary the effects, or magnitude of effects, with regard to major accidents and disasters. A list of potential major accidents and disasters has been developed, and each is considered in terms of how the location and proposed use of the CFIIS may affect the risk of each accident/disaster scenario (see Table 23.3.1).

The IEMA (2020a) guidance in its scoping decision process flow asks the question: '*Do existing design measures or legal requirements, codes and standards adequately control the potential major accident and/or disaster, or will it be adequately covered/assessed by another topic?*' If the answer is yes, the topic can be scoped out for further consideration. Hence, Table 23.3.1 signposts to relevant sections within this document, design standards, legal requirements, codes and standards.

Table 23.3.1: Potential Major Accidents and Disasters

Major Accident or Disaster	Location Risk?	Proposed Use Risk?	Comments	Design Measures or Legal Requirements, Codes and Standards	Topic Section	Scoped in or out?
Building Collapse	No	No	Buildings associated with the CFIIS include the purser kiosks and toilet block. The unlikely event of building collapse (during the construction or operational phase) would not be classed as a major accident due to the number of people that are likely to be affected due to the small scale of the buildings.	Managed via Construction (Design and Management) Regulations 2015 (CDM Regulations), Building standards.	NA	**Scope out.**
Transport Incident: Major Road Traffic Accident	No	No	A road traffic accident on either the A82 or A861 (during the construction or operational phase) would be unlikely to be classed as major accident due to the volume of traffic and speed of flow. It is noted a road traffic accident that blocked the A82 for passing traffic may result in the largest adverse effect due to long alternative road routes, although this is still unlikely to constitute a major accident under the IEMA definition. The potential for traffic accidents and other impacts are further discussed in Section 18: Traffic, Transport and Access. The CFIIS includes the development of a new junction for vehicles accessing/leaving the new ferry service infrastructure on the Nether Lochaber side. This new junction, in the operational phase, will improve access compared to the existing junction at Corran resulting in safer traffic flow and exit/entry onto the A82.	Design Manual for Roads and Bridges (DMRB) (National Highways *et al.*, 2024).	Section 18: Traffic, Transport and Access.	**Scope out.**
Navigation Incident: Major Vessel Collision	Yes	Yes	In the unlikely event of a vessel collision in the vicinity of the Corran Narrows and CFIIS, it is highly unlikely this would be classed as a major accident. The exception could be a collision involving the Corran Ferry and/or a cruise liner due to the number of people that may be affected. As outlined in Section 19: Navigation, collision risk associated with the construction and operational phases of the CFIIS will not be significant, and the CFIIS would not exacerbate the adverse effects of any collision.	The Code of Practice for Safe Navigation in Upper Loch Linnhe (THC, 2005); International Regulations for Preventing Collisions at Sea as amended (International Maritime Organization, 1972); and THC Ferry Operations Manuals and	Section 19: Navigation.	**Scope out.**

Major Accident or Disaster	Location Risk?	Proposed Use Risk?	Comments	Design Measures or Legal Requirements, Codes and Standards	Topic Section	Scoped in or out?
			A Navigational Risk Assessment will be developed/updated to incorporate the changes resulting from the CFIIS for both construction and operational phases (refer Section 19: Navigation).	Safety Management Systems.		
Malicious Attacks/ Terrorism	No	No	There is no known reason why the CFIIS would be a target for terrorism. Furthermore, the CFIIS does not lend itself to a means of sabotage that would give rise to a major accident.	NA	NA	**Scope out.**
Biological Hazard: Epidemic / Pandemic	No	No	Construction or operations of the CFIIS is not expected to result in an increased risk of communicable diseases. The Corran Ferry service is not identified as a major contributor toward the spread of communicable diseases as there are other transport linkages between communities.	THC has management procedures in place to deal with disease outbreaks such as COVID-19 which could impact the ferry service. Where required, these are updated in line with Scottish and/or UK Government guidance.	NA	**Scope out.**
Biological Hazard: Animal/ Insect Infestation	No	No	No major sources of biological hazards have been identified in the region and the CFIIS would not exacerbate any such hazard. Risk of terrestrial and marine non-native invasive species introduction/spread has been considered in Section 13.2.1.2 in Terrestrial Ecology and Ornithology and Sections 14.1.3.3 and 14.1.4.1 in Benthic Ecology respectively.	Wildlife and Countryside Act 1981, as amended.	Section 13.2.1.2 in Terrestrial Ecology and Ornithology and Section 14.1.3.3 in Benthic Ecology.	**Scope out.**
Earthquake	Yes	No	The site of the development is situated on the Great Glen Fault, an area which historically is shown to be a locus for minor earthquakes. Earthquakes could have impacts to scheme buildings, however even in the unlikely event of building collapse, this would not be classed as a major accident due to the number of people that can use these buildings at any time (refer 'Building collapse' above).	Managed via Construction (Design and Management) Regulations 2015 (CDM Regulations), Building standards.	NA	**Scope out.**

Major Accident or Disaster	Location Risk?	Proposed Use Risk?	Comments	Design Measures or Legal Requirements, Codes and Standards	Topic Section	Scoped in or out?
			Damage to new and existing ferry infrastructure (i.e., overnight berthing structure, slipways, marshalling areas) resulting from earthquakes may result in service disruption, but would not result in events that would constitute a major accident.			
Coastal Flooding	Yes	Yes	As outlined in Section 11: Seabed, Coastal Processes and Flooding, construction activities are not expected to contribute to an increase in flooding events. The proposed CFIIS will consider flood levels by design and will be designed to not impact upon flood risk to others or exacerbate the flood risk from incidents such as by tidal locking of drainage systems during the operational phase. Land under the CFIIS is already prone to some level of coastal flooding, and creation of the land-reclamation area will technically encroach on the coastal waterbody, however the impact of this will be negligible and it is not anticipated to increase flood risk.	The CFIIS outline and detailed design has been/will be developed to minimise the effects of coastal flooding.	Section 11: Seabed, Coastal Processes and Flooding.	**Scope out.**
High Winds/ Storm	Yes	Yes	High wind speeds adversely affect the wave conditions of the Corran Narrows causing potential service disruption. Current operational protocols dictate that in truly adverse weather conditions, the Corran Ferry service does not operate. This practice will be carried forward through the construction and into the operational phases of the CFIIS. The overnight berthing structure of the CFIIS has been designed in consideration of 1 in 50 year storms to protect the vessels from damage or from being pushed off their berths the operational phase of the CFIIS.	The CFIIS outline design has been developed to minimise the effects of adverse weather conditions for vessel berthing and operation.	NA	**Scope out.**
Fire	No	Yes	There is a low risk of the construction or operational phases of the CFIIS starting or sustaining fire. Potential ignition sources and flammable materials include new electrical infrastructure (i.e., NEV charging feeder pillar and switchboards) and diesel infrastructure (i.e. generator and storage cube).	Electrical infrastructure will be designed to Construction (Design and Management) Regulations 2015 (CDM Regulations), Building standards.	Appropriate storage of materials is discussed in Section 15: Materials and Waste.	**Scope out.**

Major Accident or Disaster	Location Risk?	Proposed Use Risk?	Comments	Design Measures or Legal Requirements, Codes and Standards	Topic Section	Scoped in or out?
			Materials during construction and operational phases will be stored appropriately to minimise fire risk (refer Section 15: Materials and Waste. In the unlikely event of a fire at the development of the CFIIS, the scale of such a fire would be unlikely to constitute a major accident under the IEMA definition.	Diesel storage managed under COSHH and CAR Regulations.		

NA = Not applicable.

23.4 Proposed Impact Assessment

As the CFIIS is not expected to increase the occurrence or exacerbate the effects of major accidents or disasters, it is proposed that this topic is **scoped out** of the CFIIS EIA. Where lesser risks relating to accidents or disasters have been identified, these are considered within other topics of this report, as detailed in Table 23.3.1.

Table 23.4.1: Summary of Effects Scoping Table

Potential Impact/Effect	Phase	
	Construction	Operations
Major Accidents and Disasters	Out	Out

24 Initial Schedule of Mitigation

Table 24.1 comprises the ISoM including the mitigation measures originating in various sections of this Scoping Report. Mitigation measures in some instances are relevant to more than one topic area, where this is the case it has been highlighted in Table 24.1. The ISoM focusses on the construction phase of the project and details the mitigation which is taken account of in the scoping out of topics from the EIAR. Operational mitigation and further construction mitigation, where required, will be determined during further assessments through the EIA process, which will be included in the EIAR Schedule of Mitigation (SoM). As outlined in Section 1.2, mitigation outlined in this ISoM will be carried forward into the EIAR SoM for the CFIIS project. This will then be utilised in the production of the CEMD developed for the CFIIS.

Table 24.1: Initial Schedule of Mitigation for CFIIS Construction

Originating Section	Topic's Relevant To	Adopted Mitigation
6	• In-Air Noise and Vibration	• If required, impacts from blasting will be controlled through the setting of vibration limits, defined in consultation with the blast engineer, and governed through construction RAMS.
9	• Geology, Land and Soils	• Materials to be re-used on site where practicable.
	• Geology, Land and Soils	• Soils will be appropriately handled to ensure the structure is not degraded, including minimal movement and suitable storage to maximise reinstatement value.
	• Geology, Land and Soils	• If previously unidentified contaminated land is suspected or found on site, works in the immediate vicinity will be halted and advice sought from the Environmental Clerk of Works (ECoW) in the first instance. If the soils have already been excavated, they will be isolated from other materials while advice is sought.
	• Geology, Land and Soils	• Soil removed from temporary areas will be stored to allow it to be used as part of the site reinstatement, where practicable.
	• Geology, Land and Soils • Water Quality • Terrestrial Ecology & Ornithology • Marine Ecology	• A Pollution Incident Response Plan will be developed in alignment with GPP 22 (NIEA, DEFRA, SEPA and NRW, 2018b)
	• Geology, Land and Soils • Water Quality • Terrestrial Ecology & Ornithology • Marine Ecology	• Spill kits will be made available close to the working areas with equipment suitable for the types and quantities of materials being utilised.

Originating Section	Topic's Relevant To	Adopted Mitigation
10	• Water Quality • Marine Ecology	• Appropriate techniques to be deployed to prevent surface water run-off, potentially including the use of geotextile silt fencing, in alignment with GPP 5: Works and Maintenance in or Near Water (NIEA, DEFRA, SEPA and NRW, 2018c).
	• Water Quality • Marine Ecology	• Visual inspections will be conducted regularly during dredging, blasting and marine rock breaking activities to monitor water turbidity caused by suspended particles, engineered containment measures (e.g., a silt curtain) will be considered, if required.
13	• Terrestrial Ecology and Ornithology • Geology, Land and Soils	• A Japanese Knotweed eradication plan will be developed and implemented.
14	• Marine Ecology	• All construction vessels, including vessels under 10m in length, will adhere to the general principles in the SMWWC when undertaking their activities.
15	• Materials and Waste • Geology, Land and Soils • Water Quality • Air Quality • Terrestrial Ecology & Ornithology • Marine Ecology	• A Materials Management Plan will be implemented to detail the storage and handling requirements of materials that have a potential to affect the environment, this will align with: o CAR GBRs 26 and 28 and GPP 2 - for oil storage and refuelling; o COSHH Regulations - to ensure chemicals are appropriately stored and used taking account of specific risks; o GPP 5 and GPP 6 – for storage of soil stock piling and concrete handling;
	• Materials and Waste • Geology, Land and Soils • Water Quality • Air Quality • Terrestrial Ecology & Ornithology • Marine Ecology	• A Waste Management Plan will be produced and implemented; this will detail how: o The waste hierarchy will be implemented; o All waste which is not able to be reused will be segregated to facilitate recycling; and o Waste removed from site will be disposed of; by a licensed waste contractor in line with the waste hierarchy

25 Conclusion

Scoping Opinions are sought from THC and the MD-LOT under Regulations 17 and 14 respectively of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended, and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended. The opinions will be used to inform the scope of the EIA that is required in support of the Planning Permission and Marine Licence applications. This report has considered all the topics that may be required for inclusion within an EIA and has proposed that a number of topics can be scoped out taking account of the mitigation proposed in Table 24.1. Table 25.1 details the topics proposed to be scoped out or included within any EIAR, for the proposed Corran Ferry Infrastructure Improvement Scheme.

Table 25.1: Summary of Topics and Effects Scoped In or Scoped Out for the CFIIS EIA Assessment

Topic	Construction	Operations
In-Air Noise and Vibration		
Noise (excluding blasting)	In	In
Vibration (excluding blasting)	In	Out
Road traffic	In	In
Blasting noise and vibration	Out	NA
Underwater Noise		
Rock stripping and potentially blasting	In	NA
Piling	In	NA
Dredging	Out	Out
Vessel movement	Out	Out
Air Quality		
Demolition dust effects on human receptors, namely Ardgour residents	Out	NA
Earthworks dust effects on human receptors	In	NA
Construction effects on human receptors	Out	NA
Trackout on human receptors and the A82	In	NA
Dust effects on ecological receptors	Out	NA
Geology, Lands and Soils		
Loss of geology and soils	Out	NA
Spread of existing contaminants	Out	NA
Degradation of soils	Out	NA
Soil contamination	Out	NA
Water Quality		
Marine		
Increase of solids in the water column	Out	Out
Pollution from a loss of containment	Out	Out
Sewage Disposal	NA	Out
Fresh Water (Watercourse)		
Increase of solids in the water column	Out	NA
Pollution from a loss of containment	Out	NA

Topic	Construction	Operations
Seabed, Coastal Processes and Flooding		
Impacts to the seabed	Out	Out
Impacts to coastal processes in the Corran Narrows	NA	In
Impacts to flood risk	NA	In
Biodiversity		
Terrestrial Ecology and Ornithology		
Habitat change	In	In
Habitat degradation	In	NA
Spread of INNS	In	NA
Disturbance	In	In
Accidental physical injury	In	In
Marine Ecology		
Benthic		
Habitat changes	In	In
Sedimentation	In	In
Spread of marine INNS	In	In
Marine Mammals		
Underwater noise	In	Out
Vessel (and construction activity) interaction	Out	Out
Injury due to dredge disposal at sea	In (if disposal to sea is required)	Out
Fish and Shellfish		
Habitat changes	Out	Out
Underwater noise effects	In	Out
Construction activity effects	Out	NA
Dredge activity interactions	Out	Out
Materials and Waste		
Consumption of materials and resources	In	Out
Materials storage and use	Out	Out
Waste management	In	Out
Landscape and Visual		
Landscape effects	Out	In
Visual effects	Out	In
Archaeology and Cultural Heritage		
Direct impacts on terrestrial and marine cultural heritage assets (designated and non-designated) within the scoping boundary	In	In
Impacts on the settings of designated cultural heritage assets, features within the 2km study area	In	In
Direct impacts on cultural heritage assets outwith the scoping boundary	Out	Out

Topic	Construction	Operations
Impacts on the settings of non-designated cultural heritage assets and features	Out	Out
Impacts on the settings of heritage assets beyond 2km of the score study area	Out	Out
Traffic, Transport and Access		
Traffic, transport and access effects on road users and local residents	In	In
Navigation		
Disruption to the Corran ferry service	In	Out
Disruption to other loch users	In	Out
Potential for collision incidents between vessels	In	In
Potential for collision incidents with new infrastructure	In	In
Impacts on Corran point lighthouse	Out	Out
Population and Socioeconomics		
Direct jobs	Out	Out
Indirect jobs	Out	Out
Social effects on the local community	In	In
Economic Effects on local businesses – Tourism (Ardgour Receptors only)	In	In
Economic Effects on local businesses – Fish Farming ('Linnhe' only)	In	Out
Economic Effects on local businesses – Other Businesses	Out	NA
Human Health		
Impacts on Human Health	Out	Out
Climate Change		
GHG emissions	In	In
Climate change impacts	Out	Out
Major Accidents and Disasters		
Major accidents and disasters	Out	Out

Key

No significant effects expected – Scoped Out	
Potential for significant effects – Scoped In	
Not Applicable	

The EIAR will be produced in line with the requirements laid out in the EIA Regulations, it will specifically include:

- A design description detailing the specifics known at the point of EIAR and highlighting any areas where refinement may occur.
- Consideration of alternatives including those presented during initial public consultation.

- Provide a sufficient description of the development including a construction method statement.
- It will present the outcome of the scoping process.
- Detain mitigation primary and tertiary mitigation taken account of during the impact assessment process.
- Present a SoM which will build upon the ISoM presented in Section 24.

It is noted that the EIA and application submissions will be supported by other documentation including but not limited to:

- Biodiversity Enhancement and Management Plan;
- HRA Supporting Documentation;
- BPEO for Dredging; and
- Transport Assessment.

The project team are committed to working with Highland Council and their design engineers to ensure the design minimises environmental effects and where this is not practicable, appropriate mitigation will be implemented.

26 Glossary

Acronym	Definition
µPa	Micro-pascal
AA	Appropriate Assessment
AQMA	Air Quality Management Areas
BAP	Biodiversity Action Plan
BBC	British Broadcasting Corporation
BPEO	Best Practicable Environmental Option
BS	British Standard
CAR	The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)
CCP	Climate Change Plan
CD	Chart Datum
CEMD	Construction Environmental Management Document
CFIIS	Corran Ferry Infrastructure Improvement Scheme
CO_2e	Carbon Dioxide Equivalent
COSHH	Control of Substances Hazardous to Health
dB	decibels
DMRB	Design Manual for Roads and Bridges
DEFRA	Department of Environment, Food and Rural Affairs
ECoW	Environmental Clerk of Works
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMF	Electric and Magnetic Fields
GEN	General Planning Principles
GES	Good Environmental Status Descriptors
GHG	Greenhouse Gas
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPP	Guidance for Pollution Prevention
GVA	Gross Value added
Ha	Hectare(s)
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HIE	Highlands and Islands Enterprise
HLAMap	Historic Land-Use Assessment Data for Scotland
HRA	Habitats Regulations Appraisal
HwLDP	Highland wide Local Development Plan
IMO	International Maritime Organization
IROPI	Imperative Reasons of Overriding Public Interest
ISoM	Initial Schedule of Mitigation
JNCC	Joint Nature Conservation Committee
km	kilometres
km^2	Kilometres-squared
LCA	Land Capability for Agriculture
LCT	Landscape Character Types
LDP	Local Development Plans
LSE	Likely Significant Effects
LVIA	Landscape and Visual Impact Assessment
m	metres

Acronym	Definition
m^2	Metres-squared
m^3	Metres-cubed
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MPA	Marine Protected Area
mph	mile per hour
MPS	Marine Policy Statement
$MtCO_2e$	Million tonnes carbon dioxide equivalent
NBN	National Biodiversity Network
NCAP	National Collection of Aerial Photography
MPA(NC)	Nature Conservation Marine Protected Area
NIEA	Northern Ireland Environment Agency
NRHE	National Record for the Historic Environment
NM	Nautical Miles
NML	Noise Monitoring Location
NMP	Scottish National Marine Plan
NMPi	National Marine Plan Interactive
NPF	National Planning Framework
NRW	Natural Resources Wales
NSA	National Scenic Areas
NSR	Noise Sensitive Receptors
OSPAR	The Convention for Protection of the Marine Environment of the North-East Atlantic
PAC	Pre-Application Consultation
PAN	Planning Advice Note
PMF	Priority Marine Feature
PTS	Permanent Threshold Shift
s	seconds
SAC	Special Area of Conservation
ScotPHO	Scottish Public Health Observatory
SEL_{cum}	cumulative weighted Sound Exposure Level
SEPA	Scottish Environment Protection Agency
SLA	Special Landscape Area
SoM	Schedule of Mitigation
SPA	Special Protected Area
SPAD	Scottish Palaeoecological Archive Database
SPL_{peak}	peak Sound Pressure Level
SPP	Scottish Planning Policy
SSEN	Scottish and Southern Electricity Networks
SSSI	Sites of Special Scientific Interest
SW	Spectral Wave
THC	The Highland Council
TTS	Temporary Threshold Shift
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
WFD	Water Framework Directive
WHO	World Health Organisation
WHILDP	West Highland and Islands Local Development Plan
ZTV	Zone of Theoretical Visibility

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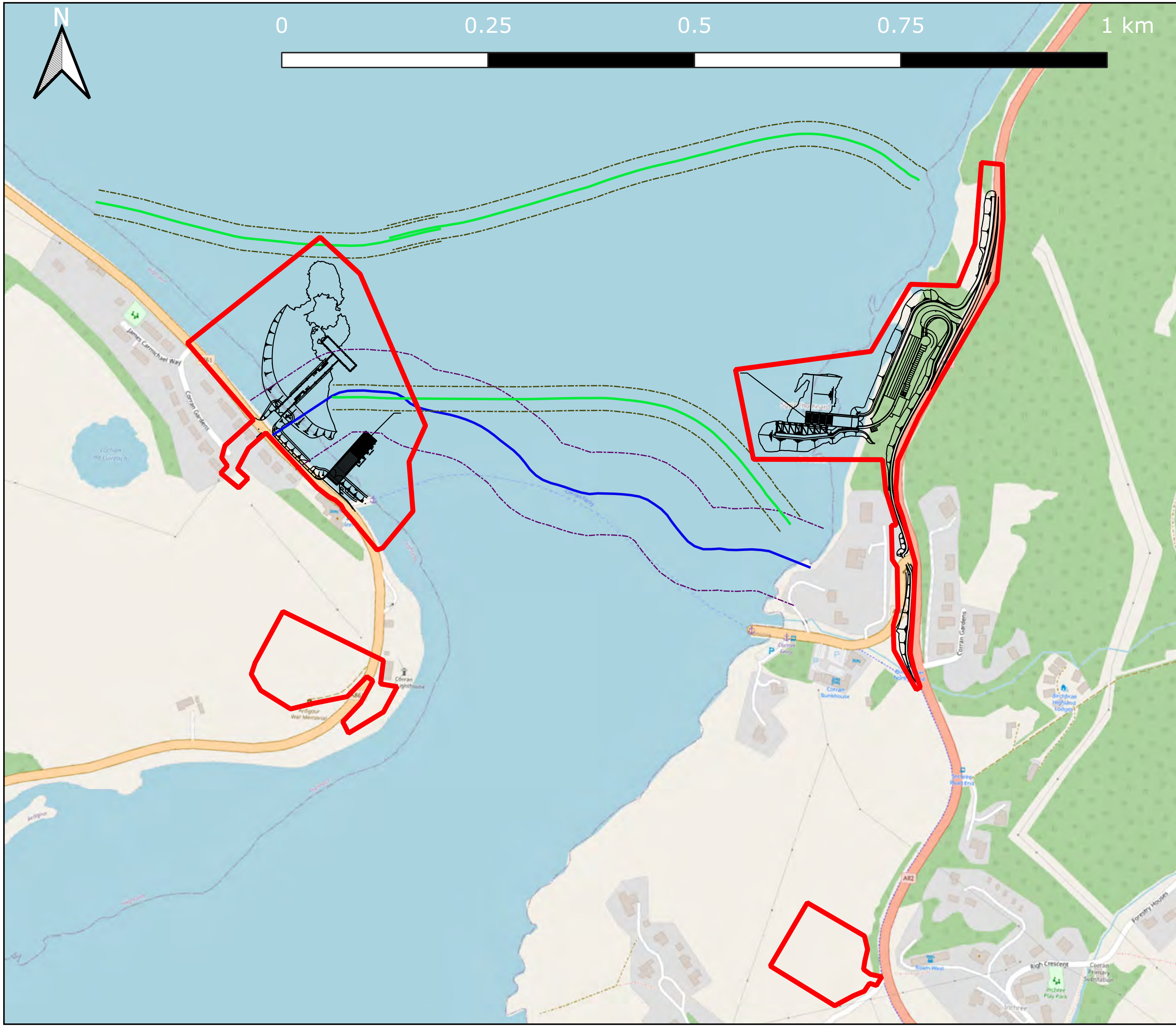
Drawings



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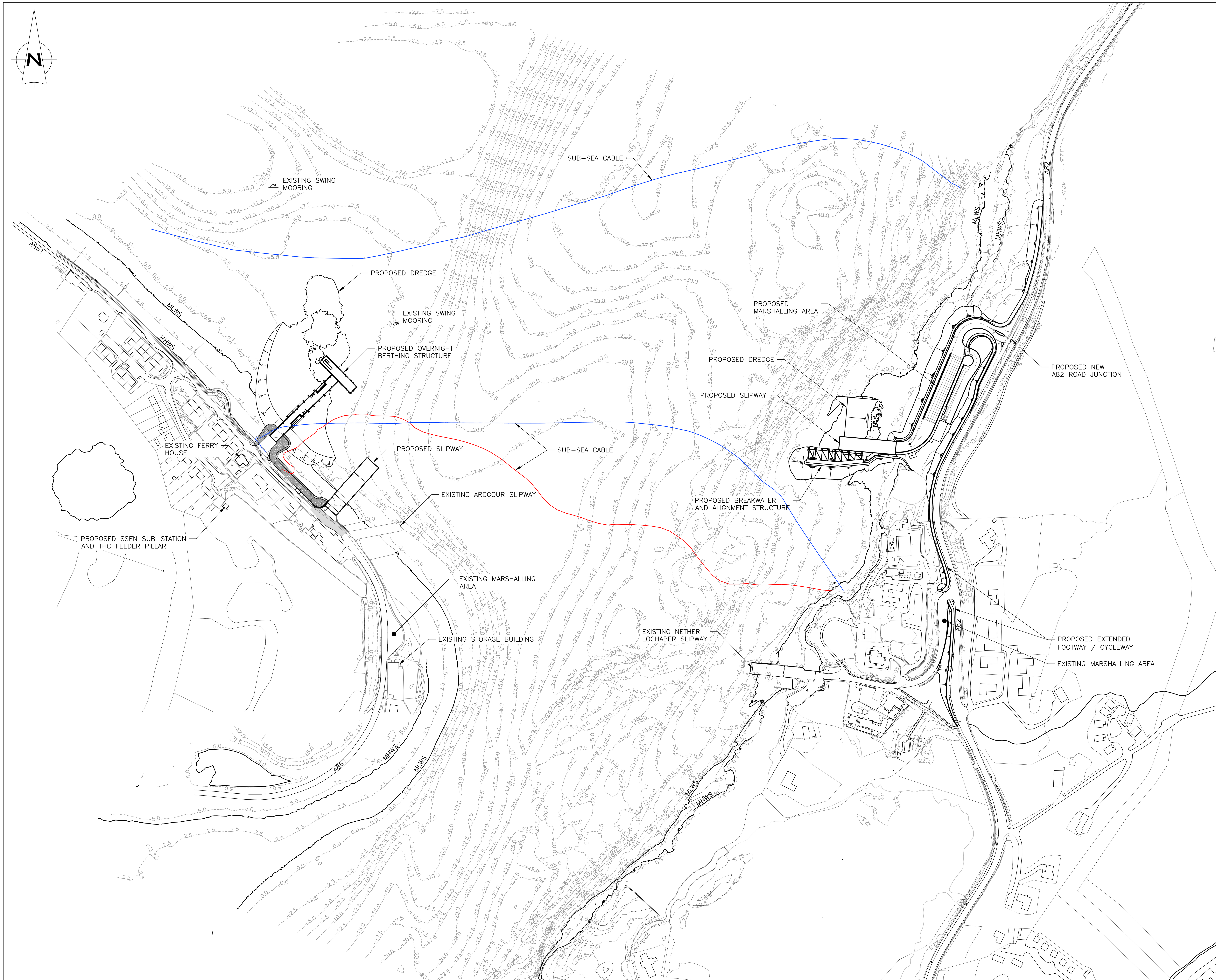
Title: 99_DRG_15_1 Scoping Boundary (with SSEN cables)

Projection: OSGB 1936/British National Grid
EPSG: 27700

Legend

Conceptual Design
Scoping Boundary
11kV Cable
11kV Currently Energised
11kV Exclusion Zone
33kV Cables
33kV De-energised Cables
33kV Exclusion Zone

Page 1	Rev No: 1	Drawing Date: 07/05/2024



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES RELATIVE TO CHART DATUM UNLESS NOTED OTHERWISE.
3. CHART DATUM IS 1.96m BELOW ORDNANCE DATUM.
4. TIDE LEVELS ARE AS BELOW:

HAT	+4.9mCD
MHWS	+4.4mCD
MHWN	+3.3mCD
MLWN	+1.7mCD
MLWS	+0.7mCD
LAT	0.0mCD

5. FOR PROPOSED NETHER LOCHABER LAYOUT, REFER TO DRAWING NUMBER 2387-WS-ZZ-NL-DR-C-5101.
6. FOR PROPOSED ARDGOUR LAYOUT, REFER TO DRAWING NUMBER 2387-WS-ZZ-AG-DR-C-0102.
7. SWING MOORINGS (2NO.) FOR EXISTING MV CORRAN AND MV MAID OF GLENCOUL

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P02	08.05.24	ARDGOUR MARSHALLING, ACCOMMODATION AND OVERNIGHT STRUCTURE REVISED.	LS	BP	TR

AMENDMENTS

CLIENT
The Highland Council
Comhairle na Gaidhealtachd

PROJECT
CORRAN FERRY REDEVELOPMENT

Wallace Stone
Consulting Civil Engineers

GLASGOW
0141 554 8233
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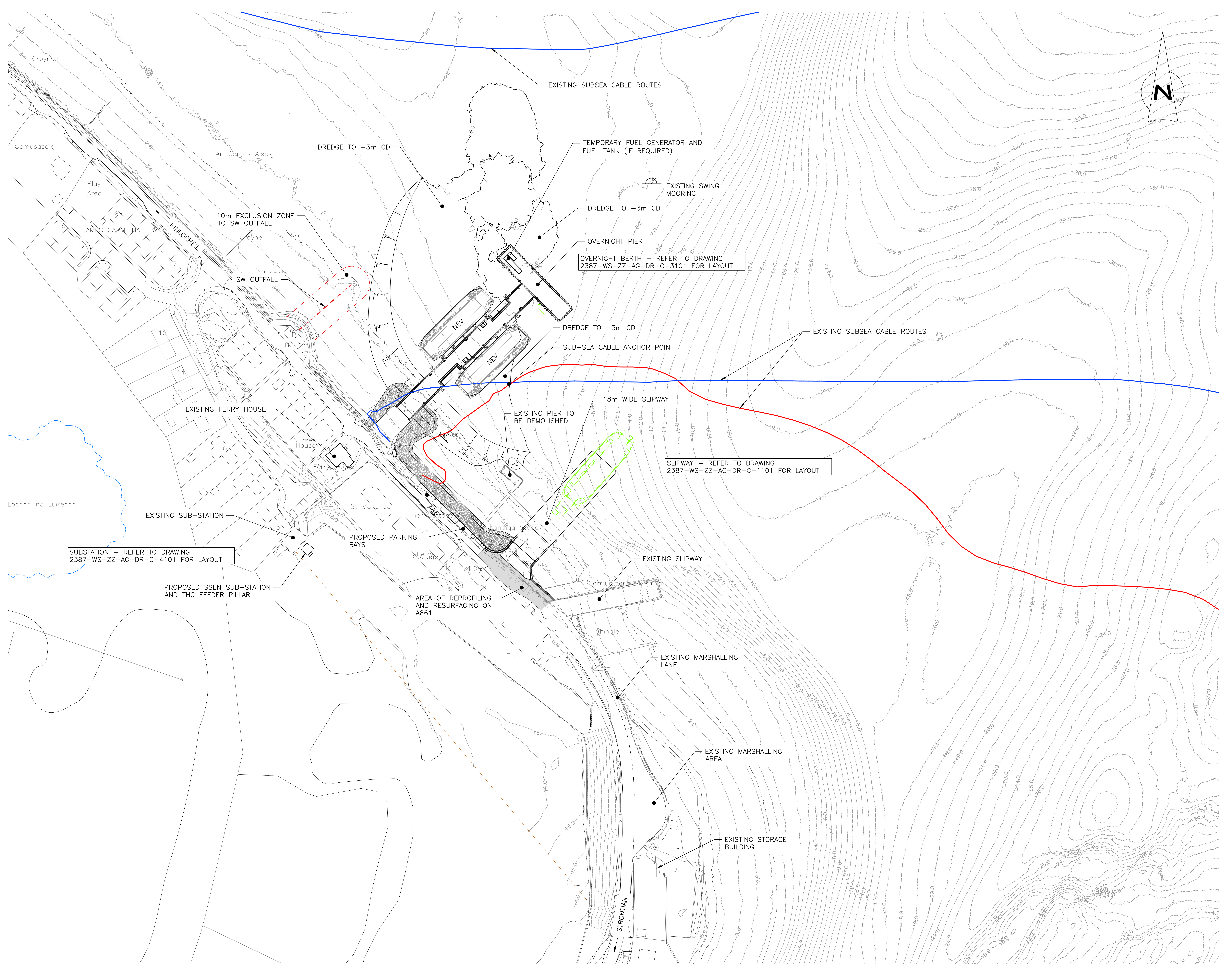
DRAWING TITLE
PROPOSED SITE LAYOUT

DRAWN	CHECKED	APPROVED
PM	BP	BP
DATE 02.04.24	DATE 03.04.24	DATE 03.04.24
SCALE (A1) 1:2000	STAGE PRELIMINARY	REV P02

DRAWING No.
2387-WS-ZZ-ZZ-DR-C-0101



MAPPING INFORMATION REPRODUCED WITH THE PERMISSION OF THE ORDNANCE SURVEY

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES RELATIVE TO CHART DATUM UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS:

HAT	+4.9mCD
MHWS	+4.4mCD
MHWN	+3.3mCD
MLWN	+1.7mCD
MLWS	+0.7mCD
LAT	0.0mCD

4. CHART DATUM IS 1.96m BELOW ORDNANCE DATUM.
5. NEV = NEW ELECTRIC VESSEL
6. EXISTING SSEN CABLES TO BE DE−ENERGISED AND REMOVED LOCALLY TO ACCOMMODATE WORKS.
7. SWING MOORINGS ON SEABED FOR MV CORRAN AND MV MAID OF GLENCOUL.

LEGEND

SUBSEA CABLE − (DE−ENERGISED)
SUBSEA CABLE − (ENERGISED)

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P03	26.03.24	PROPOSED MARSHALLING AREA REMOVED. PROPOSED ACCOMMODATION REMOVED. EX MARSHALLING LANE EXTENDED	LS	BP	TR
P02	14.03.24	REVISED OVERNIGHT BERTH STRUCTURE. ALIGNMENT STRUCTURE REMOVED. SLIPWAY WIDENED.	LS	BP	TR

AMENDMENTS

CLIENT
The Highland Council
Comhairle na Gaidhealtachd

PROJECT
CORRAN FERRY REDEVELOPMENT

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DRAWING TITLE
ARDGOUR
PROPOSED SITE LAYOUT

DRAWN	CHECKED	APPROVED
LS	BP	TR
DATE: OCT 2023	DATE: 07.02.2024	DATE: 07.02.2024
SCALE (A1): 1:1000	STAGE: PRELIMINARY	REV: P03

DRAWING No.
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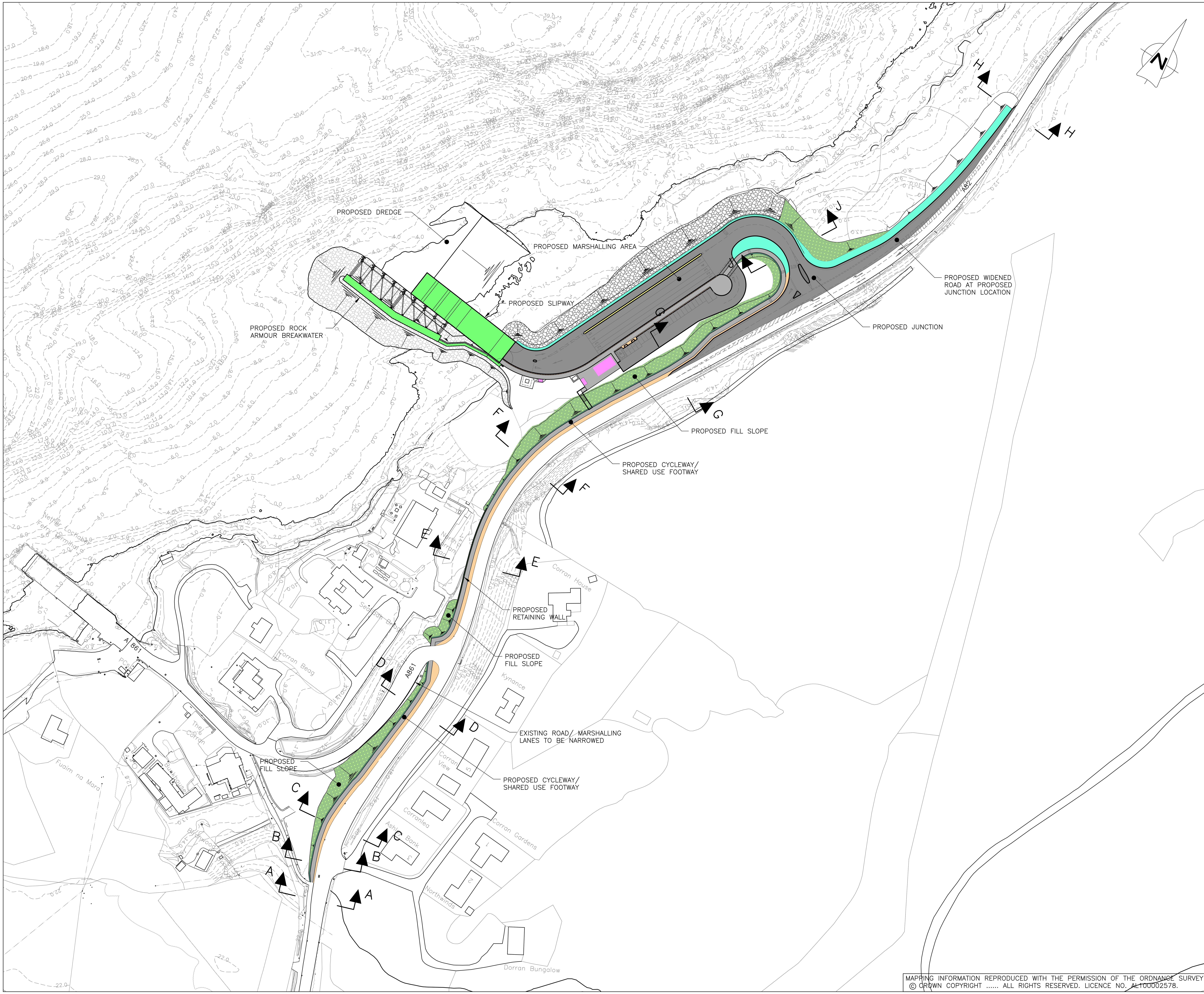

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES RELATIVE TO CHART DATUM UNLESS NOTED OTHERWISE.
3. CHART DATUM IS 1.96m BELOW ORDNANCE DATUM.
4. TIDE LEVELS ARE AS FOLLOWS:

HAT	+4.9mCD
MHWS	+4.4mCD
MHWN	+3.3mCD
MLWN	+1.7mCD
MLWS	+0.7mCD
LAT	0.0mCD

5. FOR MARSHALLING AREA LAYOUT REFER TO DRAWING NUMBER 2387-WS-ZZ-NL-DR-C-5102.
6. FOR SLIPWAY AND ALIGNMENT STRUCTURE LAYOUT REFER TO DRAWING NUMBER 2387-WS-ZZ-NL-DR-5103.
7. FOR A82 SECTIONS REFER TO DRAWING NUMBERS 2387-WS-ZZ-NL-DR-5111 TO 5114.

LEGEND:

- PROPOSED CARRIAGEWAY
- PROPOSED FOOTWAY / CYCLEWAY
- PROPOSED TRAFFIC ISLAND
- PROPOSED BUFFER
- PROPOSED VERGE
- PROPOSED CONCRETE
- PROPOSED SLOPE
- PROPOSED STONE WALL
- PROPOSED BUILDING
- PROPOSED ROCK ARMOUR

REV.	DATE	DETAILS	DRAWN	CHK'D	APP'D
P02	01.04.24	DREDGE PROFILE REVISED	PM	BP	BP

AMENDMENTS

CLIENT: The Highland Council / Comhairle na Gàidhealtachd

PROJECT: CORRAN FERRY REDEVELOPMENT

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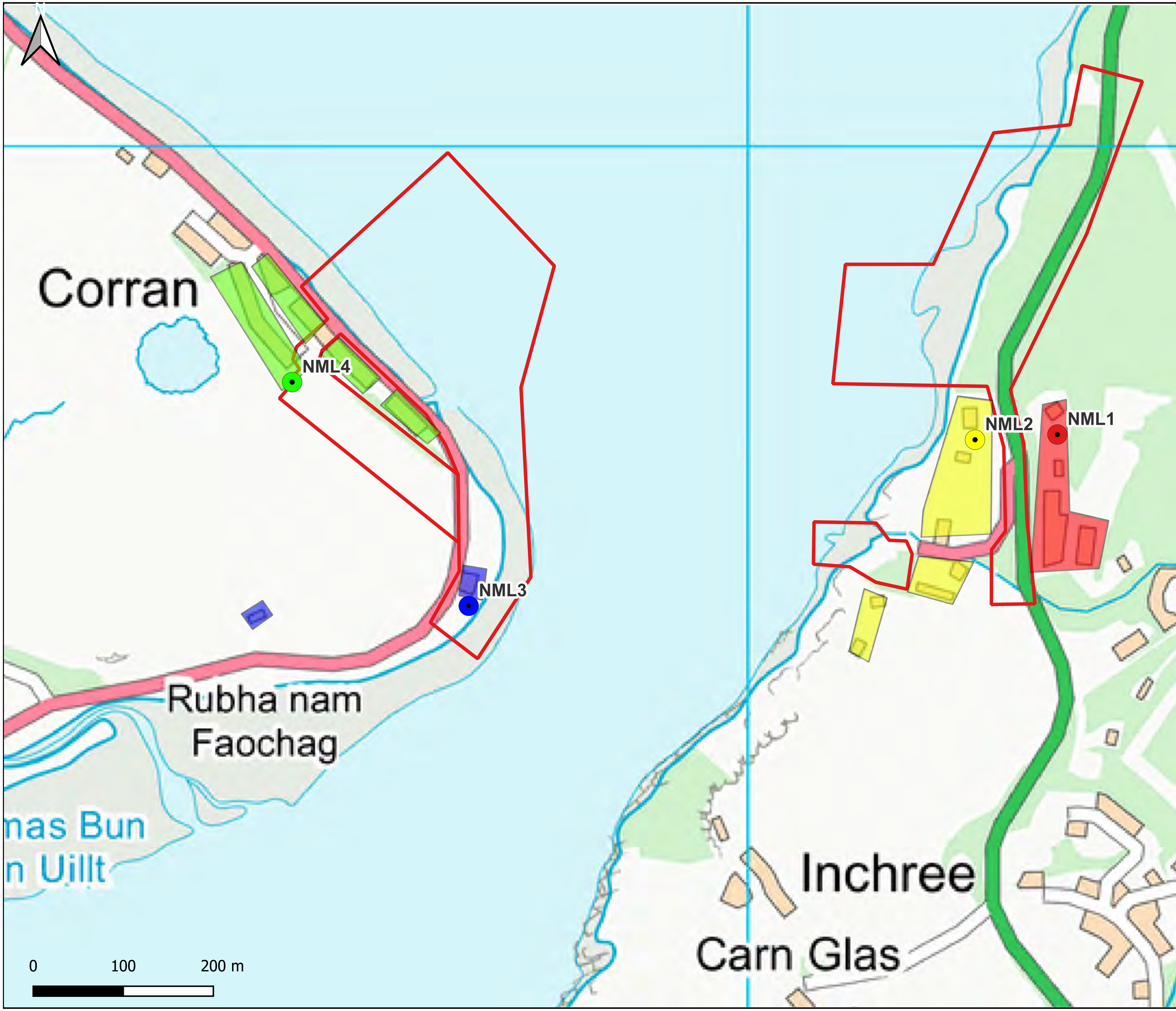
HEBRIDES 01851 600220 hebrides@wallacestone.co.uk

DRAWING TITLE: NETHER LOCHABER PROPOSED GENERAL LAYOUT

DRAWN	CHECKED	APPROVED
PM	BP	TR
DATE 27.10.23	DATE 21.12.23	DATE 21.12.23
SCALE (A1) 1:1000	STAGE PRELIMINARY	REV P02

DRAWING No. 2387-WS-ZZ-NL-DR-C-5101



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Title:
99_DRG_08_1 Corran Ferry Infrastructure Improvement Scheme Noise Monitoring Locations and Noise Sensitive Receptors

Projection: OSGB 1936/British National Grid
EPSG: 27700
Scale 1:6000

Legend

Indicative Red Line Boundary

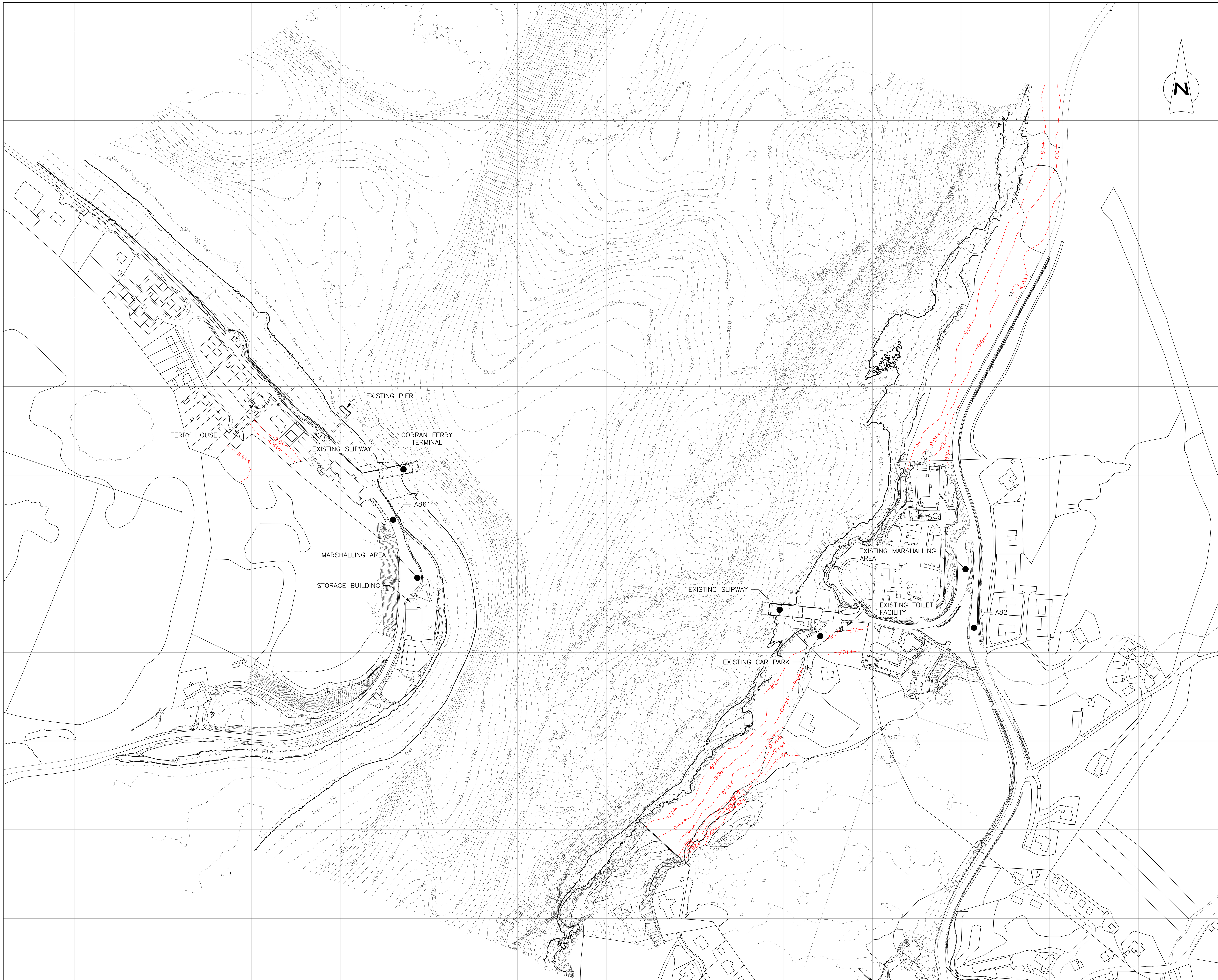
Indicative Noise Monitoring Locations (NMLs)

- NML1
- NML2
- NML3
- NML4

Nearest Noise Sensitive Receptors (NSRs)

- Nearest NSRs Represented by NML1
- Nearest NSRs Represented by NML2
- Nearest NSRs Represented by NML3
- Nearest NSRs Represented by NML4

Page 1	Rev No: 1	Drawing Date: 24/08/2023



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HAT	+4.9mCD
MHWS	+4.4mCD
MHWN	+3.3mCD
MLWN	+1.7mCD
MLWS	+0.7mCD
LAT	0.0mCD

4. CHART DATUM IS 1.96m BELOW ORDNANCE DATUM.
5. BATHYMETRIC CONTOURS (BELOW MHWS) SHOWN AT 1m INTERVALS WITH LABELS EVERY 5m.
6. TOPOGRAPHIC CONTOURS (ABOVE MHWS) SHOWN AT 0.5m INTERVALS WITH LABELS EVERY 2.5m.

LEGEND

0.0 CONTOURS (FROM ASPECT SURVEY DATA)

0.0 INDICATIVE CONTOURS (FROM ORDNANCE SURVEY DATA)

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
A	08.09.22	MINOR AMENDMENTS.	TC	BP	TR

AMENDMENTS

CLIENT

The Highland Council
Comhairle na Gàidhealtachd

PROJECT

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DRAWING TITLE

EXISTING SITE LAYOUT

DRAWN	CHECKED	APPROVED
TC	BP	TR
DATE JUL 22	DATE JUL 22	DATE JUL 22

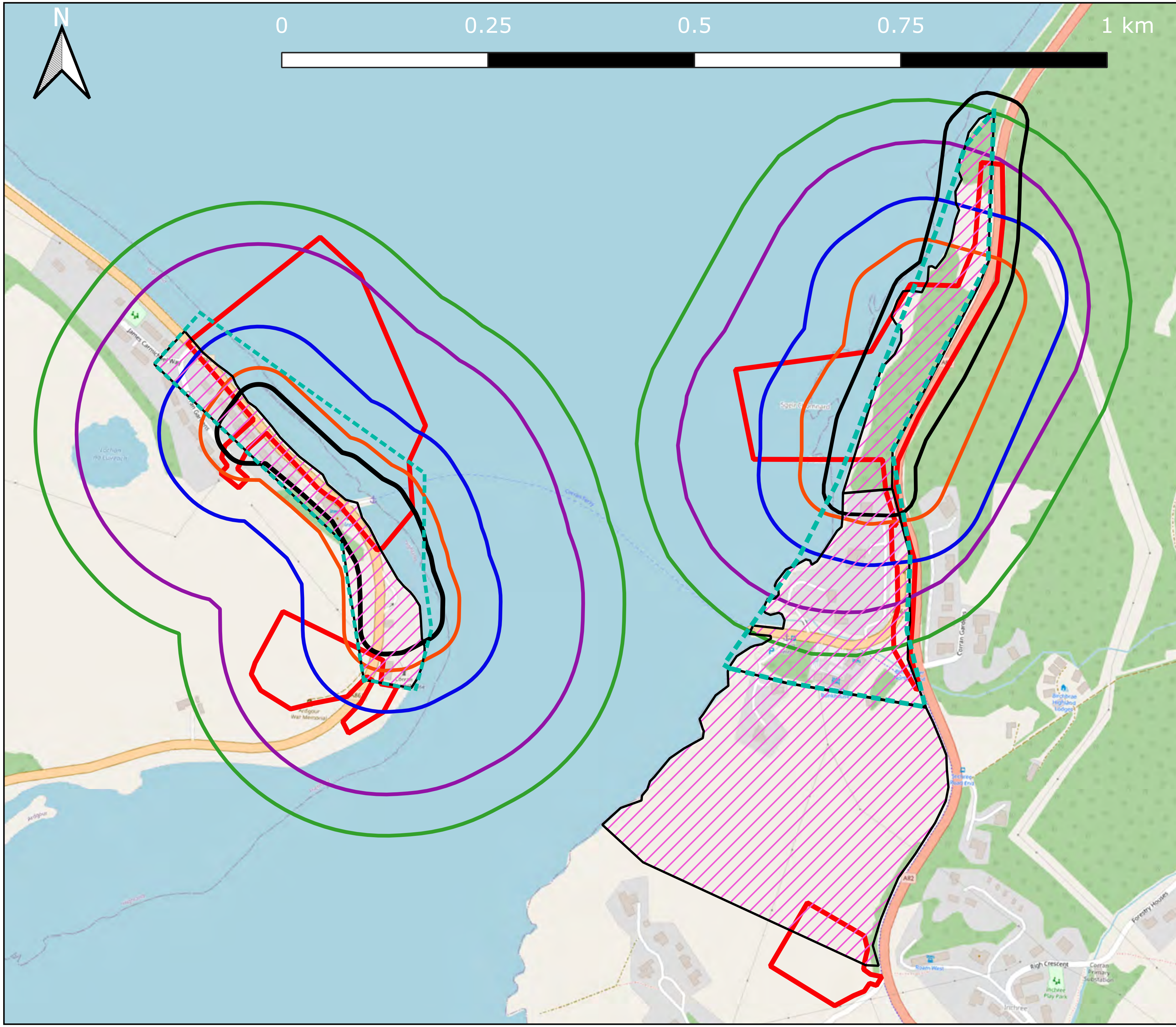
SCALE (A1) 1:2000

STAGE PRELIMINARY

REVISION A

PROJECT No. 2387

DRAWING No. 901



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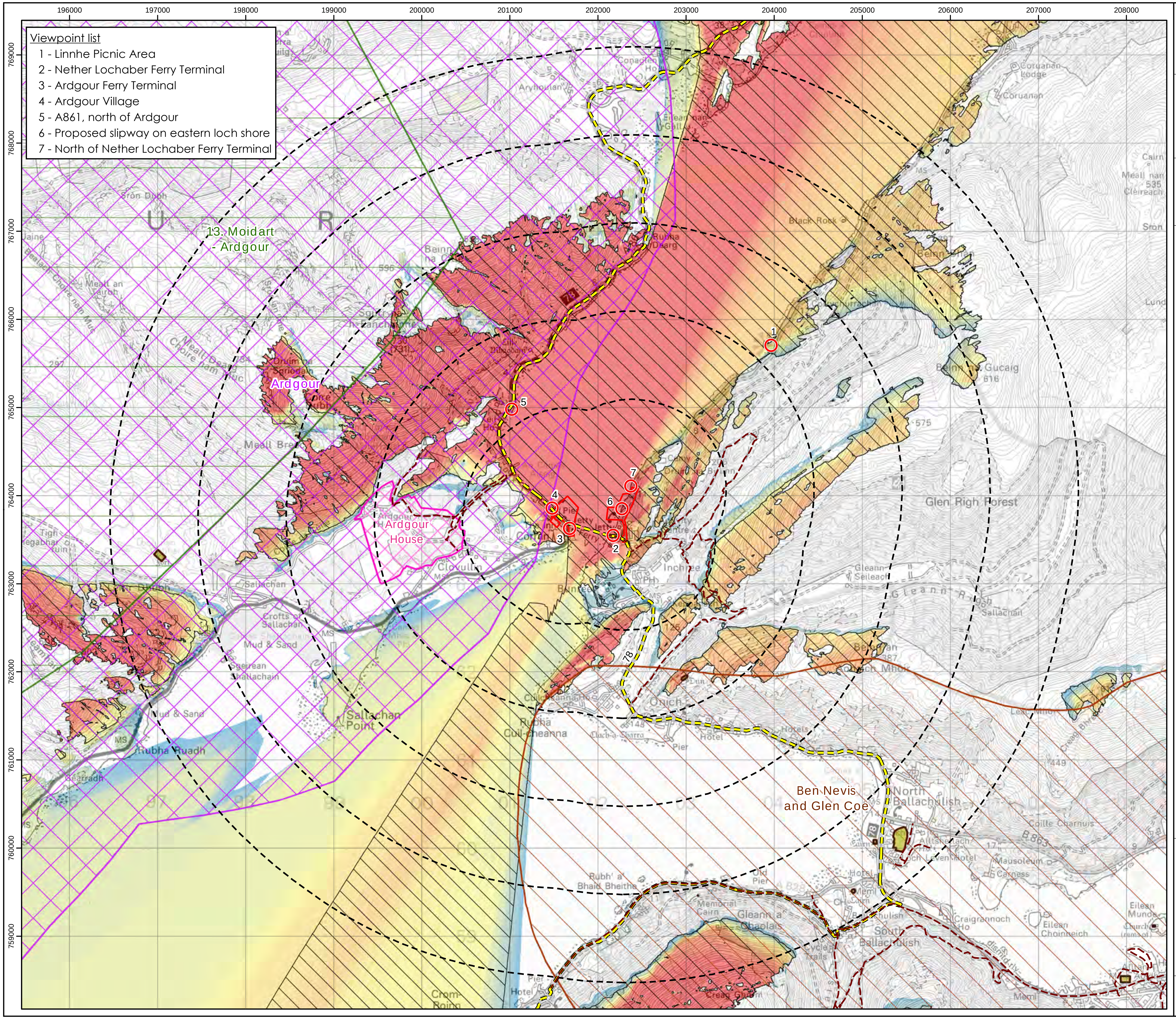
Title: 99_DRG_14_1 Ecological Survey Boundaries

Projection: OSGB 1936/British National Grid
EPSG: 27700

Legend

- Scoping Boundary
- Breeding Bird Survey Area
- PEA Survey Area
- PSS Bat Survey Area
- PSS Red Squirrel Survey Area
- PSS Badger Survey Area
- PSS Otter Survey Area
- PSS Pine Marten Survey Area

Page 1	Rev No: 1	Drawing Date: 06/05/2024



Corran Ferry

Bare Earth Zone of Theoretical Visibility

Key

- Site boundary
- 1km buffers to 5km
- Landscape Viewpoint
- Corepath
- Sustrans cycle route
- Scheduled Monument
- Garden or Designed Landscape
- Wild Land Area
- Special Landscape Area
- National Scenic Area
- Visibility of berthed ferry (max 20m height)

Zone of Theoretical Visibility

Modelled height 10m above ground, including reclaimed land

Highest visibility of proposals (100% visible)

Lowest visibility of proposals

Generated using Ordnance Survey's Terrain5 dataset which does not take into account the screening effects of buildings or vegetation.

ZTV calculated using ArcGIS 10.6 Viewshed tool with observer eye height 2m above ground and corrections for earth curvature and atmospheric refraction applied

atmos CONSULTING

0 0.5 1 2

Kilometres

N

Scale @ A3: 1:40,000

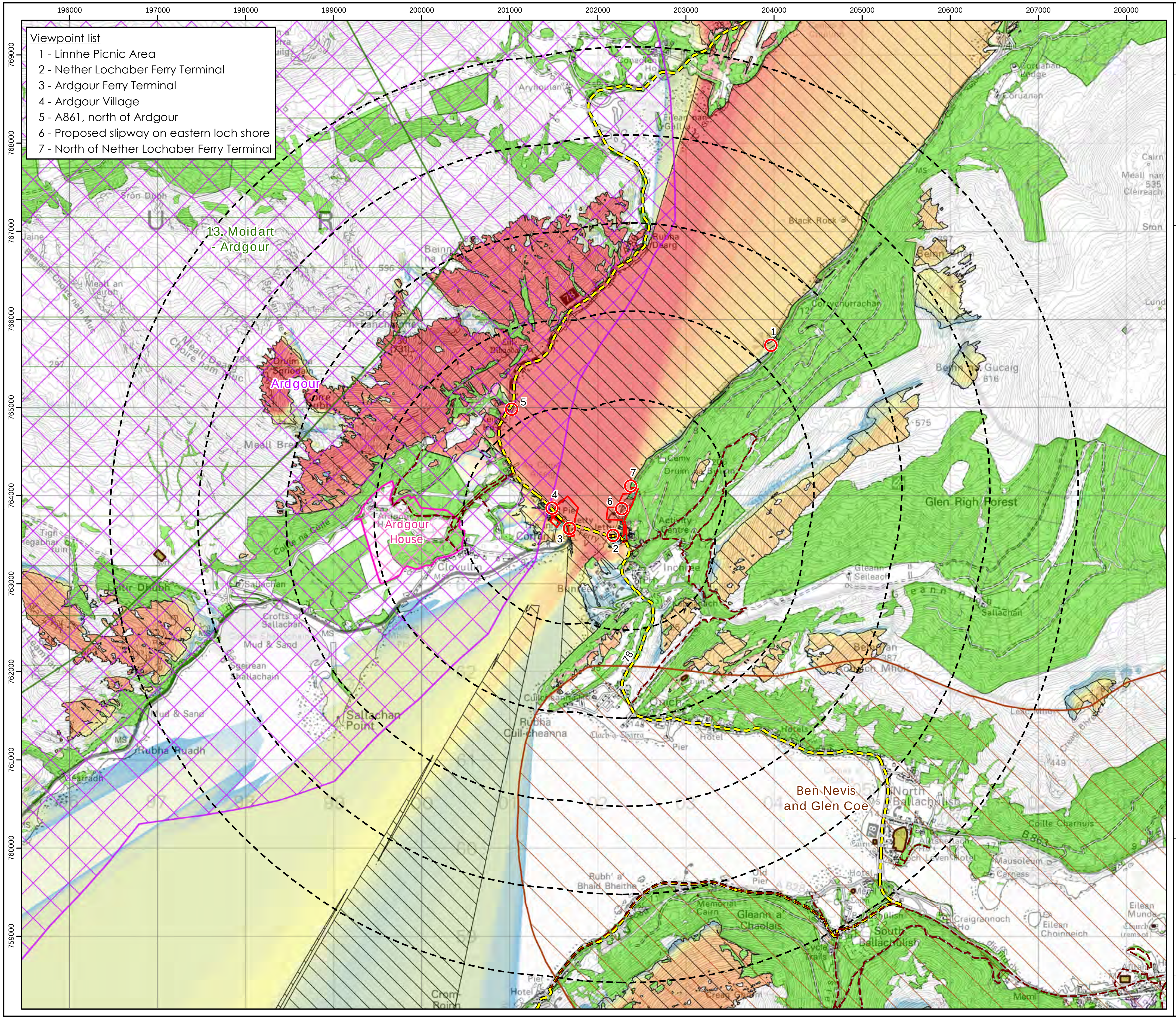
18/04/2024 19411/ZV/001c

Drawn by: TH Checked by: KM Approved by: TH

Corran Ferry

Affric

Screened Zone of Theoretical Visibility



Key

- Site boundary
- 1km buffers to 5km
- Landscape Viewpoint
- Corepath
- Sustrans cycle route
- Scheduled Monument
- Garden or Designed Landscape
- Wild Land Area
- Special Landscape Area
- National Scenic Area
- Building
- Woodland
- Visibility of berthed ferry (max 20m height)

Zone of Theoretical Visibility

Modelled height 10m above ground, including reclaimed land

Highest visibility of proposals (100% visible)

Lowest visibility of proposals

Visibility calculated using Ordnance Survey's Terrain5 DTM dataset, with screening effects of woodland (10m) and buildings (6m) modelled using layers from OS OpenMapLocal data.

ZTV calculated using ArcGIS 10.6 Viewshed tool with observer eye height 2m above ground and corrections for earth curvature and atmospheric refraction applied.

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Kilometres

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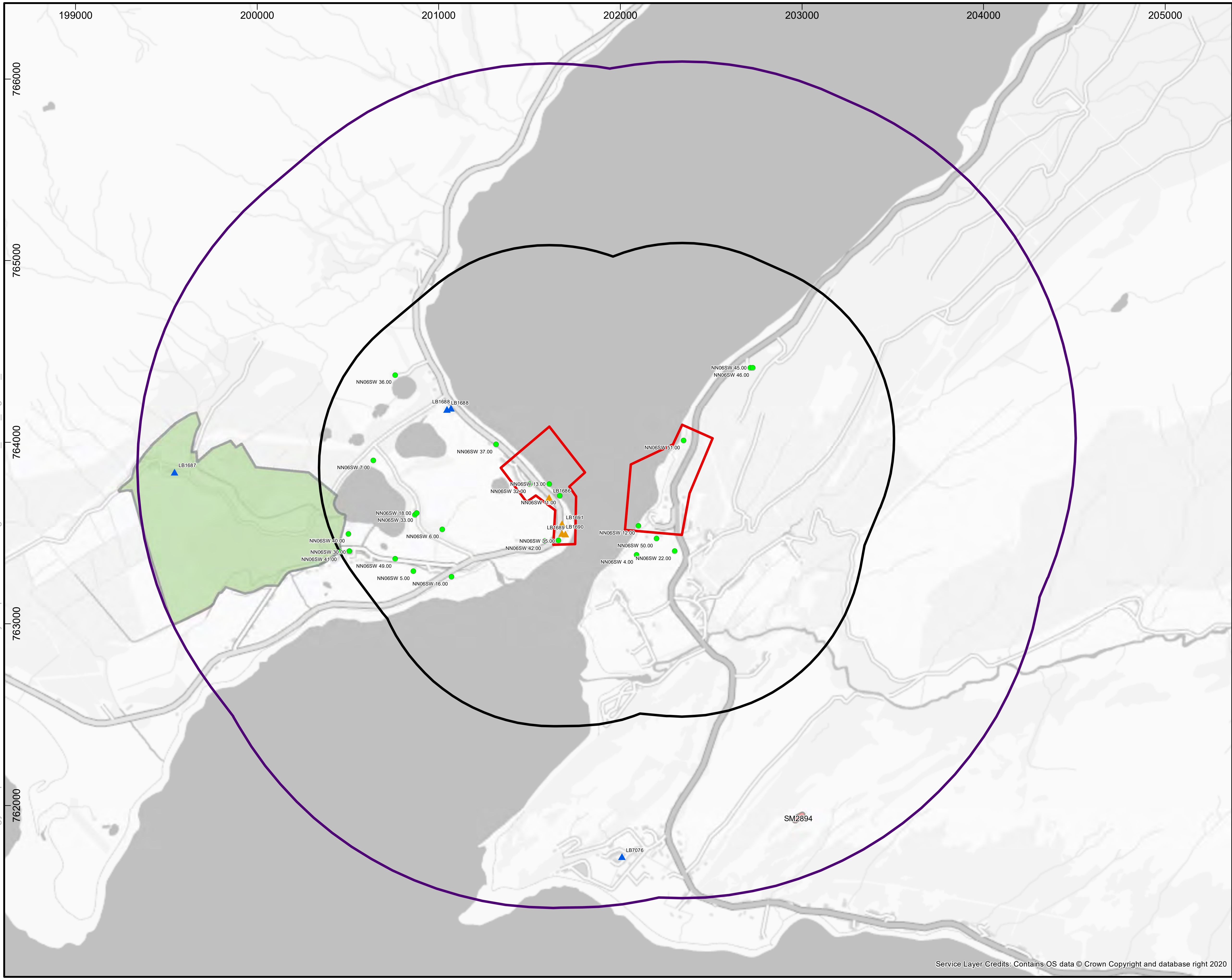
18/04/2024 19411/ZV/002b

Drawn by: TH Checked by: KM Approved by: TH



Service Layer Credits: Contains OS data © Crown Copyright and database right 2020

C:\Users\lisa.bird\AOC Archaeology Group\Data Portal - 27114 - Corran Ferry\Graphics\GIS\Draft figures\AOC27114_SCO_Figure1_20230418.mxd

Figure	1

Heritage Constraints Map

Legend

- Site Boundary
- 1km Study Area
- 2km Study Area
- Scheduled Monument Extent
- Listed Building- Category B
- Listed Building- Category C
- Inventory Garden and Designed Landscape Extent
- Non-designated Heritage Asset

FOR

Affric

Drawn/checked:	LB/SO
DWG no:	01/27114/Sco/01/01
AOC Project No.:	27114

AOC Archaeology Group

N

SYSTEM

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936

SCALE

1:20,000 @ A3

SCALE

0 1,000m

Appendix 1. Environment Agency’s Water Framework Directive Scoping Template

Water Framework Directive assessment: scoping template for activities in estuarine and coastal waters

Use this template to record the findings of the scoping stage of your Water Framework Directive (WFD) assessment for an activity in an estuary or coastal water.

If your activity will:

- take place in or affect more than one water body, complete a template for each water body
- include several different activities or stages as part of a larger project, complete a template for each activity as part of your overall WFD assessment

The WFD assessment guidance for estuarine and coastal waters will help you complete the table.

Your activity	**Description, notes or more information**
Applicant name	The Highland Council
Application reference number (where applicable)	*TBC*
Name of activity	CFIIS
Brief description of activity	*See Section 3 of Scoping Report*
Location of activity (central point XY coordinates or national grid reference)	*See section 2.1 of Scoping Report*
Footprint of activity (ha)	TBC
Timings of activity (including start and finish dates)	Approximately 18 months of construction works.
Extent of activity (for example size, scale frequency, expected volumes of output or discharge)	*See Section 3 of Scoping Report*
Use or release of chemicals (state which ones)	None planned

Water body[1]	Description, notes or more information
WFD water body name	*Loch Linnhe North*
Water body ID	*(SEPA ref: 200089)*
River basin district name	*Loch Linnhe*
Water body type (estuarine or coastal)	*Estuarine*
Water body total area (ha)	*25.3km^2*
Overall water body status (2022)	*Good*
Ecological status	*Good*
Chemical status	*Pass*
Target water body status and deadline	*Good*
Hydromorphology status of water body	*High*
Heavily modified water body and for what use	*NA*
Higher sensitivity habitats present	*Potential PMF: kelp beds*
Lower sensitivity habitats present	*Rocky shore*
Phytoplankton status	*High*
History of harmful algae	*No*
WFD protected areas within 2km	*None*

[1] *Water body information can be found in the Environment Agency's catchment data explorer and the water body summary table. Magic maps provide additional information on habitats and protected areas. Links to these information sources can be found in the WFD assessment guidance for estuarine and coastal waters.*

Specific risk information

Consider the potential risks of your activity to each of these receptors: hydromorphology, biology (habitats and fish), water quality and protected areas. Also consider invasive non-native species (INNS).

Section 1: Hydromorphology

Consider if hydromorphology is at risk from your activity.

Use the water body summary table to find out the hydromorphology status of the water body, if it is classed as heavily modified and for what use.

Consider if your activity:	**Yes**	**No**	**Hydromorphology risk issue(s)**
Could impact on the hydromorphology (for example morphology or tidal patterns) of a water body at high status	Requires impact assessment	Impact assessment not required	*No - Waterbody currently good overall but high for hydromorphology.*
Could significantly impact the hydromorphology of any water body	Requires impact assessment	Impact assessment not required	*No - Unlikely but being considered as part of coastal processes (see Scoping Report Section 11.4.2).*
Is in a water body that is heavily modified for the same use as your activity	Requires impact assessment	Impact assessment not required	*No*

Record the findings for hydromorphology and go to section 2: biology.

Section 2: Biology

Habitats

Consider if habitats are at risk from your activity.

Use the water body summary table and Magic maps, or other sources of information if available, to find the location and size of these habitats.

Higher sensitivity habitats [2]	Lower sensitivity habitats [3]
chalk reef	cobbles, gravel and shingle
clam, cockle and oyster beds	intertidal soft sediments like sand and mud
intertidal seagrass	rocky shore
maerl	subtidal boulder fields
mussel beds, including blue and horse mussel	subtidal rocky reef
polychaete reef	subtidal soft sediments like sand and mud
saltmarsh	
subtidal kelp beds	
subtidal seagrass	

[2] *Higher sensitivity habitats have a low resistance to, and recovery rate, from human pressures.*

[3] *Lower sensitivity habitats have a medium to high resistance to, and recovery rate from, human pressures.*

Consider if the footprint[4] of your activity is:	Yes	No	Biology habitats risk issue(s)
$0.5km^2$ or larger	Yes to one or more – requires impact assessment	No to all – impact assessment not required	No
1% or more of the water body's area			No
Within 500m of any higher sensitivity habitat			Potentially close to subtidal kelp beds
1% or more of any lower sensitivity habitat			No

[4] *Note that a footprint may also be a temperature or sediment plume. For dredging activity, a footprint is 1.5 times the dredge area.*

Fish

Consider if fish are at risk from your activity, but only if your activity is in an estuary or could affect fish in or entering an estuary.

Consider if your activity:	Yes	No	Biology fish risk issue(s)
Is in an estuary and could affect fish in the estuary, outside the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	Continue with questions	Go to next section	No - see Scoping Report Section 14.3.5, underwater noise impacts require further consideration for farmed fish only.
Could impact on normal fish behaviour like movement, migration or spawning (for example creating a physical barrier, noise, chemical change or a change in depth or flow)	Requires impact assessment	Impact assessment not required	
Could cause entrainment or impingement of fish	Requires impact assessment	Impact assessment not required	

Record the findings for biology habitats and fish and go to section 3: water quality.

Section 3: Water quality

Consider if water quality is at risk from your activity.

Use the water body summary table to find information on phytoplankton status and harmful algae.

Consider if your activity:	**Yes**	**No**	**Water quality risk issue(s)**
Could affect water clarity, temperature, salinity, oxygen levels, nutrients or microbial patterns continuously for longer than a spring neap tidal cycle (about 14 days)	Requires impact assessment	Impact assessment not required	No
Is in a water body with a phytoplankton status of moderate, poor or bad	Requires impact assessment	Impact assessment not required	No
Is in a water body with a history of harmful algae	Requires impact assessment	Impact assessment not required	No

Consider if water quality is at risk from your activity through the use, release or disturbance of chemicals.

If your activity uses or releases chemicals (for example through sediment disturbance or building works) consider if:	**Yes**	**No**	**Water quality risk issue(s)**
The chemicals are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment	Impact assessment not required	No
It disturbs sediment with contaminants above Cefas Action Level 1	Requires impact assessment	Impact assessment not required	No

If your activity has a mixing zone (like a discharge pipeline or outfall) consider if:	Yes	No	Water quality risk issue(s)
The chemicals released are on the Environmental Quality Standards Directive (EQSD) list	Requires impact assessment[5]	Impact assessment not required	No

[5] Carry out your impact assessment using the Environment Agency's surface water pollution risk assessment guidance, part of Environmental Permitting Regulations guidance.

Record the findings for water quality go on to section 4: WFD protected areas.

Section 4: WFD protected areas

Consider if WFD protected areas are at risk from your activity. These include:

- special areas of conservation (SAC)
- special protection areas (SPA)
- shellfish waters
- bathing waters
- nutrient sensitive areas

Use Magic maps to find information on the location of protected areas in your water body (and adjacent water bodies) within 2km of your activity.

Consider if your activity is:	Yes	No	Protected areas risk issue(s)
Within 2km of any WFD protected area[6]	Requires impact assessment	Impact assessment not required	No – Only the Moidart and Ardgour SPA designated for Golden Eagle (1.3km NW) within 2km, highly unlikely to be affected by water quality issues.

[6] Note that a regulator can extend the 2km boundary if your activity has an especially high environmental risk.

Record the findings for WFD protected areas and go to section 5: invasive non-native species.

Section 5: Invasive non-native species (INNS)

Consider if there is a risk your activity could introduce or spread INNS.

Risks of introducing or spreading INNS include:

- materials or equipment that have come from, had use in or travelled through other water bodies
- activities that help spread existing INNS, either within the immediate water body or other water bodies

Consider if your activity could:	Yes	No	INNS risk issue(s)
Introduce or spread INNS	Requires impact assessment	Impact assessment not required	Yes, see Scoping Report Sections 13.1.3, 14.1.3.3 and 14.1.4.1.

Record the findings for INNS and go to the summary section.

Summary

Summarise the results of scoping here.

Receptor	Potential risk to receptor?	Note the risk issue(s) for impact assessment
Hydromorphology	No	
Biology: habitats	Yes	Benthic ecology impacts require consideration especially as PMF may be present.
Biology: fish	No	
Water quality	No	
Protected areas	No	
Invasive non-native species	Yes	Marine INNS onsite, need to avoid spread on and offsite.

If you haven’t identified any receptors at risk during scoping, you don’t need to continue to the impact assessment stage and your WFD assessment is complete.

If you’ve identified one or more receptors at risk during scoping, you should continue to the impact assessment stage.

Include your scoping results in the WFD assessment document you send to your activity’s regulator as part of your application for permission to carry out the activity.

Appendix 2. Preliminary Ecological Appraisal Report

Corran Ferry

Infrastructure Improvement Scheme

Preliminary Ecological Appraisal Report

Report No: 99_REP_05

Body Document and Appendices 1 & 2 only. Appendices 3 & 4 can be provided on request.

Date: 06/09/2022

Wallace Stone
Consulting Civil Engineers

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Document Control

	Name	Title	Signature	Date
Author	Ffion Maguire	Ecologist	F. Maguire	06/09/2022
Reviewer	Claire Williams	Senior Environmental Consultant	C. Williams	06/09/2022
Authoriser	Fiona Henderson	Director	F. Henderson	06/09/2022

Effective Date:	**06/09/2022**

Revision No:	Signature	Comments	Date
1A	F. Maguire	For internal review	06/09/2022
1	F. Henderson	For issue	06/09/2022

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Contents

Executive Summary

Affric Limited have undertaken a Preliminary Ecological Appraisal (PEA) of the land surrounding the existing ferry terminals at Ardgour and Nether Lochaber, either side of the Corran Narrows in Loch Linnhe, south of Fort William. The survey was undertaken to help inform the suitability of proposed locations for development works associated with the Corran Ferry Infrastructure Improvement Scheme (CFIIS) by outlining potential ecological constraints to development by providing baseline information on the ecological nature of the Survey Area and recommendations on further ecological survey work (if required). The PEA was undertaken by suitably qualified ecologists, Ffion Maguire and Texa Sim, on 23rd August 2022.

The site is situated within 5km of five designated sites, including Onich to North Ballachulish Woods and Shore Site of Special Scientific Interest (SSSI), Onich to North Ballachulish Special Area of Conservation (SAC), Moidart and Ardgour Special Protection Area (SPA), Glen Etive and Glen Fyne SPA and Kentallen SSSI. Habitats within the Survey Area are not considered to be an extension of the designates sites, however, may provide connective habitat for protected species in the wider locality. Both Moidart and Ardgour SPA and Glen Etive and Glen Fyne SPA are protected due to the presence of Golden Eagle (*Aquila chrysaetos*). However, the Survey Area was considered to be sub-optimal for the species due to the sub-urban nature of the site and subsequent disturbance and lack of suitable resources.

The Survey Area has been divided into four zones (Zone 1, 2, 3 and 4). Zones 1 – 3 are situated on the eastern bank of Loch Linnhe. Zone 4 is situated on the western bank of the loch. The Survey Area supports a range of habitats typical of a sub-urban coastal area, including buildings, amenity grassland, broadleaved woodland, coniferous woodland, scrub and heathland. The land surrounding the Survey Area is predominantly comprised of coniferous woodland, heathland, grazing pasture and hard infrastructure.

The broadleaved woodland situated in Zone 1 and the small pockets of coniferous and broadleaved woodland in Zones 2 and 3 have potential suitability for bats, Badger (*Meles meles*), Red squirrel (*Sciurus vulgaris*) and Pine marten (*Martes martes*). Therefore, if works are proposed within these Zones, further species-specific surveys will be required.

Breeding Bird Surveys were undertaken by Atmos Consulting Limited in the summer of 2022 to determine potential ecological constraints in relation to ornithology. Thus, although this report contains comment on birds identified within the Survey Area, the Breeding Bird Survey Report should be referred to for recommendations in relation to ornithology.

Rhododendron (*Rhododendron ponticum*) and Japanese Knotweed (*Fallopia japonica*) were identified within the Survey Area. Both species are Invasive Non-Native Species (INNS) listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). If construction works encroach upon areas supporting invasive species, INNS Management Plans (INNSMP) will be required. Extensive Rhododendron clearance has recently been undertaken within Zone 3. As such, the current habitat predominantly comprised of cleared vegetation. The clearance of invasive species is likely to have a positive impact upon the habitat by promoting the growth of native species. If construction works are to take place within Zone 3, there may be a need to re-survey the area. Habitats within Zone 3 are known to support Lesser butterfly-orchid (*Platanthera bifolia*), a UK Biodiversity Action Plan (BAP) protected species. Lesser butterfly-orchid was not identified during the Extended Phase 1 Habitat Survey, however, a National

Vegetation Classification (NVC) Survey of Zone 3 would be advisable if it is to be included within the proposed design.

1 Introduction

Affric Limited have undertaken a Preliminary Ecological Appraisal (PEA) of the land surrounding the existing ferry terminals at Ardgour and Nether Lochaber, either side of the Corran Narrows in Loch Linnhe, south of Fort William. The purpose of the survey was to help inform the suitability of proposed locations for development works associated with the Corran Ferry Infrastructure Improvement Scheme (CFIIS) by providing baseline information on the ecological nature of the Survey Area and identifying potential ecological constraints to development.

For the purpose of this report, the 'Survey Area' includes the land situated within the blue line boundary (Drawing 99_DRG_02_01). The Survey Area covers in the region of 20ha, which includes land on both the eastern and western banks of Loch Linnhe. The Survey Area has been split into four Zones (Zones 1, 2, 3 and 4), in order to help identify specific areas requiring further survey work. Survey Zones are shown in Drawing 99_DRG_02_1.

1.1 Objectives of Study

The purpose of the Preliminary Ecological Appraisal Report (PEAR) is to establish the baseline ecological conditions of the Survey Area and inform of potential ecological constraints to development by undertaking an Extended Phase 1 Habitat Survey and desktop study.

This report will detail the following:

- Desk study results;
- Field survey methodology;
- Field survey results; and
- Recommendations for further survey (if required).

1.2 Survey Area Description

The Survey Area runs alongside either side of Loch Linnhe, through the villages of Nether Lochaber and Ardgour. As such, much of the surrounding area incorporates habitats and infrastructure associated with a coastal village. A large part of the Survey Area is part of the sub-urban landscape, comprised of residential and commercial buildings with associated hard and soft landscaping. However, areas of woodland, grassland, scrub and heathland remain. Rhododendron (*Rhododendron ponticum)* has become a significant problem within the local area, dominating much of the existing habitats.

1.3 Proposed Works

The Highland Council (THC) are proposing to upgrade the existing ferry terminals at Corran. The upgrade will involve the replacement of the existing ferry with two electric vessels requiring installation of infrastructure to support their use, including a new slipway at Ardgour and Nether-Lochaber, marshalling areas, public facilities, and a berthing pier. The development will involve both marine construction and dredging works below Mean High Water Springs (MHWS), as well as construction works above Mean Low Water Springs (MLWS). Several designs are proposed. The PEAR will help assist design selection by informing the suitability of proposed locations for development works associated with the CFIIS.

2 Methodology

2.1 Study Area

The Survey Area covers around 20ha of land along the western and eastern banks of Loch Linnhe. As the PEAR was undertaken to inform optioneering. The Survey Area was comprised of four Zones (Zones 1, 2, 3 and 4) which were chosen with the various design proposals in mind and were comprised of potential construction zones with an buffer deemed appropriate for the ecological nature and landscape of the site. The desktop study was extended to include a 5km buffer from the Survey Area in order to properly assess local records of species populations which may utilise the wider habitat mosaic.

2.2 Desktop Study

A data collection exercise was undertaken to provide additional contextual ecological information of the site.

Ecological background information of the survey area and 5km buffer was obtained from a variety of sources. Information of designated sites was obtained from DEFRA via MAGIC Map (DEFRA, 2022) and NatureScot via SiteLink (NatureScot, 2022). A review of information available on the National Biodiversity Network (NBN) Atlas (NBN, 2022) was undertaken to obtain information on local records of protected species. Aerial photography from Google Maps (Google, 2022) was also utilised.

2.3 Extended Phase 1 Habitat Survey

An Extended Phase 1 Habitat Survey was undertaken by suitably qualified ecologists, Ffion Maguire and Texa Sim on 23rd August 2022 following the guidance of CIEEM's Guidelines for Baseline Ecological Assessment (CIEEM, 2017). The Extended Phase 1 Habitat Survey was undertaken across the entirety of the Survey Area. The survey should not be considered to be representative of a full protected species or botanical survey but a baseline survey to provide an overview of the ecology of the site to help inform upon the need for further survey work (if required).

Phase 1, as described in JNCC's Handbook for Phase 1 Habitat Survey, a Technique for Environmental Audit (JNCC, 2010), is considered to be a standardised method of assessing and recording habitat types. Habitats within the Survey Area were mapped on-site. Where required, descriptive 'Target Notes' were recorded for features of ecological interest (Appendix 2). A Site Habitat Map was produced using Quantum Geographic Information System (QGIS) software.

The Extended Phase 1 Habitat Survey included a preliminary survey of the site's suitability to support protected species. In order to assess the site's suitability for protected species, species-specific best practice guidelines were followed.

2.4 Limitations

The survey was undertaken during heavy rain. The heavy rain caused much of the rocky coastline to become inaccessible due to risk of slipping. However, as the habitat was situated below the high tide mark, access was not required as part of the terrestrial Extended Phase 1 Habitat Survey. There were access limitations within the woodland and heathland due to dense ground flora, although it was still possible to suitably map the habitats. Some locations within the Survey Area could not be accessed due to constraints of land ownership. However, this land was part of residential plots, and as such will not be impacted as part of development. Residential plots comprised of residential dwellings, outbuildings, mown gardens and introduced shrub were mapped as 'buildings'. The site survey was undertaken during August, which is considered to be an appropriate time to complete a Phase 1 Habitat Survey. On the other hand, August is considered to be sub-optimal for the survey of certain species, such as Badger (*Meles meles*).

3 Results

3.1 Desktop Study

3.1.1 Statutory Designated Sites

A review of SiteLink and MAGIC Maps confirmed that there are several designated sites within 5km of the Survey Area (Table 3.1).

Table 3.1.1: Summary of Designated Sites within 5km of the Survey Area

Designated Site	Approximate distance from Survey Area	Ecological Features of Importance	Comments
Onich to North Ballachulish Woods and Shore SSSI	0.5km SE	Structural and metamorphic geology; calcium-rich spring water-fed fens; upland mixed ash woodland; and upland oak woodland	The site supports semi-natural woodland, unusual mire communities and Dalradian rocks. The woods are of ecological interest both for their extent and for the variation in structure and flora
Onich to North Ballachulish SAC	0.5km SE	Old Sessile oak (*Quercus petraea*) woods with Ilex and Blechnum with smaller areas of alkaline fens and Tilio-Acerion forests	The site supports three Annex I habitats, including 91A0 old Sessile oak woods with Ilex and Blechnum; 7230 Alkaline fens and 9180 Tilio-Acerion forests
Moidart and Ardgour SPA	1km NW	Regularly supports a population of Golden eagle (*Aquila chrysaetos*)	In 2003, 11 territories of Golden eagle were recorded, which is more than 2.4% of the GB population
Glen Etive and Glen Fyne SPA	4km SSE	Regularly supports a population of Golden eagle (*Aquila chrysaetos*)	In 2003, 19 territories of Golden eagle were recorded, which is more than 4.2% of the GB population
Kentallen SSSI	5km SSW	Geological SSSI	No further information available

3.1.2 Non-statutory Designated Sites

There are no known non-statutory designated sites within 5km of the Survey Area.

3.1.3 Protected Species Records

A review of existing species records on NBN Atlas indicates that there are records of protected within the Survey Area and 5km buffer. An overview of herptiles (amphibians and reptiles) and protected terrestrial mammals recorded within 500m of the Survey Area and Red Birds of Conservation Concern (BoCC) and protected invertebrate species recorded within the Survey Area is shown in Table 3.2.

Table 3.1.2: Overview of species records

Group	Common name	Scientific name
Amphibians	Common frog	*Rana temporaria*
Birds	Common bullfinch	*Pyrrhula pyrrhula*
	Common cuckoo	*Cuculys canorus*
	Dunlin	*Calidris alpina*
	Eurasian curlew	*Numenius arquata*
	Herring gull	*Larus argentatus*
	House sparrow	*Passer domesticus*
	Kittiwake	*Rissa tridactyla*
	Long-tailed tit	*Aegithalos caudatus*
	Mistle thrush	*Turdus viscivorus*
	Ringed plover	*Charadrius hiaticula*
	Shag	*Phalacrocorax aristotelis*
	Song thrush	*Turdus philomelos*
	Starling	*Sturnus vulgaris*
	Whinchat	*Saxicola rubetra*
	Wood warbler	*Phylloscopus sibilatrix*
Reptiles	Common lizard	*Zootoca vivipara*
	Slow-worm	*Anguis fragilis*
Terrestrial mammals (excl. bats)	Eurasian otter	*Lutra lutra*
	Eurasia red squirrel	*Sciurus vulgaris*
	Pine marten	*Martes martes*
Invertebrates - bees	Moss carder-bee	*Bombus muscorum subsp. celtibus*

3.1.4 Invasive Species Records

Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*) have been previously recorded within Zone 4, on the western banks of Loch Linnhe. Both species are listed as invasive under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

3.2 Extended Phase 1 Habitat Survey

3.2.1 Habitats

The Survey Area was comprised of habitats associated with a coastal village in the Scottish Highlands. Much of the Survey Area was developed with residential and commercial plots. However, the Survey Area also supports semi-natural habitats such as woodland and heathland. The areas of habitat types identified within each of the four zones is provided in Table 3.3. A description of habitats present within the Survey Area is shown in Table 3.4. A Site Habitat Map has been produced using QGIS to provide a visual representation of the habitats present within the Survey Area (Drawing 99_DRG_02_1).

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Table 3.3: Approximate Area of Each Habitat Type (as Described in JNCC, 2010), Identified within the Four Survey Zones

Habitat Type	Approximate Area within Zone 1	Approximate Area within Zone 2	Approximate Area within Zone 3	Approximate Area within Zone 4
Semi-natural broadleaved woodland	$0.023km^2$	$0.005km^2$	$0.006km^2$	N/A
Semi-natural coniferous woodland	N/A	$0.003km^2$	$0.001km^2$	N/A
Planted coniferous woodland	N/A	N/A	N/A	$0.001km^2$
Dense/continuous scrub	N/A	N/A	N/A	$0.003km^2$
Improved grassland	N/A	$<0.001km^2$	$0.003km^2$	$0.001km^2$
Poor semi-improved grassland	N/A	N/A	N/A	$0.003km^2$
Amenity grassland	N/A	$0.003km^2$	N/A	N/A
Introduced shrub	N/A	$0.001km^2$	$0.024km^2$	N/A
Buildings	N/A	$0.022km^2$	$0.002km^2$	$0.018km^2$
Other habitat	N/A	N/A	$0.057km^2$	N/A

Table 3.4: Overview Habitats Present within the Survey Area

Habitat code	Habitat	Description
A1.1.1	Semi-natural broadleaved woodland	Zone 1 is predominantly comprised of semi-natural broadleaved woodland. The majority of the woodland is dominated by stands of Silver birch (*Fagus sylvatica*) of forest growth form, with a low abundance of Alder (*Alnus glutinosa*), Rowan (*Sorbus aucuparia*), Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*), Wild cherry (*Prunus avium*) and Scots pine (*Pinus sylvestris*). In these areas, patches of Bracken (*Pteridium spp.*) and Bramble (*Rubus fruticosus*) dominate the understorey. A patch of Japanese Knotweed (*Fallopia japonica*) is present within the woodland and appears to be spreading westwards. Rhododendron (*Rhododendron ponticum*) is also present. In areas of the woodland where the ground becomes wetter due to small fens, Alder dominates. In these areas there is a decrease in the abundance of Bracken and Bramble, as Soft rush (*Juncus effusus*) takes precedence. Small patches of semi-natural broadleaved woodland are also present in Zones 2 and 3, though these were inaccessible due to dense scrub. However, the woodlands appeared to be dominated by Silver birch with an understorey dominated by Bramble.
A1.2.1	Semi-natural coniferous woodland	A small area of coniferous woodland is present in Zone 2. The woodland canopy isa monoculture of Scots Pine (*Pinus sylvestris*). The ground vegetation appears to be dominated by dense Rhododendron (*Rhododendron ponticum*) scrub, which limited accessibility to survey.
A1.3.2	Planted mixed woodland	Small linear feature dominated by Cherry laurel (*Prunus laurocerasus*) separating the residential plots in Zone 4 from grazing pasture at the rear.
A2.1	Continuous scrub	Linear feature of dense scrub situated in Zone 4 upon the western banks above the A861. Scrub dominated by Gorse (*Ulex spp.*), Bramble (*Rubus fruticosus*) and Rhododendron (*Rhododendron ponticum*). Young/semi-mature Rowan (*Sorbus* aucuparia) and Scots Pine (*Pinus sylvestris*) also present.

Habitat code	Habitat	Description
B4	Improved grassland	Equine grazing pasture in Zone 3 was inaccessible due to land ownership. Appeared to be dominated by Ryegrass (*Lolium spp.*). The grass sward was heavily grazed and showed indication of improvement. Sheep grazing pasture situated towards the west of Zone 4. Dominated by Ryegrass (*Lolium spp.*) and White clover (*Trifolium repens*), with a low abundance of Buttercup (*Ranunculus spp.*), and Dandelion (*Taraxacum officinale*). Small patches of tall herb, Thistle (*Cirsium spp.*) and large patches of Rush (*Juncus effusus*) are present.
B6	Poor semi-improved grassland	Patches of poor semi-improved grassland situated between residential and commercial plots and hard infrastructure within Zone 4. Grassland is relatively patchy. However, covers <75% of the ground. Low species diversity.
D1 & J1.4 matrix	Dry dwarf shrub heath, introduced shrub matrix	Dry upland dwarf heath dominated by Heather (*Calluna spp.*) and Gorse (*Ulex spp.*) that has become heavily encroached by dense patches of Rhododendron (*Rhododendron ponticum*) scrub situated towards the southwest of Zone 3.
J1.2	Amenity grassland	Area of amenity grassland to the north of the eastern ferry terminal in Zone 2. Species identification limited due to heavy mowing. Grassland appears to be dominated by Ryegrass (*Lolium spp.*) and White clover (*Trifolium repens*)
J5	Cleared introduced shrub (other habitat)	Area of recently cleared Rhododendron (*Rhododendron ponticum*) scrub, situated towards the southeast of Zone 3.
J6	Buildings	Residential plots, comprised of buildings with associated hard and soft landscaping, commercial buildings and hard infrastructure are present on both the western and eastern banks of Loch Linnhe (Zones 1, 2, 3 and 4).

3.2.2 Protected Species

3.2.2.1 Amphibians

No freshwater standing waterbodies have been formerly mapped within 250m of Zones 1, 2 or 3. Nonetheless, woodland, grassland and heathland habitats within the Survey Area provide suitable terrestrial habitats to support amphibians. As smaller, unmapped waterbodies may provide suitable breeding habitat for amphibians, it is recommended that Zones 1, 2 and 3 be considered suitable to support common and widespread amphibians as a precautionary approach.

Two lochans are present within 250m of Zone 4. The lochans are part of a larger habitat mosaic of standing waterbodies, grassland and heathland which likely support metapopulations of common and widespread amphibian species. There are records of Common Frog (*Rana temporaria*) and Common Toad within 5km of the Survey Area. Residential plots and grassland within Zone 4 provide some suitability for amphibians and may be used as 'steppingstone' habitat whilst commuting.

Ultimately the entirety of the Survey Area was considered to have suitability to support populations of common and widespread amphibian species such as Common Frog.

3.2.2.2 Bats

A scoping survey was undertaken concurrently to the PEA to determine suitable habitats on-site for roosting bats which may require a Preliminary Bat Roost Assessment (PRA). Several woodland blocks were identified within Zones 1, 2 and 3. This included a large woodland block dominated by Silver birch (*Betula pendula*) which made up the majority of Zone 1, a small block of native coniferous woodland dominated by Scots pine (*Pinus sylvestris*) to the rear of the existing toilet block in Zone 2, and some small pockets of Silver birch dominated broadleaved woodland within Zones 2 and 3. The woodland blocks were all considered to have suitability for roosting bats. Although no specific Potential Roosting Features (PRF) were identified during the initial scoping survey, it was acknowledged that the woodlands provided features of old growth often associated with roosting bats. As such, the woodlands were perceived to have suitability for roosting bats as a precautionary approach (trees should be inspected on a tree-by-tree basis once proposal designs are complete). Common pipistrelle (*Pipistrellus pipistrellus*) and Soprano pipistrelle (*Pipistrellus pygmaeus*) have been recorded within 5km of the Survey Area. Both are crevice dwelling bat species that may use small PRFs within the trees on-site for roosting. It was identified that there were constraints to a ground-level inspection due to the density of the canopy and ground vegetation. Thus, it is likely that a climbed inspection will be required during further survey work.

Built structures within the Survey Area predominantly comprised of in-use residential and commercial buildings. If works are proposed to any existing built structure as part of the proposed development, a PRA of the built structure will be required.

The entirety of the Survey Area was also surveyed for suitability for foraging/commuting bats. The Survey Area is comprised of a matrix of invertebrate-rich habitats suitable for bat foraging, including grassland, heathland, scrub woodland, residential plots and Loch Linnhe. The Survey Area is surrounded by a range of high-quality habitats, particularly native coniferous woodland. Therefore, suitability for foraging/commuting bats was considered to be high.

3.2.2.3 Birds

The Survey Area supports several habitat types which are considered to be suitable for the associated bird species, including broadleaved woodland, coniferous woodland, heathland, amenity grassland and coastal margins. The potential for the proposals to impact upon protected bird species has already been identified early on in the planning process. As such, a Breeding Bird Survey was carried out by Atmos Consulting Limited in the summer of 2022. The survey report should be referenced for information on ecological constraints in relation to ornithology.

3.2.2.4 Invertebrates

Common hawker (*Aeshna juncea*) were identified within the grazing pasture west of Zone 4. No protected invertebrate species were identified during the suite survey. However, Moss carder bee (*Bombus muscorum subsp. celticus*), a UK BAP invertebrate species, has been previously identified immediately adjacent to the southwestern boundary of Zone 4. However, habitats within Zone 4 are considered to be largely unsuitable for the species due to their sub-urban nature. Habitats within the Survey Area are not considered to be unique or of particularly high quality for invertebrates within the wider locality. As such, the project is unlikely to have any long-term impact upon local populations of invertebrates.

3.2.2.5 Reptiles

No reptiles, or evidence of reptiles, were identified during the site survey. However, Slow-worm (*Anguis fragilis*) and Common lizard (*Zootoca vivipara*) have been previously recorded within 5km of the Survey Area. Habitats within the Survey Area, including grassland, heathland, scrub and woodland are considered to provide a suitable habitat mosaic to the support populations of common and widespread reptilian species, such as Slow-worm.

A large area of Rhododendron (Rhododendron ponticum) scrub has recently been cleared within Zone 3. The clearance of an invasive scrub is likely to decrease shading and promote the growth of locally native flora. Thus, there is the potential for heathland habitat to become more favourable to reptiles. If construction works are to take place within Zone 3, there will be a need to resurvey the area to inform whether the habitat has suitability for reptiles, particularly Adder (*Vipera berus*).

3.2.2.6 Badger

There are records of Badger (*Meles meles*) within 5km of the site. The substrate within the woodland in Zone 1 was heavily waterlogged, and so was considered to be sub-optimal for sett building. Nonetheless, there is potential for Badger to forage/commute through the site. Suspected snuffle holes were identified within the broadleaved woodland in Zone 1 by an observer during the Breeding Bird Survey in March 2022. Mammal trails were noted within the dense ground vegetation during the Extended Phase 1 Habitat Survey, however no setts, day beds, latrines, foraging signs, scratching posts, hair or footprints were identified. The site survey was undertaken during August, which is considered to be sub-optimal for Badger survey due to the density of the ground vegetation and a reduction in Badger activity. It is therefore recommended that further species survey work take place during the optimal time period (October to April) for disturbance in Zone 1. The Badger Survey should also incorporate the small pockets of woodland within Zones 2 and 3 which were inaccessible during the site survey. These woodlands are well connected to high quality habitats within the wider locality and may provide suitable refuge for sett building.

3.2.2.7 Hedgehog

No Hedgehog (*Erinaceus europaeus*), or evidence of Hedgehog, was identified during the site survey. However, the species are known to be present within the local area. Habitats within the Survey Area, including woodland, amenity grassland and residential gardens are considered to provide a suitable habitat mosaic to support a population of Hedgehog.

3.2.2.8 Otter

There are records of Otter (*Lutra lutra*) within 500m of the Survey Area, however no Otter, or evidence of Otter, was identified during the site survey. Otter are known to be present in the area (confirmed sighting from local residents). Habitats within the Survey Area are not considered to be suitable to support a holt, due to lack of suitable habitat above high tide.

However, Otter may use the coastal margins as a layup. Otter likely use the coastal habitats spontaneously for foraging/commuting.

3.2.2.9 Pine Marten

No Pine marten (*Martes martes*), or evidence of Pine marten, was identified during the site survey. There are, however, records of Pine Marten within 500m of the Survey Area. The broadleaved woodland in Zone 1 and the smaller pockets of broadleaved and coniferous woodland in Zones 2 and 3 are considered to provide suitability to support Pine marten, when taking into consideration the larger habitat mosaic within the wider locality.

3.2.2.10 Red Squirrel

No Red squirrel (*Sciurus vulgaris*), footprints, feeding signs or dreys were identified during the site survey. However, there are records of Red squirrel within the broadleaved woodland in Zone 1. The broadleaved woodland in Zone 1 and the smaller pockets of broadleaved and coniferous woodland in Zones 2 and 3 are considered to provide suitability to support Red squirrel, when taking into consideration the larger habitat mosaic within the wider locality. In particular, it is likely that Red squirrel utilise the woodland in Zone 1 in conjunction with the coniferous woodland situated on the other side of the A82. Species record notes state that the species have been observed running across the A82 between the two woodland blocks.

3.2.2.11 Scottish Wildcat

There are records of Scottish wildcat within 5km of the Survey Area, however no evidence of Scottish wildcat (*Felix silvestris*) was identified during the site survey. Suitable habitat within the Survey Area is small in size and fragmented from any high-quality habitat by urban development, including busy roads (such as the A82) and residential and commercial structures. Therefore, it would be considered justifiable to assume that Scottish wildcat are absent from the Survey Area.

3.2.2.12 Water Vole

There are no known records of Water vole (*Arvicola amphibius*) within 5km of the Survey Area. Furthermore, no suitable watercourses or drains were identified within the Survey Area to provide suitable habitat to support Water vole. Based on the lack of suitable habitat it would be considered justifiable to assume that Water Vole are not present within the Survey Area.

3.2.2.13 Common and Widespread Terrestrial Mammals

The Survey Area supports a range of different habitats suitable to support populations of common and widespread terrestrial mammals, such as Rabbit (*Oryctolagus cuniculus*). Furthermore, habitats within Zone 3 were considered to be suitable to support Mountain Hare (*Lepus timidus*) which has been recorded within 5m of the Survey Area.

3.2.2.14 Protected Plant Species

Habitats within Zone 3 are known to support Lesser butterfly-orchid (*Platanthera bifolia*).. However, Lesser butterfly-orchid was not identified during the site survey. Heathland habitat within the area is considered to be suitable for the species. Although, the area has become heavily encroached by Rhododendron (*Rhododendron ponticum*) scrub which is likely to have increased shading and degraded the former habitat.

3.2.3 Invasive Species

3.2.3.1 Japanese Knotweed

A large patch of Japanese Knotweed (*Fallopia japonica*) was identified within the broadleaved woodland in Zone 1 (Target Note TN7; drawing 99_DRG_03_1. The patch was formerly identified during the Breeding Bird Survey, undertaken by Atmos. Japanese Knotweed is an INNS listed in Section 9 of the Wildlife and Countryside Act 1981 (as amended). The species is considered to be highly invasive and can have considerable impact upon hard infrastructure.

3.2.3.2 Rhododendron

Rhododendron (*Rhododendron ponticum*) is present throughout much of the Survey Area and has become established within several different habitats, including broadleaved woodland, coniferous woodland, scrub and heathland. Where present, the species dominates the ground-flora and has likely impacted upon former biodiversity. Rhododendron is an INNS listed in Section 9 of the Wildlife and Countryside Act 1981 (as amended).

A large area, previously dominated by Rhododendron, has recently been cleared to manage the INNS (Target Note TN11; depicted as J5 on drawing 99_DRG_03_01). The habitat was once a matrix of dry dwarf heath and introduced shrub (Rhododendron). It is hoped that the clearance will promote a growth of native flora and have a positive impact upon local biodiversity.

4 Discussion

The Extended Phase 1 Habitat Survey was undertaken in order to scope the Survey Area for potential ecological constraints to re-development in the area. As such, ecological features requiring further survey work within different zones (Zones 1, 2, 3 and 4) are provided to help inform upon suitable locations for re-development. Recommendations in relation to each survey Zone are provided below.

4.1 Zone 1

R1 A Badger Walkover Survey of the broadleaved woodland should be undertaken by a suitably qualified ecologist during an appropriate season (October – April).

R2 A Terrestrial Mammal Survey of the broadleaved woodland should be undertaken by a suitably qualified ecologist to determine the presence and distribution of Red squirrel and Pine marten (if any).

R3 A Preliminary Bat Roost Assessment (PRA) of individual trees requiring tree works (including removal) should be undertaken by a suitably qualified ecologist. Due to the complexity of the woodland and constraints of a ground-level inspection, a climbed inspection may be required. Potential Roost Features (PRF) should be inspected by endoscope by a suitably licenced bat worker.

R4 An Invasive Non-Native Species Management Plan (INNSMP) for Japanese Knotweed should be put in place and implemented with a matter of urgency.

R5 Otter are likely to utilise coastal margins spontaneously for foraging, commuting and potentially, as a layup. Therefore, suitable mitigation strategies to protect the species should be produced. This should include a pre-construction survey to check for resting places and mitigation to avoid physical harm.

4.2 Zone 2

R1 A Badger Walkover Survey of the small pockets of broadleaved and coniferous woodland should be undertaken by a suitably qualified ecologist during an appropriate season (October – April).

R2 A Terrestrial Mammal Survey of the small pockets of broadleaved and coniferous woodland should be undertaken by a suitably qualified ecologist to determine the presence and distribution of Red squirrel and Pine marten (if any).

R3 A PRA of individual trees requiring tree works (including removal) should be undertaken by a suitably qualified ecologist. Due to the complexity of the woodland and constraints of a ground-level inspection, a climbed inspection may be required. PRFs should be inspected by endoscope by a suitably licenced bat worker.

R5 Otter are likely to utilise coastal margins spontaneously for foraging, commuting and potentially, as a layup. Therefore, suitable mitigation strategies to protect the species should be determined. This should include a pre-construction survey to check for holts

R6 An INNSMP for Rhododendron should be put in place to clear the Rhododendron from site, which will help promote the growth of native flora and provide a positive contribution to biodiversity net gain.

4.3 Zone 3

R7 An updated Extended Phase 1 Habitat Survey of the area should be undertaken by a suitably qualified ecologist prior to final project design as the existing habitats are likely to change as a result of recent clearance of the site. The updated PEAR should outline further survey work (if required).

R8 National Vegetation Communities (NVC) Surveys would be advisable to determine whether the habitat still support Lesser butterfly-orchid. Rhododendron clearance is likely to enhance the existing habitat to make it more suitable for Lesser butterfly-orchid. However, care should be taken when choosing suitable pesticides for clearance that is does not impact the protected species.

4.4 Zone 4

R6 An INNSMP for Rhododendron should be put in place to clear the Rhododendron from site, which will help promote the growth of native flora and provide a positive contribution to biodiversity net gain.

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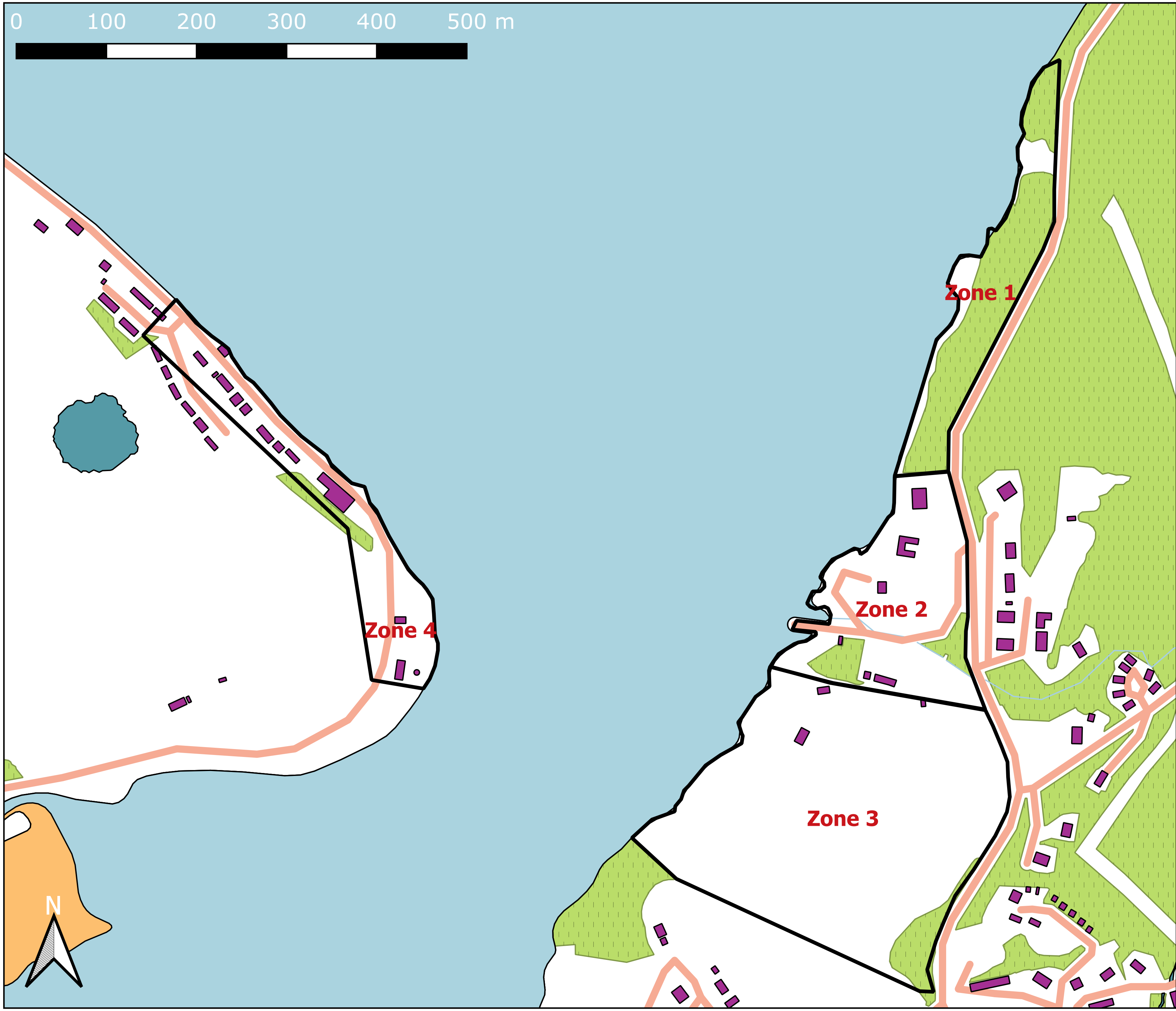
6 Glossary

Table 6.1: Glossary of terms used within the report

Acronym	Definition
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BoCC	Birds of Conservation Concern
CIEEM	Chartered Institute of Ecology and Environmental Management
INNS	Invasive Non-Native Species
INNSMP	Invasive Non-Native Species Management Plan
JNCC	Joint Nature Conservation Committee
NBN	National Biodiversity Network
PEA	Preliminary Ecological Appraisal
PEAR	Preliminary Ecological Appraisal Report
PRA	Preliminary Bat Roost Assessment
PRF	Potential Roost Feature
SSSI	Site of Special Scientific Interest
SAC	Special Area of Conservation
SPA	Special Protection Area
THC	The Highland Council
QGIS	Quantum Geographic Information System

Appendix 1: Drawings



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99_DRG_02_1: Survey Area

Projection: OSGB 1936/British National Grid EPSG: 27700

Legend

- Buildings
- Foreshore
- Fresh Water
- Roads
- Tidal Water
- Woodland
- Zone 1
- Zone 2
- Zone 3
- Zone 4

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99_DRG_03_1: Site Habitat Map

Projection: OSGB 1936/British National Grid EPSG: 27700

Legend

Habitats

- A1.1.1 - Broadleaved woodland - semi-natural
- A1.2.1 - Coniferous woodland - semi-natural
- A1.3.2 - Mixed woodland - plantation
- A2.1 - Scrub - dense/continuous
- B4 - Improved grassland
- B6 - Poor semi - improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J1.4 - Introduced shrub
- J3.6 - Buildings
- J5 - Other habitat
- Target Notes PEA
- Survey Area

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Appendix 2: Target Notes

Table A2.1: Target notes recorded during the Extended Phase 1 Habitat Survey on the 23rd August 2022

Target Note No.	Easting	Northing	Description
TN1	202245	763783	Rocks slippery due to seaweed and heavy rain largely inaccessible
TN2	202307	763858	Large patch of Rhododendron
TN3	202291	763921	Cormorant identified on rocks
TN4	202369	763980	Mature Sycamore
TN5	202361	763952	Alder with Bracken understorey
TN6	202400	764083	Scattered Scots pine present
TN7	202340	763919	Large patch of Japanese knotweed spreading westwards
TN8	202175	763513	Woodland inaccessible due to Rhododendron shrub
TN9	202051	763411	Rocks slippery due to seaweed and heavy rain largely inaccessible
TN10	202083	763368	Steep incline difficult to climb due to rain and heathland vegetation
TN11	202226	763344	Rhododendron clearance recently taken place. Grasses starting to grow through dead vegetation
TN12	202334	763312	Linear feature of woodland inaccessible due to dense Bramble scrub
TN13	201565	763676	Offsite grazing pasture with patches of Juncus
TN14	201679	763552	Disused building with potential bat suitability

Appendix 3. Breeding Bird Survey Report

Corran Ferry
19410

Technical Report

Corran Ferry

Breeding Bird Survey

Affric limited

September 2022

Contents

Document Prepared For
Affric Limited

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Version	Date	Reason
1.1	14/09/2022	Draft for internal review
1.2	19/09/2022	Client issue

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1 Introduction

1.1 Terms of Reference

Atmos Consulting Ltd. was commissioned by Affric Limited on behalf of Highland Council to undertake a breeding bird survey at Corran Narrows, Corran, Scottish Highlands (hereafter referred to as the "Site").

1.2 Site Location and Description

The Site is located on either side of the Corran Narrows, the narrowest point of Loch Linnhe, approximately 13km south-west of Fort William. The Site comprises two sections: one on the western side of the Corran Narrows at Corran Ferry Port, and another on the eastern side at Ardgour Ferry Terminal. The Site boundary of the Corran section extends from Corran Point north-west along the A861 and includes much of the Corran settlement. The Site boundary of the Ardgour section incorporates land between the waters of Loch Linnhe and the A82, extending north from Blàr Moine to Poll a' Phloid.

1.3 Objectives

The objectives of this report are to:

- Summarise the avian desk study information obtained to date for the Site; and
- Document the ornithological survey methodologies and avian species recorded.

1.4 Proposed Development

The proposed scheme is for expansion of the Corran and Ardgour ferry port facilities.

2 Methodology

2.1 Desktop Study

2.1.1 Designated Sites

The desktop study consisted of a search for statutory and non-statutory designated Sites with avian qualifying features within 10km of the Site, as well as a data review for sources of information relating to bird populations on and within the vicinity. Various data sources were utilised including the website of the statutory agency, NatureScot via the "Site Link Portal" (https://sitelink.nature.scot/home).

2.1.2 Species Records

A search of publicly available records within 2km of the Site was undertaken using various data sources including datasets freely available for commercial use held on the National Biodiversity Network (NBN) Atlas website (https://data.nbn.org.uk).

2.2 Survey Methodologies

Survey methodologies were in accordance with SNH (2017b) guidance as well as survey methodologies described in Gilbert *et al*. (1998) and Hardey *et al*. (2013).

All surveys were carried out by experienced ornithological surveyors who hold NatureScot Schedule 1 bird licences.

2.2.1 Breeding Bird Survey

A breeding bird survey was carried out using the Brown & Shepherd breeding bird survey method (Brown & Shepherd, 1993). This technique is used to census upland breeding waders such as golden plover *Pluvialis apricaria*, dunlin *Calidris alpina*, greenshank *Tringa nebularia* and other species of open upland moor, but can be used in a residential / agricultural setting to record all species and provides a reliable estimate for most species.

Surveys were undertaken between April and June, avoiding high winds and other unfavourable weather conditions. The method is based on a constant search effort, allowing 20 to 25 minutes per 500 x 500m quadrat of open land. A predetermined route through each quadrat was followed so that all areas of each quadrat were approached to within at least 100m, with the surveys taking place between 08:30 and 18:00, in accordance with the guidelines.

The behaviour and location of each individual bird was recorded on a 1:25,000 scale map, using standard BTO codes. Records from each survey were combined into a final visit map, so that duplicate records of the same birds could be removed.

Birds were assumed to be breeding or holding a territory (confirmed breeding) at a location if one or more of the following was recorded:

- Presence of a nest, eggs or young (including newly fledged); and / or
- A bird was observed carrying food or breeding material.

In the absence of either of these indicative behaviours, birds were classified as probable breeding if one or more of the following was recorded:

- Courtship, displaying or singing in the same location on more than one visit;
- Agitated behaviour including alarm calls or distraction display; and / or
- Territorial disputes.

In the absence of any of the above indicative behaviours, birds were classified as possible breeding if one or more of the following was recorded:

- Singing or displaying on one visit;
- A pair in suitable habitat; and / or
- Birds reacting antagonistically on one visit.

Other records were considered to be of non-breeding birds.

2.3 Survey Limitations

Surveys were undertaken at a suitable time of year and under suitable weather conditions and no limitations have been identified in this regard.

3 Results

3.1 Desk Study

3.1.1 Designated Sites

Statutory Designations

There are two designated sites with avian qualifying features in the vicinity (< 10km) of the proposed development (Table 1 refers).

Table 1: Designated Sites

Designated Site	Designated Feature	Distance from Site Boundary
Special Protection Areas (SPA)		
Moidary and Ardgour (NatureScot, 2010)	Golden Eagle *Aquila chrysaetos*	Approximately 1.5km to the north-west
Glen Etive and Glen Fyne (NatureScot, 2010)	Golden Eagle *Aquila chrysaetos*	Approximately 3.75km to the south-east

3.1.2 Species Records

A search of the NBN Atlas (undertaken under licence OGL, CC-BY-NC) for the last 10 years within a 2km radius of the proposed development showed records for six species (Table 2 refers) that are listed either on:

- Annex I of the EC Birds Directive (2009/147/EC);
- Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); or
- Red or Amber lists of Birds of Conservation Concern 5 (BoCC 5) (Stanbury *et al.*, 2021).

Table 2: Recorded Bird Species (data from NBN Atlas)

Species[1]	Annex I	Schedule 1	Red list (BoCC 5)	Amber list (BoCC 5)
Dunnock *Prunella modularis* [1]				X
House sparrow *Passer domesticus* [1]			X	
Wren *Troglodytes troglodytes* [1]				X
Black guillemot *Cepphus grille* [1]				X
Herring gull *Larus argentatus* [1]			X	
Willow warbler *Phylloscopus trochilus* [1]				X

[1] Data sourced from Birds (BTO / JNCC / RSPB Partnership)

3.2 Breeding Bird Survey

Three Brown and Shepherd visits were carried out as detailed in Table 3. The study area for this survey included the site boundary plus a 200m buffer (access permitting) (Appendix A, Figure 1 refers).

Table 3: Moorland Breeding Bird Survey Effort 2020

Visit Number	Date	Observer	Start time	Stop time	Duration
1	23/06/2022	Alexander Kennard	09:30	13:30	4hrs
2	12/07/2022	Alexander Kennard	10:00	14:30	4hrs 30mins
3	27/07/2022	Alexander Kennard	09:50	13:20	3hrs 30mins

During the breeding bird survey, a total of 42 species were recorded (Appendix A, Figure 1 refers). Table 4 presents, alphabetically, each of the species in terms of their conservation value and breeding status at the Site.

Table 4: Breeding Bird Survey Recorded Species

BTO Code	Common Name	Scientific Name	EU Birds Directive: Annex I	Schedule 1 Wildlife & Countryside Act 1981	Scottish Biodiversity List (SBL)	Birds of Conservation Concern (BoCC)	Breeding Status and number of territories (possible, probable, confirmed or non-breeding)
AE	Arctic tern	*Sterna paradisaea*	X		X	Amber	Non-breeding (1)
TY	Black guillemot	*Cepphus grylle*				Amber	Confirmed (1) Non-breeding (2)
B.	Blackbird	*Turdus merula*				Green	Probable (3) Possible (2)
BT	Blue Tit	*Cyanistes caeruleus*				Green	Possible (2)
CG	Canada goose	*Branta canadensis*				Introduced	Non-breeding (2)
C.	Carrion crow	*Corvus corone*				Green	Probable (1)
CH	Chaffinch	*Fringilla coelebs*				Green	Probable (3)
CT	Coal tit	*Periparus ater*				Green	Probable (1) Possible (1)
CD	Collared dove	*Streptopelia decaocto*				Green	Possible (1)
CM	Common gull	*Larus canus*				Amber	Probable (2) Possible (2) Non-breeding (4)
CS	Common sandpiper	*Actitis hypoleucos*				Amber	Possible (2)
CN	Common tern	*Sterna hirundo*	X		X	Amber	Non-breeding (2)
E.	Eider	*Somateria mollissima*				Amber	Possible (1) Non-breeding (4)
GC	Goldcrest	*Regulus regulus*				Green	Possible (2)

BTO Code	Common Name	Scientific Name	EU Birds Directive: Annex I	Schedule 1 Wildlife & Countryside Act 1981	Scottish Biodiversity List (SBL)	Birds of Conservation Concern (BoCC)	Breeding Status and number of territories (possible, probable, confirmed or non-breeding)
GO	Goldfinch	*Carduelis carduelis*				Green	Probable (1)
GD	Goosander	*Mergus merganser*				Green	Possible (2)
GB	Great black-backed gull	*Larus marinus*				Amber	Non-breeding (1)
GT	Great tit	*Parus major*				Green	Possible (2)
GR	Greenfinch	*Chloris chloris*				Red	Probable (2) Possible (1)
H.	Grey heron	*Ardea cinerea*				Green	Non-breeding (4)
HG	Herring gull	*Larus argentatus*			X	Red	Possible (4) Non-breeding (5)
HC	Hooded crow	*Corvus cornix*			X	Green	Non-breeding (1)
HM	House martin	*Delichon urbicum*				Red	Probable (1) Non-breeding (1)
HS	House sparrow	*Passer domesticus*			X	Red	Probable (5)
LR	Lesser redpoll	*Acanthis cabaret*				Red	Probable (1)
MA	Mallard	*Anas platyrhynchos*				Amber	Non-breeding (1)
MP	Meadow pipit	*Anthus pratensis*				Amber	Probable (1)
OP	Osprey	*Pandion haliaetus*	X	X	X	Amber	Non-breeding (1)
OC	Oystercatcher	*Haematopus ostralegus*				Amber	Probable (1) Possible (3) Non-breeding (2)
PF	Pied wagtail	*Motacilla alba*				Green	Probable (3)
RA	Razorbill	*Alca torda*				Green	Non-breeding (2)
R.	Robin	*Erithacus rubecula*				Green	Probable (4) Possible (1)
RC	Rock pipit	*Anthus petrosus*				Green	Possible (1)
RO	Rook	*Corvus frugilegus*				Amber	Possible (1)
SI	Siskin	*Carduelis spinus*			X	Green	Possible (1)
SF	Spotted flycatcher	*Muscicapa striata*			X	Red	Possible (1)
SG	Starling	*Sturnus vulgaris*			X	Red	Probable (1)
SL	Swallow	*Hirundo rustica*				Green	Possible (1)
W.	Wheatear	*Oenanthe oenanthe*				Amber	Possible (1)
WW	Willow warbler	*Phylloscopus trochilus*				Amber	Probable (5) Possible (2) Non-breeding (1)
WP	Woodpigeon	*Columba palumbus*				Amber	Probable (2) Non-breeding (1)

BTO Code	Common Name	Scientific Name	EU Birds Directive: Annex I	Schedule 1 Wildlife & Countryside Act 1981	Scottish Biodiversity List (SBL)	Birds of Conservation Concern (BoCC)	Breeding Status and number of territories (possible, probable, confirmed or non-breeding)
WR	Wren	*Troglodytes troglodytes*			X	Red	Probable (4)

4 Discussion & Mitigation

Three species recorded on site are Annex I listed species: arctic tern, common tern and osprey. However, all observations were identified as non-breeding individuals. Therefore no specific mitigation is required.

All wild birds are protected by law whereby for any wild bird species, it is an offence to intentionally or recklessly:

- kill, injure or take a bird
- take, damage, destroy or interfere with a nest of any bird while it is in use or being built
- obstruct or prevent any bird from using its nest
- take or destroy an egg of any bird

If further works are required during the bird breeding season (considered to be March to August, inclusive), the following measures are recommended in order to minimise any potential impact on breeding birds within the Site:

- A breeding bird survey should be undertaken prior to construction commencing.
- A toolbox talk on breeding birds should be given to all site staff before works commence.
- Site staff should stay vigilant for the presence of nests especially in areas of thick scrub as well as any breeding bird behaviour including birds carrying food, nesting materials, alarm calling or making distraction displays.
- The working footprint will be limited to the minimum required to undertake the works and all vehicles will keep to designated routes.
- Any materials or machinery left overnight should be checked at the start of each day for the presence of breeding or recently fledged birds.
- If any nests are located within the footprint of the works, all works within that area should cease and an Ecologist contacted for advice.
- In the event a nest is identified, an exclusion zone should be established appropriate to the species and after taking advice from an Ecologist – generally the exclusion zone will be 5 – 10m for non Schedule 1 birds. Such exclusion zones would only be required while the nest is considered “active”.

5 References

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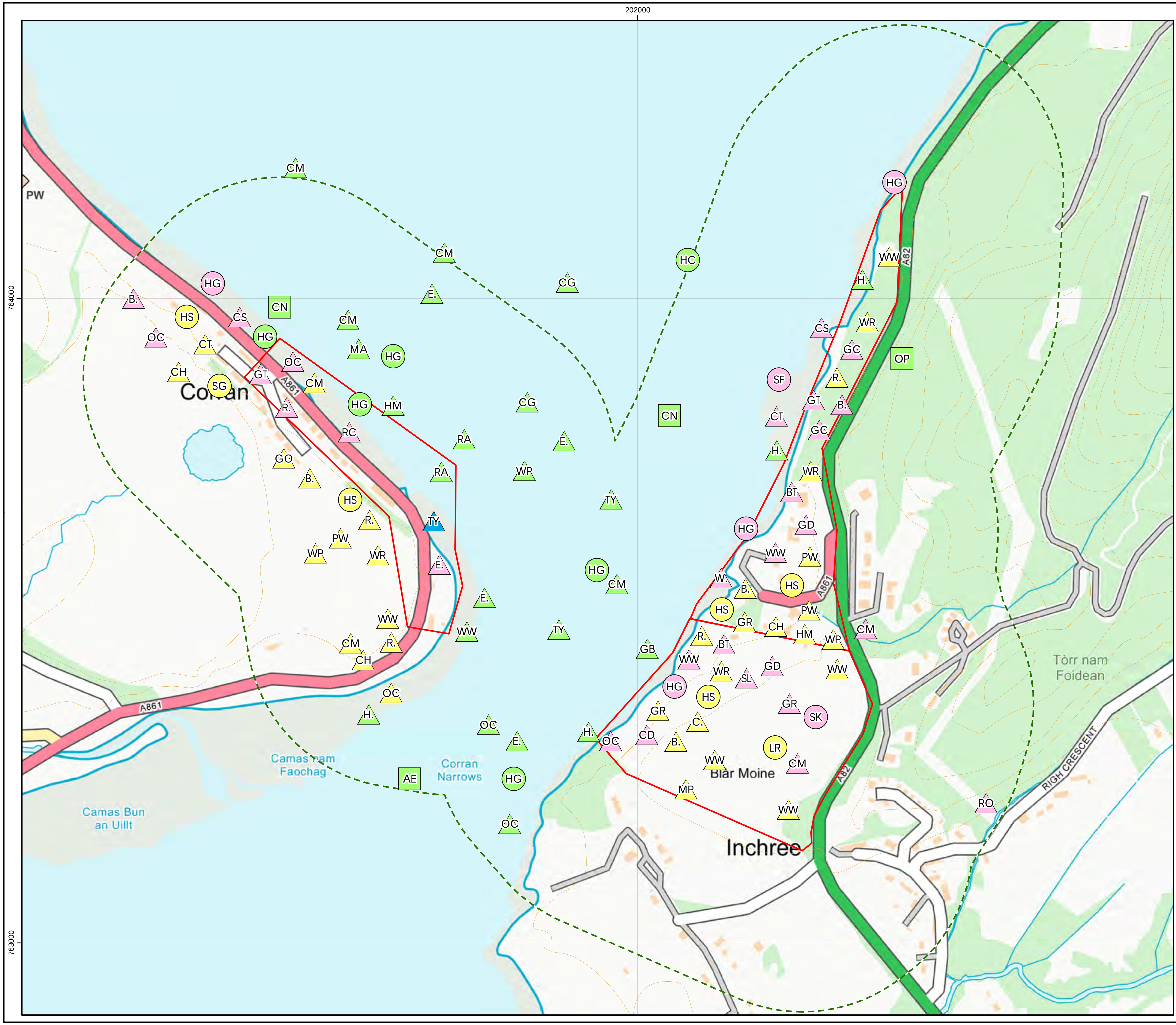
Appendices

Appendix A. Figures

Figure 1 - Breeding Bird Survey Results



Corran Ferry

Affric

Figure 1
Breeding Bird Survey Results

Key

- Site boundary
- Survey area - 250m buffer

Category

- Schedule 1/Annex 1
- Scottish Priority Species
- Not designated

Breeding Status

- Confirmed
- Probable
- Possible
- Non-breeding

atmos CONSULTING

0 100 200
Meters

N

Scale @ A3:
1:5,500

01/09/2022 19410/OR/001a

Drawn by: JT Checked by: TH Approved by: JW

Appendix 4. Protected Species Survey Report

Corran Ferry Infrastructure Improvement Scheme

Protected Species Survey

Report No. 99_REP_09_1

Body Document only. Appendices can be provided on request.

Date: 16/04/2024

Document Control

	Name	Title	Signature	Date
Authors	Ffion Maguire	Environmental Consultant	F. Maguire	21/03/2024
	Sophie Fallon	Senior Environmental Consultant	S. Fallon	24/08/2023
	Innes Beaton	Operations Director	I. Beaton	24/08/2023
Reviewer	Kirsty Macdonald	Senior Environmental Consultant	K. Macdonald	16/04/2024
Authoriser	Claire Williams	Senior Environmental Consultant	C. Williams	16/04/2024

Effective Date:	16/04/2024

Revision No:	Signature	Comments	Date
1	C. Williams	For issue.	16/04/2024

Contents

Executive Summary

- A Protected Species Survey (PSS) for bats, badger, pine marten, red squirrel and otter was carried out by competent and experienced ecologists on the 24th May and the 16th August 2023;
- The results of the survey determined that there is the potential for roosting bats within broadleaved trees situated within the Nether Lochaber survey area and within the Lighthouse Store situated within the Ardgour survey area;
- Suitable habitat for badger was identified within the Nether Lochaber and Ardgour survey areas, however, no evidence of the species was identified;
- Suitable den sites for pine marten were identified within the Nether Lochaber survey area however, no definitive evidence of the species was identified;
- Suitable foraging habitat for red squirrel was identified within the Nether Lochaber survey area however, no evidence of the species was identified;
- Spraints and otter footprints confirmed the presence of the species within the Nether Lochaber and Ardgour survey areas. Potential otter holts, couches and layups were found within coastal margins of the Nether Lochaber and Ardgour survey areas;
- Patches of native bluebell were identified in the broadleaved woodland within the Nether Lochaber survey area;
- Two potential hibernacula for amphibians and reptiles were identified in the broadleaved woodland within the Nether Lochaber survey area; and
- Further survey work for bats, pine marten and otter has been recommended.

Table 0.1: Drawings Referenced within the Protected Species Survey Report

Drawing Number	Comments
99_DRG_03_1	Phase 1 Habitat Map produced during the Preliminary Ecological Appraisal (PEA).
99_DRG_11_1	Shows the approximate survey areas for each of the target species and the locations of target notes in Nether Lochaber.
99_DRG_12_1	Shows the approximate survey areas for each of the target species and the locations of target notes in Ardgour.

1 Introduction

The Highland Council (THC) are proposing to upgrade the existing ferry terminals at the Corran Narrows under the Corran Ferry Infrastructure Improvement Scheme (CFIIS). The CFIIS will involve the replacement of the existing ferry with up to two electric vessels along with associated new infrastructure in the villages of Ardgour and Nether Lochaber. The detailed designs of the development proposals have yet to be formalised.

Wallace Stone, as the principal engineering consultants to THC, have appointed Affric Limited (Affric) to undertake a Protected Species Survey (PSS) of the proposed development footprint of the CFIIS in order to determine the presence/likely absence of terrestrial ecological receptors, previously identified during the Preliminary Ecological Appraisal (PEA) (Affric, 2023). The PSS targeted bats (*Chiroptera spp*.), badger (*Meles meles*), pine marten (*Martes martes*), red squirrel (*Sciurus vulgaris*) and otter (*Lutra lutra*) and made note of any other protected species identified opportunistically.

The PSS will succeed information provided within the PEA, with regards to the target species (i.e., bats, badger, pine marten, red squirrel, and otter).

1.1 Survey Site Description

The survey site is comprised of two separate land parcels which run alongside either side of Loch Linnhe, through the villages of Nether Lochaber and Ardgour. These land parcels will hereafter be referred to as the Nether Lochaber and Ardgour survey areas (as shown in Drawings 99_DRG_11_1; and 99_DRG_12_1). As these land parcels are separated by a significant barrier which is impenetrable by most terrestrial species (Loch Linnhe) the two survey areas will be considered separately, with the exception of otter.

Both the Nether Lochaber and Ardgour survey areas incorporate habitats and infrastructure associated with a coastal village. The Nether Lochaber survey area is comprised, in-part, by a sub-urban landscape made up of residential and commercial buildings with associated hard and soft landscaping. In the surrounding areas, plant communities associated with woodland, grassland, scrub, and heathland habitats are present (see Drawing 99_DRG_03_1; and Affric, 2022). The Ardgour survey area is predominantly sub-urban, due to existing residential and commercial development although coastal margins and arable farmland provide semi-natural habitat (see Drawing 99_DRG_03_1; and Affric, 2022).

Unfortunately, invasive non-native species (INNS) have been recorded in both the Nether Lochaber and Ardgour survey areas. Rhododendron (*Rhododendron ponticum)* has become a significant problem within both the Nether Lochaber and Ardgour survey areas, dominating much of the existing habitats. Japanese knotweed (*Fallopia japonica*) has also been identified within the broadleaved woodland within the Nether Lochaber survey area (see Affric, 2022).

For further detail on the habitats situated within the survey areas, please refer to the Phase 1 Habitat Map and corresponding PEA Report (Drawing 99_DRG_03_1; and Affric, 2022).

1.2 Legislation and Policy

Otter and all bat species found naturally in Scotland are European Protected Species (EPS), and therefore receive full protection under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (hereafter referred to as the 'Habitat Regulations'). In addition, six species of bat are listed within the 'Highland Nature Biodiversity Action Plan 2021 – 2026' (HNBAP)

(THC, *et al*., 2022) including brown long-eared bat (*Plecotus auritus*), Daubenton's bat (*Myotis daubentonii*), natterer's bat (*Myotis nattereri*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and Nathusius' pipistrelle (*Pipistrellus nathusii*).

Badgers are a protected species under The Protection of Badgers Act 1992 as amended by the Wildlife and Natural Environment (Scotland) Act 2011.

Pine marten and red squirrels are protected under the Wildlife and Countryside Act 1981 (as amended). Both of these species are also listed within the Highland Nature Biodiversity Action Plan (HNBAP) (THC, *et al*., 2022).

For further details on relevant legislation, please refer to Appendix 2.

2 Methodology

2.1 Desktop Study

A data collection exercise (desktop study) for protected species was undertaken as part of the PEA process in August 2022 (Affric, 2022) during which, data was obtained from a variety of sources. Information on statutory sites including location, citations and conservation objectives was obtained from NatureScot's online portal 'SiteLink' (NatureScot, 2023). Commercially available records of protected species identified within the survey site and a reasonable commuting distance were obtained from the National Biodiversity Network (NBN) Atlas (NBN, 2023). Aerial photography from Google Maps was also utilised allow for an assessment of potential connectivity (Google, 2023).

A data search for records of each species was undertaken for the site and a 2km buffer, although where no records were inspected, a search was conducted up to 5km to gain further understanding of the wider locality.

As the results of the desktop study are greater than 12 months old, a review was undertaken to check for updated available ecological data of the target species during the interim (Chartered Institute of Ecology and Environmental Management (CIEEM), 2019). No new data records were identified thus, the desktop study within the PEA remains accurate and current. As such, an overview of the information identified during the PEA for the species associated with this report is provided in Section 3. For further information please refer to the PEA report (Affric, 2022).

2.2 Site Survey

A site survey for bats, badger, pine marten and red squirrel was carried out on 24th May 2023 and 16th August 2023. An otter survey was carried out on 24th May 2023. Surveys were carried out by appropriately competent and experienced ecologists.

The PSS was carried out within all suitable habitats for the target species (i.e., bats, badger, pine marten, red squirrel, and otter) within the proposed development footprint of the CFIIS and appropriate species-specific buffer zones (see Table 2.1). Where evidence of the target species, or potential features suitable for the target species, were identified, they were recorded and mapped as target notes (see Drawings 99_DRG_11_1; and 99_DRG_12_1). Evidence of target species identified outwith the species-specific buffer zone was still recorded and mapped as target notes in order to provide additional context to the spatial distribution of the species.

Evidence of any other protected species identified during the survey was also recorded and mapped as target notes in order to ensure the survey areas were represented accurately.

Table 2.1: Species-specific Survey Areas During the Protected Species Survey on the 28th May and 16th August 2023 (as Shown in Drawings 99_DRG_11_1; and 99_DRG_12_1)

Receptor	Buffer zone	Survey area descriptor
Bats	Nether Lochaber and Ardgour survey areas and a 30m buffer zone.	Nether Lochaber and Ardgour bat survey areas.
Badger	Nether Lochaber and Ardgour survey areas and a 100m buffer zone.	Nether Lochaber and Ardgour badger survey areas.
Pine marten	Nether Lochaber and Ardgour survey areas and a 250m buffer zone.	Nether Lochaber and Ardgour pine marten survey areas.
Red squirrel	Nether Lochaber and Ardgour survey areas and a 50m buffer zone.	Nether Lochaber and Ardgour red squirrel survey areas.
Otter	Nether Lochaber and Ardgour survey areas and a 200m buffer zone.	Nether Lochaber and Ardgour otter survey areas.

2.2.1 Bats

A Preliminary Roost Assessment (PRA) for bats was undertaken as per the Bat Conservation Trust's (BCT) 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (Collins, 2016) (as at the time of survey, this was the most current BCT guidance). The PRA was comprised of a ground-level inspection of the trees and built structures within the Nether Lochaber and Ardgour bat survey areas (see Drawings 99_DRG_11_1; and 99_DRG_12_1).

During the PRA of the trees, the surveyor walked transects through the woods, recording any PRFs identified.

The inspection of the Lighthouse Store, involved a detailed external and internal inspection of the structure to identify potential bat entry/exit points, potential roosting location and evidence of bats, such as droppings, urine stains and foraging remains.

The suitability of trees and built structures to support roosting bats was assessed as per Table 2.2. Trees and/or buildings identified to have PRFs were recorded and mapped (see Drawings 99_DRG_11_1; and 99_DRG_12_1), including photographs, location, and description. As no bat droppings were identified during the PSS, no data was sent for eDNA analysis.

The PRA also included an assessment for the likeliness for foraging/commuting bats (as per Table 2.2). The assessment for foraging/commuting bats included an evaluation on available habitat, connectivity, and local species records (where appropriate).

Table 2.2: Assessment Criteria for Suitability of Habitats for Bats (developed from Collins, 2016)

Suitability	Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically but do not provide enough space, shelter, protection appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by a large number of bats (i.e., unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen form the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats but isolated, i.e., not very well connected to the surrounding landscape by other suitable habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats.
Moderate	A structure or tree with one or more potential roost sites that could be use by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	Continuous habitat connected to the wider landscape that could be used by bats for commuting. Habitat that is connected to the wider landscape that could be used by bats for foraging.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.	Continuous, high-quality habit that is well connected to the wider landscape that is likely to be used regularly by commuting bats. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats. Site is close to and connected to known roosts.
Confirmed roost	Roost confirmed through the identification of bats within a roost or definitive signs of recent use by bats.	N/A.

New bat survey guidance was published by the BCT in September 2023 (Collins, 2023), which is taken into consideration within the conclusion and recommendations (see Section 6).

2.2.2 Badger

A site survey for badger was carried out in line with Scottish Badgers 'Surveying for Badgers, Good Practice Guidelines' (Scottish Badgers, 2018) and THC's 'Best Practice Guidance – Badger Surveys' (THC, 2006) within the Nether Lochaber and Ardgour badger survey areas (see Drawings 99_DRG_11_1; and 99_DRG_12_1). Due to the nocturnal nature of badgers, surveys relied on the interpretation of field signs rather than direct observation of the animals themselves.

Field signs (where identified) were recorded and mapped (see Drawings 99_DRG_11_1; and 99_DRG_12_1). Field signs indicative of badger activity include:

- Setts;
- Day beds;
- Latrines;
- Signs of foraging including snuffle holes;
- Pathways;
- Scratching posts;
- Hairs; and
- Footprints.

Sett entrances, if identified, were photographed, and mapped. Each sett entrance was classified as Well Used (WU), Partially Used (PU) or Disused (D). Sett entrances were grouped where applicable and classified as a main sett, annex sett, subsidiary sett, or outlier sett, in accordance with survey guidelines (Scottish Badgers, 2018).

2.2.3 Pine Marten and Red Squirrel

A site survey for pine marten and red squirrel was undertaken as per the 'UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation' (Cresswell, *et al.*, 2012) within the Nether Lochaber and Ardgour pine marten and red squirrel survey areas (respectively) (see Drawings 99_DRG_11_1; and 99_DRG_12_1). The survey comprised of a site walkover, looking for evidence of pine marten (i.e., scats, prints and den sites) and red squirrel (i.e., animal sightings, dreys, and feeding signs, such as pinecones and caches). Evidence of either species, or features identified as having suitability to support a pine marten den and/or red squirrel drey were recorded and mapped for further investigation (see Drawings 99_DRG_11_1; and 99_DRG_12_1).

2.2.4 Otter

The otter survey was undertaken in broad accordance with the approach detailed by NatureScot's 'Standing Advice for Planning Consultations - Otters' (NatureScot, 2023), together with the guidance provided in 'Ecology of the European Otter' (Chanin, 2003). All accessible areas within the Nether Lochaber and Ardgour otter survey areas were surveyed, concentrating on coastal margins and rock armour.

Due to the often-elusive nature of otters, surveys relied on the interpretation of field signs rather than direct observation of the animals themselves. During the survey the following field signs were sought, with those which can be regarded as definitive, i.e., they provide certain confirmation of the presence of this species, marked with an asterisk:

- Spraints (faeces)*;
- Feeding remains (partially eaten prey items);
- Holts (den);
- Footprints*;
- Couches or Lay-Ups (resting place above ground); and
- Pathways and slides into water.

Field signs were recorded and mapped for further investigation (see Drawings 99_DRG_11_1; and 99_DRG_12_1).

2.3 Limitations

The PRA involved the inspection of a large number of trees, almost all of which were situated within a dense, closed-canopy broadleaved woodland. Every effort was made to inspect each individual tree, however as the survey was completed in May and August, the trees were in full leaf. Thus, there were limitations to the complete inspection of trees for PRFs which may have been hidden by foliage. This is accounted for within the final conclusions of this report. Foliage was not considered to have an impact upon the observation of red squirrel dreys, and the canopy itself could be inspected for evidence of drey building.

During surveying for otter, the small lochan at the rear of Corran Gardens (Lochan na Luireach) was inaccessible due to dense vegetation encircling it. A dry stream bed exits the lochan behind residential housing in the Nether Lochaber survey area; this terminates at a silted culvert and does not provide a pathway for otter to use for foraging between suitable habitats. It is located at the outer reaches of the survey area for otter.

Coniferous woodland towards the east of the Nether Lochaber survey area was inaccessible due to the density of the understorey and the steep topography. Areas of dense rhododendron scrub within the Ardgour survey area was also inaccessible. Where possible an assessment of these habitats and their suitability for protected species was made from access points which allowed view of the surrounding habitat types. Thus, the survey data captured was considered to be appropriate in determining the presence/likely absence of the target species.

3 Desktop Study

An overview of the relevant information identified during the desktop study of the PEA is provided in the sections below. For further information please refer to the PEA report (Affric, 2022).

3.1 Site Designations

No sites designated for the presence of badger, red squirrel, pine marten or bats are present within 20km of the survey site however, four Special Areas of Conservation (SAC) and one Site of Special Scientific Interest (SSSI) situated within 20km of the survey site have been designated partially, or in full, for otter. None of the five designated sites are considered to have ecological connectivity to the survey site (as justified within Table 3.1). Therefore, protected species as qualifying features of designated sites will not be considered within the conclusions or recommendations of this report.

Table 3.1: Sites Designated for Bats, Badger, Pine Marten, Red Squirrel and/or Otter within 20km of the Survey Site

Designated site	Qualifying feature(s)	Approximate distance from survey site	Ecological connectivity (yes/no)	Comments
Glen Creran Woods SAC	Otter	12.7km SSE	No	In a coastal environment otter generally range between 2-10km (Chanin, 2013). In order for otter from the SAC to reach the survey site, otter would need to travel approximately 15km. Hence, it is considered unlikely that otter associated with the Glen Creran SAC would be found within the survey site.
Sunart SAC and SSSI	Otter	18.1km WSW	No	In a coastal environment otter generally range between 2-10km (Chanin, 2013). In order for otter from the SAC and SSSI to reach the survey site, otter would need to travel approximately 37km. Hence, it is considered unlikely that otter associated with the Sunart SAC and SSSI would be found within the survey site.
Loch Moidart and Loch Shiel Woods SAC	Otter	18.9km NW	No	In a coastal environment otter generally range between 2-10km (Chanin, 2013). In order for otter from the SAC to reach the survey site, otter would need to travel approximately 130km. Hence, it is considered unlikely that otter associated with the Loch Moidart and Loch Shiel Woods SAC would be found within the survey site.
Loch Etive Woods SAC	Otter	19.3km SE	No	In a coastal environment otter generally range between 2-10km (Chanin, 2013). In order for otter from the SAC to reach the survey site, otter would need to travel approximately 40km. Hence, it is considered unlikely that otter associated with the Loch Etive Woods SAC would be found within the survey site.

3.2 Species Records

Records of the target species identified within and surrounding the survey site are discussed in Table 3.2.

Table 3.2: Overview of Records of the Target Species Identified Within and Surrounding the PSS Boundaries

Species	Nether Lochaber	Ardgour
Bats	There are no records of bat species within 2km of the Nether Lochaber survey area. However, records of common pipistrelle and soprano pipistrelle were identified within 5km of the Nether Lochaber survey area, thus the species are known to be present within the wider locality.	There are no records of bat species within 2km of the Ardgour survey area. However, records of common pipistrelle were identified within 5km of the Ardgour survey area, thus the species are known to be present within the wider locality.
Badger	There are no records of badger within the Nether Lochaber survey area. However, records were identified within 2km of the Nether Lochaber survey area thus the species are known to be present within the wider locality.	No records of badger were identified within 5km of the Ardgour survey area.
Pine marten	There is a record of a deceased pine marten identified immediately adjacent to the Nether Lochaber survey area on the A82. Further records were identified within the coniferous woodland, situated east of the Nether Lochaber survey area.	There are no records of pine marten within 2km of the Ardgour survey area. However, records of the species were identified within 5km, thus, the species are known to be present within the wider locality.
Red squirrel	There are records of red squirrel within close proximity to the Nether Lochaber survey area. In particular within the coniferous woodland on the eastern side of the A82.	There is a record of a red squirrel identified immediately adjacent to the Ardgour survey area, within a residential garden just of the A861. Further records were identified within 2km of the Ardgour survey area.
Otter	There are records of otter within the Nether Lochaber and Ardgour survey area. This includes records of the species within the Loch Linnhe waterbody, between the two parcels of land.	

It is worth noting that the identification of species records does not confirm that a species is still present within an area and that the lack of species records does not provide confirmation of the absence of a species, as the absence of species data can be a result of a lack of survey efforts or the non-submission of results.

4 Results

4.1 Bats

4.1.1 Roosting Bats – Trees

4.1.1.1 Nether Lochaber

Multiple PRFs suitable for individual bats were identified within the trees situated within the broadleaved woodland strip, situated in the Nether Lochaber survey area, between the A82 and Loch Linnhe. PRFs included gaps under peeling bark, woodpecker holes, small holes caused by insect infestation and rot (i.e., at branch junctions), snapped out tops and cracks in the stem structure (see Table 4.1). All of the PRFs identified were considered to be suitable for individual bats. None of the PRFs identified were considered to be suitable to support a large number of bats, for example a maternity roost. Hence, the trees were identified as having low suitability for roosting bats (see Table 4.1). However, due to the number of PRFs, it is considered that the woodland habitat in its entirety has an overall moderate to high potential for roosting bats, which should not be discounted.

4.1.1.1.1 Ardgour

One tree was identified within the wider survey area (i.e. area inspected for badger, otter and pine marten) as having moderate suitability for roosting bats, due to the presence of several PRFs associated with features of old growth (see TN31; Table 4.1). As the tree was situated >30m from any proposed works, it is not considered to be an ecological receptor of the CFIIS, however the tree was included within the results, as it provides further context of the wider locality and its suitability for bats.

4.1.1.2 Summary

The PRFs identified on trees during the survey are outlined in Table 4.1.

Table 4.1: Target Notes Recorded During the PSS on the 28th May and 16th August Regarding Roosting Bats in Trees

Target Note No.	Location		Description				Photo(s)
	Easting	Northing	Tree Tag No.	Species	Comments	Suitability	
TN10	202249	763719	99	Alder.	Two small holes on the stem due to the loss of branches and subsequent decay.	Low suitability	P1
TN11	202250	763730	98	Downy birch	Large cracks in the stem.	Low suitability	P2 – P3
TN12	202260	763741	Untagged due to access constraints.	Sycamore	Small holes in stem.	Low suitability	P4
TN13	202271	763765	52	Common ash	Small holes in stem and apparent cavity in centre of stem.	Low	P5 – P6
TN14	202286	763777	53	Silver birch	Cracks in stem. Apparent hollow in centre of stem.	Low	P7
TN15	202280	763818	97	Alder	Small gaps beneath peeling bark. Snapped out top.	Low	P8 & P9
TN17	202290	763840	66	Alder	Small hole in stem.	Low	P10
TN18	202301	763841	55	Alder	Small gaps under peeling bark. Snapped out stem.	Low	P11
TN19	202316	763846	56	Alder	Small holes on the stem due to woodpecker, insects and the loss of branches and subsequent decay.	Low	P12
TN20	202322	763850	57	Alder	Crack in stem.	Low	P13
TN21	202316	763855	58	Alder	Crack in Stem.	Low	P14
TN22	202338	763890	59	Alder	Small holes in stem caused by woodpecker and/or insects and rot. Gaps beneath peeling bark.	Low	P15
TN28	201456	763717	N/A outwith 30m buffer zone.	Beech	Large mature beech tree with many features of old growth, including fungal brackets and large cavities.	Moderate	P16 – P17

4.1.2 Roosting Bats - Built Structures

4.1.2.1 Nether Lochaber

No built structures were identified within the Nether Lochaber bat survey area that required further consideration in relation to roosting bats.

4.1.2.2 Ardgour

The CIIFS may include the refurbishment of a listed building, the Lighthouse Store (MHG17310); (Highland Historic Environment Record, 2023). The Lighthouse Store is situated NN01676355, immediately adjacent to the western banks of Loch Linnhe. The building dates back to the late 19th century and is single storey. The walls are three-bay, constructed with red-brick. The gable roof is constructed of overlapping slate tiles supported by a timber frame. There are window fixtures on all elevations of the building comprised of glass panels supported by timber frames. The external doorway is situated on the northern elevation and is comprised of wood. There is no chimney.

Internally, the building was relatively clean and tidy. The key holder confirmed that the floors and surfaces are cleaned on a semi-regular basis. There were three rooms in total, a large room which made up the majority of the building and two smaller rooms towards the eastern elevation. The rooms were filled with machinery, tools, and equipment, some of which had evidently been in place for some time. Machinery was inspected for potential bat droppings, although none were identified. Plywood has been placed over timber support beams to separate the main rooms from the roof void. The roof void could not be accessed for inspection however, where possible, a torch was used to look up into the roof space through gaps in the plyboard (predominantly around the edge of the room), to inspect for suitability of the structure for roosting bats. Additionally, the plyboard itself was inspected for evidence of urine stains.

Overall, the building was in fair condition and was being used by THC as a workshop and storeroom however, the lead flashing situated on the roof apex had risen in some places, particularly towards the eastern end of the building and several of the slate tiles have become risen providing potential access/egress points. There were also small gaps between the window and door fixtures and the brick walls. Internally, gaps in the plyboard ceiling structure provide potential access/egress between the roof void and the main structure. The PRFs were only considered to be suitable for individual roosting bats to use opportunistically. Furthermore, no evidence of roosting bats was identified internally or externally. Nonetheless, due to the number of PRFs, the building was considered to have moderate suitability for roosting bats.

4.1.2.3 Summary

The PRFs identified in built structures during the survey are outlined in Table 4.2.

Table 4.2: Target Notes Recorded During the PSS on the 28th May and 16th August Regarding Roosting Bats in Built Structures

Target Note No.	Location		Description				Photo(s)
	Easting	Northing	Tree Tag No.	Species	Comments	Suitability	
TN29	201682	763550	B1	Brick structure currently used as a workshop and storage area. Internal and external PRA undertaken.	Low	P18 – P23	TN29

4.1.3 Foraging/Commuting Bats

The Nether Lochaber bat survey area is comprised of broadleaved woodland, amenity grassland, infrastructure, and residential and commercial plots (with areas of hard and soft landscaping) (see Section 1.1). To the west is Loch Linnhe, an elongated sea loch and the east is a large area of coniferous woodland, separated from the survey area by the A82 (although the A82 is not considered to be an impenetrable barrier for foraging/commuting bats and there is therefore considered to be ecological connectivity between habitats within the survey area and those to the west). Coniferous and broadleaved woodland are considered to provide optimal habitat for foraging/commuting bats. The A82 may act as a navigational feature and open water (Loch Linnhe) and the sub-urban environment, including residential gardens, amenity grassland and streetlights may provide suitable foraging habitat for bats. The Nether Lochaber bat survey area is therefore considered to have high suitability for foraging/commuting bats overall.

The Ardgour bats survey area is comprised of amenity grassland, coastal margins, infrastructure, and residential and commercial plots (with areas of hard and soft landscaping). Nonetheless, the residential gardens are considered to provide continuous foraging/commuting habitat for bats. The large open areas of grazing pasture to the east and open water (Loch Linnhe) to the west are also considered to provide suitable foraging habitat. Thus, overall, the Ardgour bat survey area is considered to have good ecological connectivity with the wider locality. Streetlights may also provide suitable foraging habitat. The Ardgour bat survey area is therefore considered to have moderate suitability for foraging/commuting bats.

4.2 Badger

Although suitable habitat is present within the Nether Lochaber and Ardgour badger survey areas and there are records of badger within the wider locality, no evidence of badger was identified within either the Nether Lochaber or Ardgour badger survey areas.

4.3 Pine marten

No definitive evidence of pine marten was identified within either the Nether Lochaber pine marten survey area. However, five potential den sites were identified within the broadleaved woodland situated towards the north of the Nether Lochaber pine marten survey area (see Table 4.3.). The den sites were considered to be low suitability due to the lack of evidence of usage, suggesting that the potential sites may be suboptimal. A local resident confirmed that a pine marten previously denned within a residential outbuilding within their land in the Nether Lochaber pine marten survey area (see TN36; Table 4.3), thus, the species is considered likely to be present within the Nether Lochaber survey area.

No evidence of pine marten was identified within the Ardgour pine marten survey area.

Table 4.3: Target Notes Recorded During the PSS on the 28th May and 16th August Regarding Pine Marten

Target Note No.	Location		Description	Photo(s)
	Easting	Northing		
TN23	202283	763779	Small hollow beneath a rocky ledge. Dry and well sheltered by vegetation. Potential den site.	P24
TN24	202284	763780	Small hole beneath risen tree root, running into a larger hollow beneath the tree. Potential den site.	P25
TN25	202292	763773	Small hollow under rocky outcrop immediately adjacent to the A82. Noise and vibration levels are high due to traffic. However, hollow is well sheltered with vegetation and appears dry. Potential den site.	P26
TN26	202284	763783	Small hollow beneath roots of windblown tree. Ground appears slightly damp suggesting site may not be well sheltered. Potential den site.	P27
TN29	202366	763917	Large hollow beneath roots of a windblown tree. Well sheltered with moss and other vegetation. Several small holes in the vegetation running into the hollow suggest it may be (or have been) used by an animal for shelter. Potential den site.	P28
TN34	202399	764027	Area of windblown conifers providing a deadwood matrix with suitability for denning.	P29
TN35	202241	763654	Pine marten identified denning within residential outbuilding by landowner.	N/A

4.4 Red squirrel

Although suitable habitat is present within the Nether Lochaber and Ardgour red squirrel surveys areas and there are records of red squirrel within the wider locality, no evidence of red squirrel was identified within either the Nether Lochaber or Ardgour red squirrel survey areas.

4.5 Otter

Throughout both the Nether Lochaber and Ardgour survey areas, field signs were found in and around the shoreline, indicating the presence of otter either side of the Corran Narrows. A summary of these field signs noted during the survey is provided in Table 4.4. The survey area habitat provided ample opportunities within the rock and grassy slopes for places of shelter and laying-up, particularly to the northern edge of the Nether Lochaber survey area where natural rock formations meet the shoreline and there is less disturbance.

On the eastern shoreline, a potential holt (TN2) was identified in a rocky boulder formation at the rear of the unmarked road between the ferry terminal and North Corran Beag residential property. Two old spraints were located near one of the entrances (TN1), which led to a large rocky complex with numerous chambers to the rear. Although there was no evidence of current use, the side and top of the rock formation was covered in fresh grass clippings, which may have covered any recent field signs.

Further north, close to the edge of woodland adjacent to the shore was a potential lay-up and track in through grass (TN4). A spraint was located a few metres away on a prominent grassy knoll (TN3). These two target notes were located away from the residential dwellings and isolated in their locations from habitation or public access. TN5 was a potential lay-up in an area of flat grassland, adjacent to an old spraint and feeding remains on a nearby rocky ledge. A fresh spraint (TN6) was located within the same grassy area within a few metres of the potential lay-up, indicating recent use of the area by otter. At the northern extent of the 200m buffer, remains of a number of old spraints were located on a rocky outcrop (TN7) in an isolated location near to a transmission tower on the shoreline.

Within the Ardgour otter survey area, a potential lay-up (TN8) was identified north of the ferry terminal, at the base of the sea wall in front of the residential properties on the A861. This was located in a square pipe which led to a cavity or series of cavities within the sea wall foundations. The remains of several old spraints were located within the outlet. No inlet was found behind the sea wall. This potential lay-up will not be affected by the development as it is located 90m from the red line boundary as noted in the PEA report (Affric, 2022).

Behind the coastal habitat is a road, and a residential area. Behind the residences is a small lochan, Lochan na Luireach, within the outer reaches of the Ardgour survey area. As no otter tracks were found into or out of the lochan or between the lochan and coastal habitat, it was assumed that otter were not traversing between the shoreline and Lochan na Luireach.

To the south of the ferry terminal, a potential holt was identified in a circular tunnel or pipe at the base of the sea defence wall (TN9). This pipe was partially filled with sand, and fresh otter prints were noted at the entrance heading both into and out of the pipe. The pipe appeared to return inland under the sea defence and road above for a number of metres. No outlet was recorded on the road above (currently the ferry marshalling lane) or behind the sea defence.

From this point southwards, there was no evidence of otter using the beach or areas of shrubland around Corran Point, or to the south of Corran Point Lighthouse. This was not deemed premium otter habitat and was, by its nature, more exposed to disturbance from the A861 road. The beach and grassland areas appeared well used by dog walkers and grazed by sheep. These areas may be utilised on a transitory basis by otter on route to less disturbed areas to the south, away from the CFIIS.

Table 4.4: Target Notes Recorded During the PSS on the 28th May Regarding Otter

Target Note No.	Location		Description	Photo(s)
	Easting	Northing		
TN1	202185	7636285	(Nether Lochaber) Two old spraints located immediately adjacent to each other, adjacent to entrance to TN2 potential otter holt.	P30
TN2	202192	763621	(Nether Lochaber) Potential otter holt in rock/boulder formation at rear of gardens, on shoreline.	P31 – P32
TN3	202252	763753	(Nether Lochaber) New spraint.	P33
TN4	202256	763754	(Nether Lochaber) Potential lay-up and track in on edge of woodland.	P34 – P35
TN5	202316	763937	(Nether Lochaber) Potential lay-up on flat grassy area, track in, old spraint, and feeding remains in immediate vicinity.	P36
TN6	202318	763940	(Nether Lochaber) New spraint.	P37
TN7	202364	764126	(Nether Lochaber) Remains of several old spraints on rocky outcrop.	P38
TN8	201424	763910	(Ardgour) Potential lay-up in square pipe located at the base of sea defence wall, and several old spraints within pipe.	P39
TN9	201671	763645	(Ardgour) Potential otter holt in circular pipe at base of sea wall. Fresh footprints in sand at the entrance to the pipe.	P40 – P41

4.6 Other Protected Species

As noted, protected species identified outwith the list of the target species were recorded and target notes mapped.

A large area dominated by bluebell (*Hyacinthoides* spp.) was identified within the broadleaved woodland towards the north of the Nether Lochaber survey area (TN33). The patches appeared to be dominated by native bluebell (*Hyacinthoides non-scripta*). However, potential Spanish bluebell (*Hyacinthoides hispanica*) and hybrids (*Hyacinthoides × massartiana*) were noted.

Two potential hibernacula suitable of supporting hibernating amphibians and reptiles were also identified within the broadleaved woodland towards the north of the Nether Lochaber survey area (TN34 and TN35). One of which (TN34) appeared to be the remains of a former 'black house'.

A bird's nest was identified within a mature alder tree situated towards the coastal edge of the broadleaved woodland within the Nether Lochaber survey area (TN35). It is not known which species constructed the nest, or whether it was in use. However, it does confirm the presence of nesting birds within the habitat.

Target notes of other protected species identified during the PSS site survey are outlined in Table 4.5.

Table 4.5: Target Notes Recorded During the PSS on the 28th May and 16th August that were Unrelated to the Target Species

Target Note No.	Location		Description	Photo(s)
	Easting	Northing		
TN30	202380	763956	Large patch of bluebell that dominates the area of understorey within broadleaved woodland.	P46 – P47
TN31	202345	764007	Former 'black house' provides suitable hibernacula for amphibians and reptiles.	P48
TN32	202366	763917	Pile of stones overgrown with moss and vegetation provides a suitable hibernacula for amphibians and reptiles.	P49
TN33	202280	763818	Birds nest identified within mature alder trees.	P50

5 Discussion

5.1 Bats

PRFs were identified within several trees in the Nether Lochaber bat survey boundary and the Lighthouse Store situated within the Ardgour bat survey boundary. All of the PRFs identified were considered to be suitable for individual roosting bats, although due to the number of PRFs identified, it is possible that multiple bats could be impacted by the proposed works, should a large area of woodland be removed. Thus, far the number and location of trees to be removed is unknown, although it is anticipated that a site-targeted approach will be most appropriate for further survey works. Further surveys works will be required to determine the woodlands usage by bats (if any) (Collins, 2023).

Additionally, further survey work is required to assess the potential for roosting bats within the Lighthouse Store. It is recommended that two bat surveys are carried out to determine bat presence/likely absence. This should comprise of one dawn re-entry survey and one dusk emergence survey. The surveys should be completed between May and September (during appropriate weather conditions), a minimum of two weeks apart. Should the presence of roosting bats be confirmed during the initial surveys, additional survey works will be required to complete a roost characterisation assessment (Collins, 2023). In this instance, an EPS licence must be granted by NatureScot before any works to the building (that are likely to cause disturbance to bats) can commence.

Habitats within the Nether Lochaber survey area were considered to have high suitability for forging/commuting bats whilst habitats within the Ardgour survey area were considered to have moderate suitability for foraging/commuting bats. Due to the potential for foraging/commuting bats within both survey areas, appropriate mitigation must be implemented. It is recommended that appropriate mitigation is detailed within a Construction Environmental Management Document (CEMD) by an appropriately competent and experienced ecologist. This should include advice from BCT's 'Guidance Note 08/23 Bats and Artificial Lighting' (BCT and Institution of Lighting Professionals (ILP), 2023).

5.2 Badger

No records of badger were identified within either the Nether Lochaber or Ardgour survey area and no evidence was identified within either the Nether Lochaber or Ardgour badger survey areas. Records of badger were identified within 2km of the Nether Lochaber survey area, and, although no records of badger were identified within 5km of the Ardgour survey area, it is recognised that it is situated within the known national range of the species. Badger are highly mobile creatures, with clan territories recorded to range up to 3km^2 (Kruuk, 1989). Grassland and woodland within the Nether Lochaber and Ardgour survey areas provide suitable resources for sett building, foraging, and commuting, and therefore, the presence of badger cannot be entirely discounted. Thus, it should be recognised that there is potential for roaming badger to be present within both the Nether Lochaber and Ardgour survey areas and pre-construction surveys will be required to ensure that no badger setts have been built in the interim between the completed site surveys and the commencement of works.

5.3 Pine marten

There are records of pine marten within 2km of the Nether Lochaber survey area. In particular, there is a record of the species immediately adjacent to the Nether Lochaber survey area on the A82. Unfortunately, the record was identified due to a pine marten fatality. This record does however give indication that pine marten do attempt to the cross the road, which suggests that there is ecological connectivity between the woodland on either side of the road and records of the species towards the east. Suitable den sites were identified within the broadleaved woodland in the Nether Lochaber survey area. Furthermore, the owner of a residential property within the Nether Lochaber survey area confirmed that a pine marten had previously denned within an outbuilding situated within the residential plot. No definitive evidence of the species was found however, evidence of an animal was observed. For example, damage to bedding material, which could be indicative of pine marten. With consideration of species records, habitat availability and ecological connectivity within the wider locality, the presence of roaming pine marten should be considered likely within the Nether Lochaber survey area. Additional surveys such as focused camera trapping will be required to ascertain whether the potential dens are in use and to what extent, to determine whether there is a potential for adverse effects due to the CFIIS.

There are no records of pine marten within 2km of the Ardgour survey area however, records of the species were identified within the wider locality (5km). Habitats within the survey area were considered to be sub-optimal for pine marten due to the lack of suitable denning habitat although it may provide suitable connective habitat for roaming pine marten. Hence, the presence of the species should not be discounted entirely and the potential for roaming pine marten should be considered.

5.4 Red squirrel

There are several records of red squirrel within <500m of the Nether Lochaber survey area. In particular, there is a record of a red squirrel crossing the A82 and several records of the species within the coniferous woodland towards the east. These records suggest that there is ecological connectivity between the woodland on either side of the highway. There is also a record of red squirrel immediately adjacent to the Ardgour survey area, within a residential garden. No evidence of red squirrel was identified in either the Nether Lochaber or Ardgour red squirrel survey areas during the site survey however, woodland habitats within the Nether Lochaber survey area and small patches of trees within and adjacent to interlinking residential gardens within the Ardgour survey area are considered to provide suitable habitat for red squirrel. Thus, with consideration of species records, habitat availability and ecological connectivity within the wider locality, the presence of roaming red squirrel should be considered likely within both the Nether Lochaber and Ardgour survey areas and pre-construction surveys will be required to ensure that no red squirrel dreys have been built in the interim between the completed site surveys and the commencement of works.

5.5 Otter

Records of otter identified during the desktop study and evidence of otter identified during the site survey suggests current, frequent use of the Nether Lochaber and Ardgour survey areas by otter. Additional surveys such as focused camera trapping will be required to ascertain whether the potential resting places are in use and to what extent, to determine whether there is a potential for adverse effects due to the CFIIS.

5.6 Native Bluebell

Native bluebell are present within the broadleaved woodland situated towards the north of the Nether Lochaber survey area. As both native and non-native bluebell were identified, consideration to the protection of native bluebell and the prevention of spread of INNS should be considered.

5.7 Other Protected Species

Potential for herptiles and breeding birds was identified during the PSS. Appropriate mitigation to minimise adverse impacts to herptile and ornithological species, in particular hibernating herptiles and breeding birds, should be considered. It is recommended that any potential hibernacula be removed by hand outwith the herptile hibernation season (generally October to March inclusive), to prevent disturbance to hibernating herptiles. If works are scheduled to start during the breeding bird season (generally March to September inclusive), a breeding bird survey must be completed prior to the commencement of works. Additionally breeding bird surveys should be completed prior to the commencement of works in any new areas. If any breeding birds are identified during the breeding bird surveys, or during the works, then appropriate mitigation, such as the installation of suitable exclusion zones, should be implemented.

6 Conclusion

An overview of the findings of the report has been provided in order to identify the requirements for further surveys works (see Table 6.1).

Table 6.1: Overview of Findings of the Protected Species Survey and Recommendations

Receptor	Presence / likely absence	Comments	Recommendations
Roosting bats	To be determined	Potential for roosting bats within the Lighthouse Store in Ardgour and trees within the broadleaved woodland in Nether Lochaber.	Further survey works will be required to determine the woodlands usage by bats (Nether Lochaber). Requirements for survey works should be determined by a suitably experienced and competent bat ecologist once the location of tree works has been outlined. It is likely that a period of monitoring will be required with the use of static detectors, although other survey methods may be necessary/more appropriate. If any works to the Lighthouse Store are to be undertaken, an ecologist will be required to determine whether the works have the potential to impact upon roosting bats. If the potential for impact is confirmed, bat activity surveys should be carried out to determine the presence/likely absence of roosting bats. It is recommended that two bat activity surveys are undertaken initially (i.e., one dawn re-entry survey and one dusk emergence survey). If the presence of roosting bats is confirmed during the initial survey, further survey work must be carried out to undertake a roost characterisation assessment.
Foraging / commuting bats	Moderate to high potential	High suitability in the Nether Lochaber survey area. Moderate suitability in the Ardgour survey area.	As above.
Badger	Potential for roaming badger	Potential for roaming badger within Nether Lochaber and Ardgour survey areas	Mitigation for roaming badger within Nether Lochaber and Ardgour should be considered. Pre-construction surveys for badger within both Nether Lochaber and Ardgour should be carried out by a suitably competent and experienced ecologist. Surveys should include all suitable habitats within construction areas and a 100m buffer.

Receptor	Presence / likely absence	Comments	Recommendations
Pine marten	Present	Five suitable den sites for pine marten were identified within the Nether Lochaber survey area. Potential for roaming pine marten within Nether Lochaber and Ardgour survey areas.	Mitigation for roaming pine marten should be considered within Nether Lochaber and Ardgour. A 2-3 week (minimum) period of camera trapping should be carried out at potential pine marten dens (TN23, TN24, TN25, TN26, TN29 and TN30) to determine presence/likely absence of denning pine marten in Nether Lochaber.
Red squirrel	Potential for roaming red squirrel	Potential for roaming red squirrel within Nether Lochaber and Ardgour.	Mitigation for roaming red squirrel should be considered within Nether Lochaber and Ardgour. Pre-construction surveys for red squirrel within both Nether Lochaber and Ardgour should be carried out by a suitably competent and experienced ecologist. Surveys should include all suitable habitats within construction areas and a 50m buffer.
Otter	Present	Potential otter holts and layups were identified within the Nether Lochaber and Ardgour otter survey area.	Mitigation for roaming otter should be considered within Nether Lochaber and Ardgour survey area. A 2-3 week (minimum) period of camera trapping should be carried out at potential otter holts (TN2 and TN9) and potential lay-ups (TN4 and TN5) to determine presence/absence and activity levels.
Native bluebell	Present	Patches of native bluebell are present within the woodland situated in Nether Lochaber.	If the works are to be undertaken in areas containing native or INNS bluebell species, appropriate mitigation to protect native bluebell should be incorporated into the CEMD, including, where necessary, the installation of exclusion zones, or appropriate translocation.
Herptiles	Potential for common and widespread herptile species.	Two potential hibernacula were identified within the woodland situated in Nether Lochaber.	Potential hibernacula should be removed by hand under the supervision of an ecologist, outside of the herptile hibernation season (October to March inclusive).

Receptor	Presence / likely absence	Comments	Recommendations
Breeding birds	Potential for breeding birds.	There is considered to be suitable nesting habitat for breeding birds throughout the Nether Lochaber and Ardgour survey areas.	Vegetation removal (including tree removals) should be undertaken outside of the breeding bird season (March to September inclusive), or once an ecologist has inspected the area and confirmed that there are no active nests. A Pre-construction Breeding Bird Survey must be undertaken by an ecologist if works are scheduled to start within the breeding bird season.

The results of this report will be used to inform an Environmental Impact Assessment (EIA) and further surveys have been recommended as detailed in Table 6.1. If protected species are identified within the survey boundaries during subsequent surveys, mitigation will be identified in order to negate or minimise any potential impacts. A protected species licence will be required prior to construction. An application for a protected species licence from NatureScot will include a Species Protection Plan (SPP) detailing all mitigation measures previously identified.

This report details a snapshot of conditions on 24th May 2023 and the 16th August 2023. Should the interim extend beyond 12 months, it would be advisable to update the PSS to ensure that the information available is accurate and up to date, as per the recommendation of CIEEM (CIEEM, 2019).

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8 Glossary

Acronym	Definition
BCT	Bat Conservation Trust
CFIIS	Corran Ferry Infrastructure Improvement Scheme
CIEEM	Chartered Institute of Ecology and Environmental Management
D	Disused
E	East
EIA	Environmental Impact Assessment
EPS	European Protected Species
HNBAP	Highland Nature Biodiversity Action Plan
ILP	Institution of Lighting Professionals
INNS	Invasive Non-native Species
N	North
NBN	National Biodiversity Network
PEA	Preliminary Ecological Appraisal
PRA	Preliminary Roost Assessment
PSS	Protected Species Survey
PRF	Potential Roosting Feature
PU	Partially used
S	South
SAC	Special Area of Conservation
SPP	Species Protection Plan
THC	The Highland Council
TN	Target Note
W	West
WCA	Wildlife and Countryside Act 1981 (as amended)
WU	Well used

9 Drawings

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99_DRG_03_1: Site Habitat Map

Projection: OSGB 1936/British National Grid EPSG: 27700

Legend

Habitats

- A1.1.1 - Broadleaved woodland - semi-natural
- A1.2.1 - Coniferous woodland - semi-natural
- A1.3.2 - Mixed woodland - plantation
- A2.1 - Scrub - dense/continuous
- B4 - Improved grassland
- B6 - Poor semi - improved grassland
- J1.2 - Cultivated/disturbed land - amenity grassland
- J1.4 - Introduced shrub
- J3.6 - Buildings
- J5 - Other habitat
- Target Notes PEA
- Survey Area

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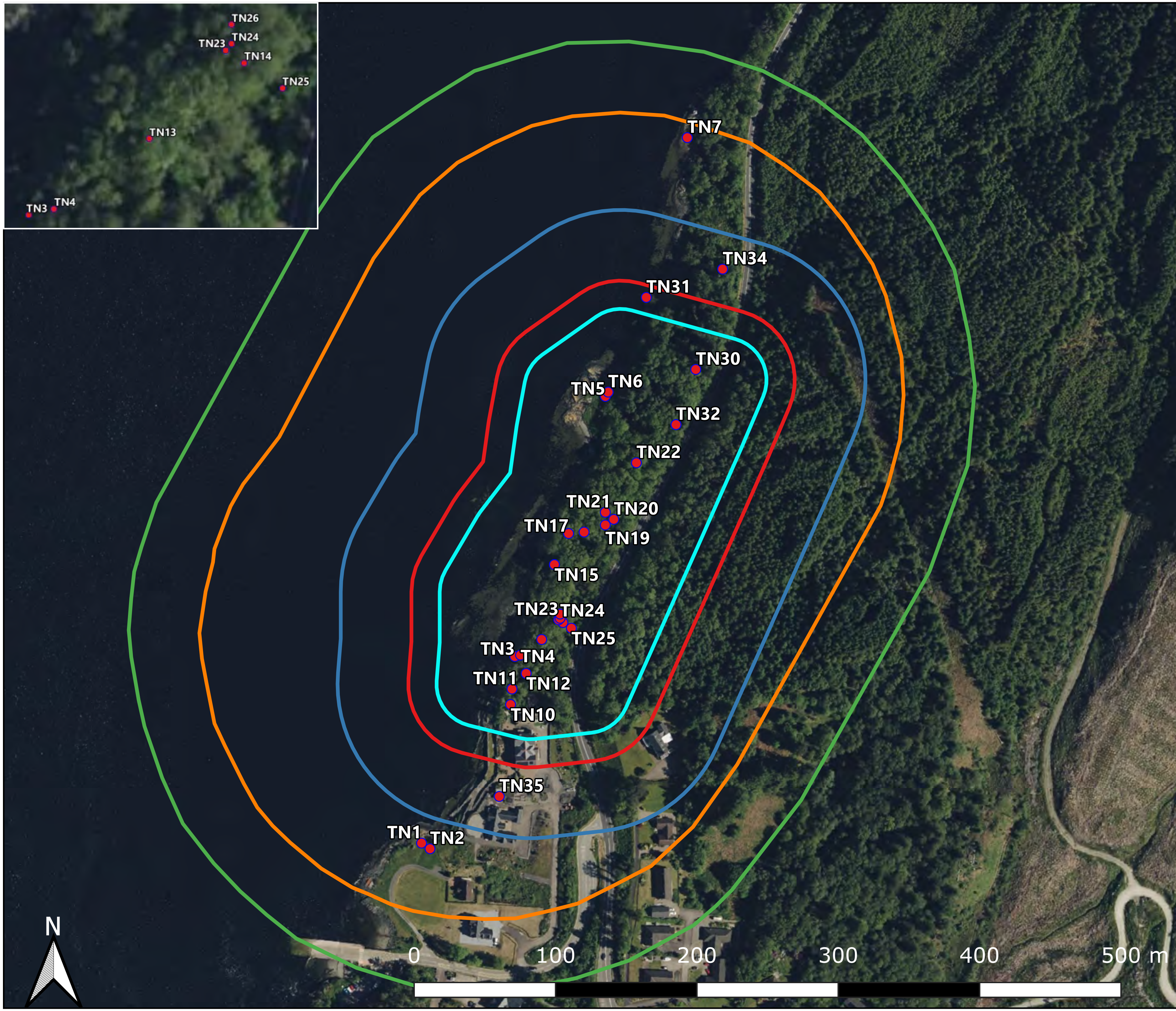

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Title: 99_DRG_11_1 Nether Lochaber Indicative Species Specific Survey Areas

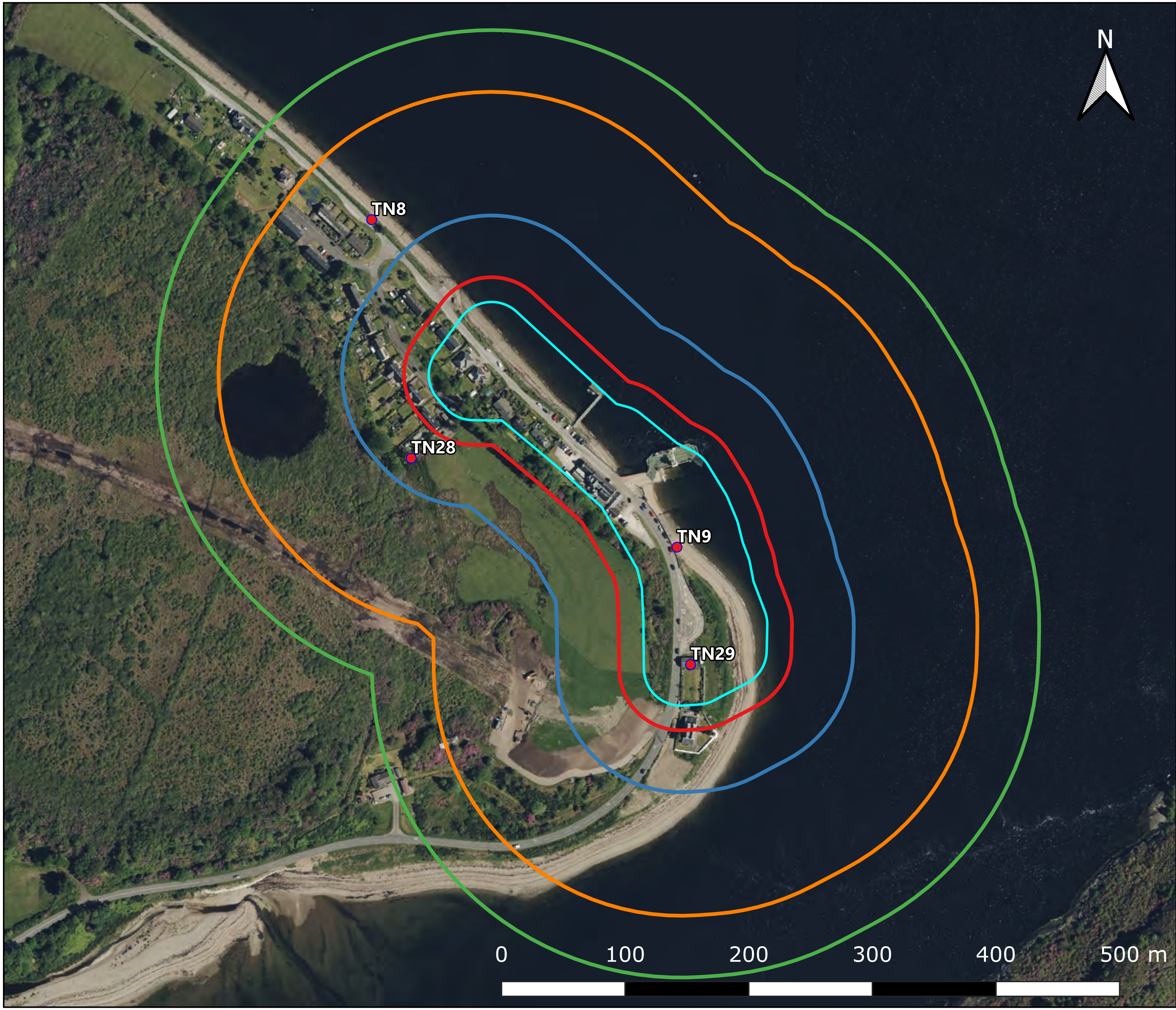
Projection: OSGB 1936/British National Grid EPSG: 27700

Google (2023) Corran Narrows. Available at: http://maps.google.co.uk (Accessed: 20 August 2023).

Legend

- Protected Species Target Notes
- 30m Bat Survey Area
- 50m Red Squirrel Survey Area
- 100m Badger Survey Area
- 200m Otter Survey Area
- 250m Pine Martin Survey Area

Page 1	Rev No: 1	Drawing Date: 20/08/2023



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Title: 99_DRG_12_1 Ardgour Indicative Species Specific Survey Areas

Projection: OSGB 1936/British National Grid EPSG: 27700

Google (2023) Corran Narrows. Available at: http://maps.google.co.uk (Accessed: 20 August 2023).

Legend

- Protected Species Target Notes
- 30m Bat Survey Area
- 50m Red Squirrel Survey Area
- 100m Badger Survey Area
- 200m Otter Survey Area
- 250m Pine Martin Survey Area

Page 1	Rev No: 1	Drawing Date: 20/08/2023

Appendix 5. Benthic Ecology Survey Report

OCEAN ECOLOGY

Marine Surveys, Analysis & Consultancy

Corran Ferry Ground Investigation Surveys: Technical Report

REF: OEL_CAUCOR0623_TCR_V01

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Version

Version	Date	Description	Author(s)	Reviewed By	Approved By
V01	20/03/2024	Draft issued to client	Dr. Ana Corrochano- Fraile, Madison Riley-Powell	Dr Elena Cappelli	Gary Robinson

Updates

Section	Description	Page

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Abbreviations

AFDW	Ash Free Dry Weight
AL	Action Level
BIIGLE	Bio-Image Indexing and Graphical Labelling Environment
BSH	Broad-Scale Habitat
CATAMI	Collaborative and Annotation Tools for Analysis of Marine Imagery
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CLOC	Clear Liquid Optical Chamber
DDC	Drop-down Camera
EC	European Commission
EMODNet	European Marine Observation and Data Network
EU	European Union
EUNIS	European University Information Systems
FOCI	Features of Conservation Importance
GPS	Global Positioning System
HA	Habitats Assessment
HD	High Definition
HOCI	Habitat of Conservation Importance
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
LED	Light-emitting diode
MP	Megapixels
MSFD	Marine Strategy Framework Directive
NMBAQC	NE Atlantic Marine Biological Analytical Quality Control
nMDS	Non-Metric Multi-Dimensional Scaling
OEL	Ocean Ecology Ltd.
OSPAR	Oslo Paris
PSD	Particle Size Distribution
QAF	Quality Assurance Framework
QC	Quality Control
RSMP	Regional Seabed Monitoring Plan
SAC	Special Area of Conservation
SE	Standard Error
SIMPER	Similarity Percentages
SIMPROF	Similarity Profile
UK	United Kingdom
UPS	Uninterruptable Power Supply
USBL	Ultra-short Baseline
UTM	Universal Transverse Mercator
WoRMS	World Register of Marine Species

Non-Technical Summary

Introduction

Causeway Geotech have been commissioned by Affric Ltd. to undertake Ground Investigation surveys to inform the detailed design of new ferry infrastructure to support the introduction of electric vessels on the Corran Ferry route. The Corran Ferry, operated by The Highland Council, crosses Loch Linnhe from the Eastern side of Nether Lochaber to the Western side of Ardgour. The ferry operates a regular service 7-days a week, providing a vital ferry connection, linking the communities of Fort William, Ardgour, Sunart, Ardnamurchan, Moidart, Morar, Morvern and the Isles of Mull.

Survey Strategy

A sampling plan was developed prior to the survey being undertaken which included 9 Drop-Down Camera (DDC) transects within the survey area. The sampling plan was further modified while on survey to include four additional DDC transects (K1 – K4) to confirm the presence of kelp beds which were observed while in the field, and seven grab samples for macrobenthic and sediment analysis which were located along the DDC transects following initial interpretation of substrate type. The pre-planned Transect T09 was inaccessible due to its location on a drying area and Transect T10 was added and sampled as a replacement. Due to shallow waters close to shore which prevented safe access to these areas, Transects T06 and T07 were extended on the deeper end to maintain the proposed length of the original transect.

Seabed Imagery Analysis

Diverse habitats encompassing Broad Scale Habitat (BSHs) A3.1, A3.2, A3.3, A4.1, A4.2, A5.1, A5.4, and A5.5 were identified across the survey area. Notably, A5.5 'Subtidal Macrophyte Dominated Sediment' was the most dominant BSH with the biotope, A5.521 '*Laminaria saccharina* and red seaweeds on infralittoral sediments' being the most frequently encountered. This biotope corresponds to the Priority Marine Feature (PMF) habitat 'Kelp and Seaweed Communities on Sublittoral Sediment,' recognized for its conservation significance in Scottish waters. Three additional habitats representative of PMFs were observed in the survey area, specifically 'Kelp beds,' 'Low or Variable Salinity Habitats,' and 'Tide-Swept Algal Communities'.

For the PMF 'Kelp beds', the corresponding EUNIS biotopes were A3.115 *'Laminaria hyperborea* with dense foliose red seaweeds on exposed infralittoral rock', A3.2121 '*Laminaria hyperborea forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock'*, A3.214 '*Laminaria hyperborea* and foliose red seaweeds on moderately exposed infralittoral rock', and A3.2143 'Grazed *Laminaria hyperborea* forest with corraline crusts on upper infralittoral rock'.

For the PMF 'Low or Variable Salinity Habitats', the corresponding EUNIS habitat was A3.322 '*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock'; while for the PMF habitat 'Tidal-swept Algal Communities' representative habitats were A3.222 'Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids' and A3.126 '*Halidrys siliquosa* and mixed kelps on tide-swept infralittoral rock with coarse sediment'.

All imagery underwent an Annex I Reef assessment which identified various reef types including Low Stony, Low Stony and Bedrock, Bedrock, and Bedrock and Low Stony reefs. The DDC transects covering these rocky reefs primarily included T04, T05, T06, T07, T08, and T10, and Kelp transects K3 and K4.

Sediment PSD

Among the 7 sediment samples, BSHs A5.1 'Coarse sediment' and A5.4 'Mixed Sediment' were predominant at stations ST04, ST02, ST08, and ST01, ST03, ST05, ST07, respectively. Sand emerged as the most abundant grain size fraction, followed by gravel. These findings align with the area's topography, especially given their proximity to the coast.

Macrobenthos

Within the 7 macrobenthic samples collected across the project area, a total of 3,780 individuals and 185 taxa were recorded. Nematoda (roundworms) were the most abundant taxa. The annelid *Pholoe inornata* exhibited the greatest occurrence across the survey area. One macrobenthic group including stations ST01, ST03, and ST05 was identified across the survey area and it was dominated by taxa with a preference for mixed sediments. Key species such as *Amphipholis. squamata* suggested that the biotope best matching the fauna in this group was A5.433 '*Venerupis senegalensis*, *Amphipholis squamata*, and *Apseudes latreilli* in infralittoral mixed sediment'. These results go hand in hand with the sediment and the imagery analysis, where gravel and sand were equally contributing to sediment composition. None of the other stations grouped together based on their macrobenthic assemblage. However, seabed imagery collected in closed proximity of grab samples ST02, ST04, ST07 and ST08 provided evidence of the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' being present. Despite some of the macrobenthic community recorded at stations ST02, ST04, ST07 and ST08 aligned with that typically found associated with kelp and seaweed communities including ascidians, gastropods and amphipods, the habitat assignment of these stations was left at EUNIS Level 4 rather than 5 due to the lack of consistent data identifying a specific biotope.

1. Introduction

1.1. Project Overview

Causeway Geotech have been commissioned by Affric Ltd to undertake Ground Investigation surveys to inform the detailed design of new ferry infrastructure to support introduction of electric vessels on the Corran Ferry route.

The ferry service shall continue to operate throughout the period of the Ground Investigation works without disruption, except during periods when adverse weather and any other operational factors prevent the service from operating on the published timetable.

1.2. Site information

The Corran Ferry, operated by The Highland Council, crosses Loch Linnhe from the Eastern side of Nether Lochaber to the Western side of Ardgour. The ferry operates a regular service 7-days a week, providing a vital ferry connection, linking the communities of Fort William, Ardgour, Sunart, Ardnamurchan, Moidart, Morar, Morvern and the Isles of Mull (Figure 1).

1.3. Aims and Objectives

OEL were commissioned by Causeway Geotech to undertake a Drop-Down Camera (DDC) transect survey, grab sampling and subsequent analysis and reporting, required to provide marine habitat and species data to inform the Environmental Impact Assessment (EIA) Report.

The DDC transect survey and environmental grab sampling was undertaken at 9 locations across the survey area. Additional DDC transects were surveyed to confirm the presence of kelp bed areas and their approximate extent.

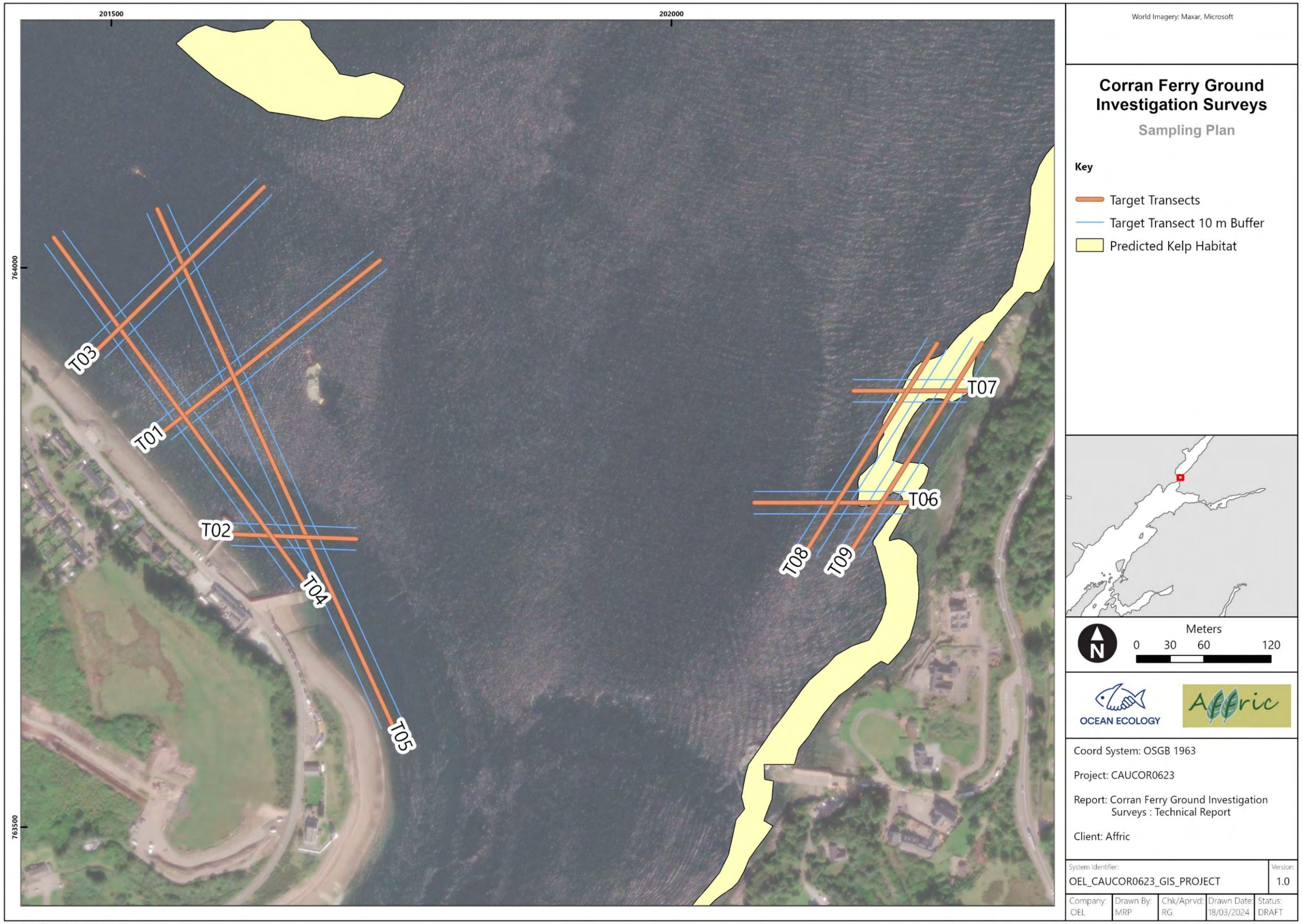

Figure 1 Overview of The Corran Ferry survey area, including the target transects and the target transect buffers (10 m either side).

2. Current Understanding

2.1. Priority Marine Features

Priority Marine Features (PMFs) are habitats and species that are considered to be marine nature conservation priorities in Scottish waters (Tyler-Walters et al. 2016). The following PMF habitats have been recorded within or near to the project site.

Kelp Beds

The kelp *Laminaria hyperborea* is commonly found around the coast of Scotland and its islands in shallow waters (to a maximum of 20-30m) and it can form forests and parks in rocky coastal areas, under a variety of wave and tidal conditions. The kelp provides a canopy under which a wide range of animals and other seaweeds can thrive. The rocks below the kelp are often encrusted with coralline algae or support cushion forming fauna, such as sea anemones, sponges and sea squirts. Small crustaceans and worms live among the kelp, while sea urchins and sea snails graze on the seaweeds, and fish find shelter from predators among the fronds. Scotland holds a significant proportion of the UK records of kelp beds and therefore the habitat is considered to be nationally important. Threats to this habitat include activities that alter wave exposure or tidal flow. Observations of this habitat within the survey area have been reported as European Nature Information System (EUNIS) biotope A3.2131 '*Laminaria hyperborea* forest and foliose red seaweeds on tide-swept upper infralittoral mixed substrata' and EUNIS classification A5.52 'Kelp and seaweed communities on sublittoral sediment' (Figure 2).

Kelp and Seaweed Communities on Sublittoral Sediment

Kelp and seaweed communities on sublittoral sediment represent shallow underwater environments characterized by a variety of seaweeds, including the sugar kelp *Saccharina latissima*, the bootlace weed Chorda filum, and various red and brown filamentous seaweeds. In areas with reduced wave action, algae such as *Phyllophora crispa* may form loose-lying mats on the sediment surface. These habitats foster a diverse array of associated marine life, including burrowing polychaete worms, bivalves, scavenging hermit crabs, regular crabs, starfish, fish, and grazing top shells. These communities are exclusive to shallow waters, reaching a maximum depth of 20 metres, and can be found on diverse substrates ranging from muddy sands and gravels to cobbles and boulders. They adapt to various environmental conditions. In Scotland, these kelp and seaweed-dominated habitats are notably widespread along the west coast and in sheltered areas of Orkney and Shetland, with occasional records on the east coast. While predominantly recorded in Scotland, this habitat is also found around the British Isles, particularly in the south and west. This diverse underwater habitat, however, is sensitive to factors such as substratum loss, alterations in water flow or wave exposure, and deoxygenation. Pressures on this environment include the impacts of climate change, coastal development, and the effects of bottom trawling.

Preserving these habitats is crucial for maintaining their biodiversity and resilience in the face of various challenges.

Low or Variable Salinity Habitats

Low or variable salinity habitats manifest where sea water and fresh water converge in varying proportions, influenced by tidal fluctuations and inputs from rivers, rainfall, and runoff. Along coastal saline lagoons, for instance, salinity levels may shift with the tide, resulting in brackish, fully saline, or occasionally hypersaline conditions. These habitats, characterized by less diversity compared to fully marine or freshwater environments, are often dominated by resilient or specialized species. Specialized inhabitants, including certain sea anemones, snails, bivalves, and stoneworts, may be particularly rare and restricted to saline lagoons or habitats with variable salinity. Typically found in estuaries, these environments can also occur at the heads of sea lochs and inlets influenced by freshwater runoff or within saline lagoons. In Scotland, low or variable salinity habitats are widespread on the west coast, the Outer Hebrides, Orkney, and Shetland, with fewer occurrences documented on the east coast. These habitats are distributed throughout the UK, especially in estuaries and coastal waters affected by freshwater runoff and are particularly concentrated in areas with low-lying land near estuaries, notably in parts of England. Scotland's diverse coastline plays a significant role in supporting a substantial portion of these habitats within the broader UK context. However, they face threats from activities altering water flow and salinity regimes, such as coastal development, land reclamation, and water abstraction. Additionally, these habitats are vulnerable to sea-level rise and pollution. Saline lagoons, in particular, are fragile and rare, susceptible to extreme weather events like storms, which can obliterate small lagoons formed by sediment barriers. Preservation efforts are crucial to safeguard the integrity of these unique and sensitive ecosystems.

Tide-Swept Algal Communities

Tide-swept algal communities thrive on bedrock and mixed substrata, shaped by robust tidal currents and dominated by expansive seaweeds like fucoids and kelps. These seaweeds form either dense forests or scattered parks, creating a canopy that offers shelter to an understorey of diverse flora and fauna, including foliose red seaweeds, sea squirts, sea mats, and sea firs. Some species even grow directly on the seaweeds. The bedrock or boulders below provide essential habitats for various marine life, such as limpets, winkles, dog whelks, tube worms, sponges, crabs, and starfish. This habitat thrives in sheltered to wave-exposed tidal channels, often positioned at the entrance of or near sea lochs, between coastal islands, or between islands and the mainland where tidal flow is channelled by the coastline's contours. Ranging from the mid shore down to depths of 30 meters, these communities can adapt to both full and variable salinity conditions. In Scotland, tide-swept algal communities have been recorded in various locations, including the west coast (e.g., the Strait of Corryvreckan and the Falls of Lora), the Outer Hebrides (e.g., the Sound of Harris), Orkney (e.g., Eynhallow Sound), and Shetland (e.g., the Narrows). This habitat is widely distributed around the UK and Ireland, with a notable concentration on the west coast. However, these communities face potential threats. The harvesting of kelp and wrack components may impact habitat structure and species diversity. Additionally, any activities that reduce water flow, such as coastal development or the installation of renewable energy devices, can have adverse effects on these dynamic and vital marine habitats. Preserving the natural conditions and water flow is crucial for the sustained health of tide-swept algal communities.

2.2. Potential Annex I Habitats within the Survey Area

Reefs

For the purposes of the European Commission (EC) Habitats Directive, the Interpretation Manual of European Union Habitats – EUR25 (CEC, 2013) defines Annex I 'Reefs' as: *'Reef can be either biogenic concretions*[1] *or of geogenic origin*[2]*. They are hard compact substrata* [3]*on solid and soft bottoms, which arise from the sea floor* [4]*in the sublittoral and littoral zone*[5]*. Reefs may support a zonation of benthic communities of algae and animal species as well as concretions and corallogenic concretions.*

Following this definition, Annex I reef habitats protected under the Habitats Directive can be classified into the following subtypes discussed in detail below:

- Bedrock - encompassing "hard compact substrata", specifically, "rocks (including soft rock, e.g. chalk)" of "geogenic origin";
- Stony - encompassing "hard compact substrata", specifically, "boulders and cobbles (generally >64 mm in diameter" of "geogenic origin";
- Biogenic (encompassing "biogenic concretions").

The following reef habitats have been recorded within or near to the survey area.

Bedrock Reef

Annex I bedrock reef habitat occurs where soft (e.g., clay) or hard bedrock arises from the surrounding seabed, providing a stable habitat for attachment for a diverse range of epibiota. Bedrock reefs and associated biological communities can be highly variable due to the diverse

[1] concretions, encrustations, corallogenic concretions and bivalve mussel beds originating from dead or living animals, i.e. biogenic hard bottoms which supply habitats for epibiotic species.
[2] reefs formed by non-biogenic substrata.
[3] rocks (including soft rock, e.g. chalk), boulders and cobbles (generally >64 mm in diameter). Such hard substrata that are covered by a thin and mobile veneer of sediment are classed as reefs if the associated biota are dependent on the hard substratum rather than the overlying sediment.
[4] the reef is topographically distinct from the surrounding seafloor.
[5] the reefs may extend from the sublittoral uninterrupted into the intertidal (littoral) zone or may only occur in the sublittoral zone, including deep water areas such as the bathyal. Where an uninterrupted zonation of sublittoral and littoral communities exist, the integrity of the ecological unit should be respected in the selection of sites.

nature of these habitats in terms of topography, structural complexity and exposure to tidal streams. In the photic zone communities associated with bedrock reefs are often dominated by attached algae, and often support various invertebrate species such as corals, sponges and sea squirts.

These epibiotic communities further increase structural complexity and represent key prey items that in turn attract more mobile and commercially valuable species such as fish and crustaceans.

Stony Reef

Stony reef habitats occur when stable hard substrata, namely cobbles and boulders > 64 mm in diameter arise from the surrounding habitat, creating a habitat colonised by a variety of species (Golding et al., 2020b; Irving, 2009a). Numerous Special Area of Conservation (SAC) sites have been designated in European waters to protect stony reef habitats and associated communities. Reefs are in many cases hot spots for the biodiversity supporting assemblages of various coral, sponges, ascidians, fish and crustaceans. These associated communities vary dramatically according to environmental variables and may incorporate species that occupy a range of trophic levels. The complexity of habitat created by stony reefs often supports a higher abundance of mobile fauna such as echinoderms and various crabs, hermit crabs, and squat lobsters, as well as fish species for which these species represent key prey items.

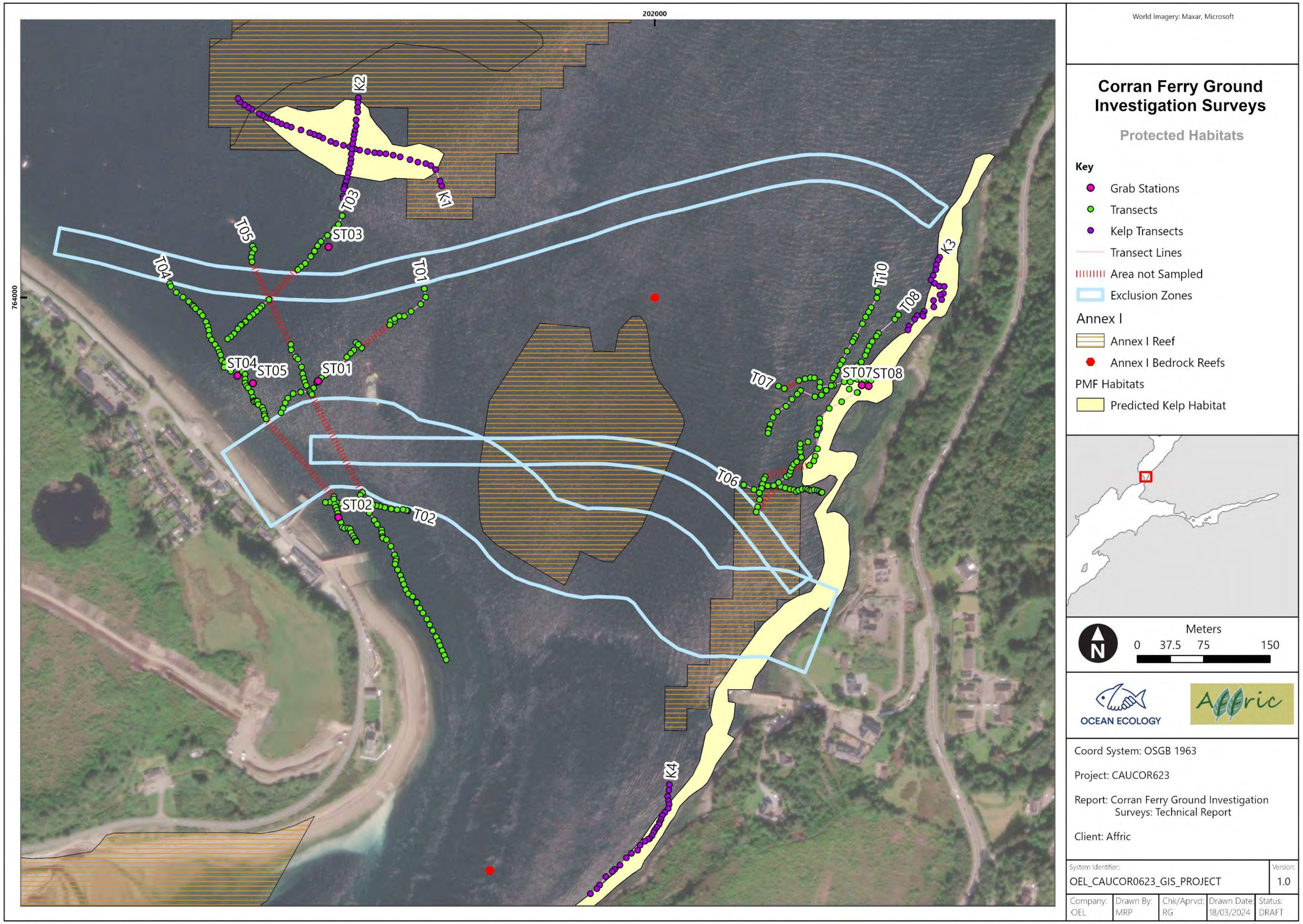

Figure 2 PMF, Annex I habitats occurring within and in the vicinity of the survey area and updated survey design including Kelp transects and grab sampling stations.

3. Survey Design

The sampling strategy was designed to provide a detailed account of the seabed to design a new ferry infrastructure for electric vessels on the Corran Ferry route. The sampling plan included DDC transects and grab samples, with four transects specifically aimed at targeting kelp beds (Figure 2). Nine transects were proposed prior to the survey taking place, while transects to target kelp beds and grab samples were planned while on survey in liaison with the Affric representative.

Below is a summary of the overall survey scope:

- Eight (T01 to T08) of the 9 proposed transects were sampled as planned; however,
- Due to shallow waters close to shore, Transects T06 and T07 were extended on the deeper end to achieve the proposed length of the target transect.
- T09 was inaccessible as it was positioned on an intertidal area and T10 was undertaken as a replacement transect.
- Seven stations were added for grab sampling as advised from the client representative on board.
- Potential kelp beds were identified in the field and K1-K4 transects were added to determine the extent of kelp beds in the area.

3.1. Timings

The vessel was mobilised on the 19th November 2023 and the survey completed between 19th and 21st of November 2023. The vessel operated out of Corran and was demobilised on 22nd of November 2023.

4. Survey Methods

4.1. Survey Navigation

The vessel was equipped with a Hemisphere V200s GPS Compass system that provided an offset position of the sampling equipment when deployed from the stern A frame. This provided a GPS feed to a dedicated survey navigation PC operating EIVA NaviPac. An offset was used to estimate subsea position of the equipment from the point of deployment on the vessel.

4.2. Project Parameters

Table 1 Datum parameters

Parameter	Details
Name	OSGB 1936
Ellipsoid	Airy 1830
Semi-Major Axis (a)	6377563.396
Semi-Minor Axis (b)	6356256.909237285
Inverse Flattening	299.3249646
Geodetic parameters EPSG Code	7022 4277

Table 2 Projection Parameters**.**

Parameter	Universal Transverse Mercator (UTM)
Central Meridian	-2.0
Latitude of Origin	49.0 °
False Easting	400000.0 m
False Northing	-100000.0 m
Scale Factor at Central Meridian	0.9996012717
Projected coordinate system EPSG code	British National Grid OSGB 1963
Units	Meters

4.3. Drop Down Camera (DDC)

Seabed imagery was collected using OEL's DDC system (Plate 1) to collect high definition (HD) video and high-resolution (up to 24 megapixels (MP)) still images at each targeted station. The camera system consisted of a SubC Rayfin camera was mounted in a Clear Liquid Optical Chamber (CLOC) (otherwise known as a 'freshwater lens') filled with fresh water to ensure imagery of suitable quality was obtained (Jones et al., 2020). Two RovTech light emitting diode (LED) strip lights with two 5 kW green dot lasers (set to 10 cm distance for scale), a 300 m umbilical and topside computer. The camera was powered with the use of an Uninterruptable Power Supply (UPS) to ensure no damage was caused should the vessel lose power or cause a power surge. The CLOC was height and angle adjustable providing a variety of options for view, lighting, and focal length to maximise data quality with respect to prevailing conditions at each station (e.g., high turbidity). Following an *in situ* review of seabed imagery, adjustments to the lighting angle were made to improve illumination across the centre of the field of view.

4.3.1. DDC Sampling

The DDC was deployed from the vessel's crane with a data umbilical run through a secondary block mounted from the crane boom. The DDC was lowered to the seabed over the target transect start location and slowly 'flown' just above the seabed to obtain continuous video footage where water clarity was sufficient. Still images representative of each target location were captured by landing the frame on the seabed. The camera was kept as close to the seabed as possible to gain a clear image where possible, while also being high enough in the water column that accidental collisions with the seabed did not occur.

All seabed imagery was collected in consideration of the JNCC epibiota remote monitoring operational guidelines (Hitchin et al., 2015). Video was captured throughout the duration of the transect and high resolution still images were captured at regular intervals (5-10m) with all video footage was reviewed *in situ* by OEL's environmental scientists and the Affric representative.

Full DDC survey logs are presented in Appendices I and II.

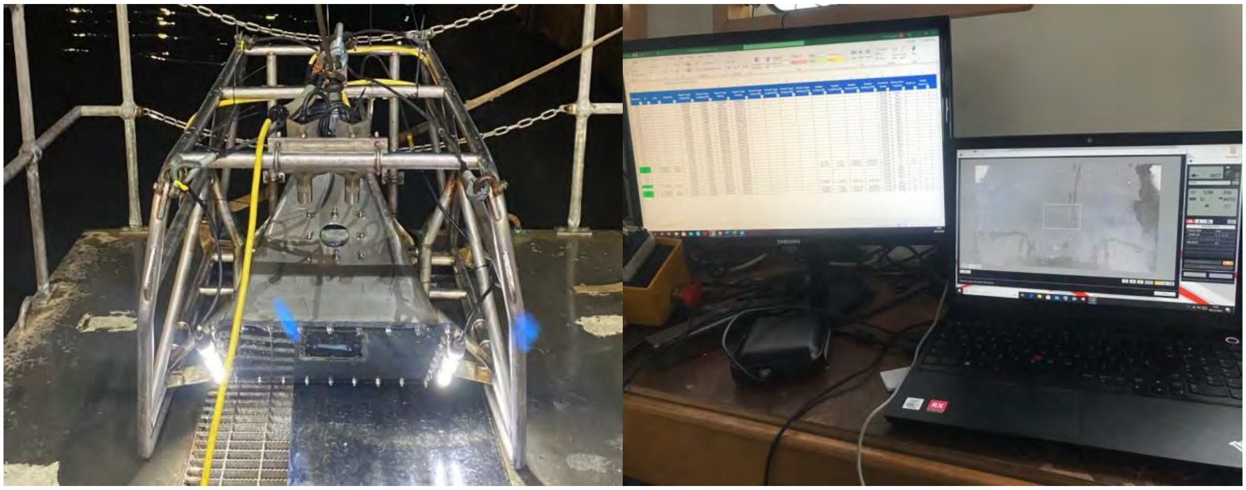

Plate 1 Left: OEL CLOC camera system. Right: The camera system topside setup.

4.4. Grab sampling

Sediment samples were collected using a 0.1 m^2 Hamon grab (Plate 2).

At each station the grab sampler was deployed to the seabed using the vessel's crane. To ensure consistency in sampling, grab samples were screened by the lead environmental scientist and considered unacceptable if:

- The sample was less than 5 L. i.e., the sample represented less than half the 10 L capacity of the grab used.
- The jaws failed to close completely or were jammed open by an obstruction, allowing fines to pass through (washout or partial washout).
- The sample was taken at an unacceptable distance from the target location (beyond 20 m).

In the case of a suitable sample not being collected after three attempts within 20 m of the target sampling locations, the sampling location was to be moved up to 50 m from the original target location. If the location was within proximity to subsea infrastructure, the vessel was to be moved in the opposite direction to the hazard. If samples of less than 5 L were continually achieved, these samples were to be assessed on-site to establish if the sample volume was acceptable to allow subsequent analysis. No pooling of samples was undertaken. If no samples were acquired from the first 4 attempts, then the station was to be abandoned. Full grab survey logs and photos of samples are provided in Appendices III and IV.

4.4.1. Grab Sample Processing

- Initial visual assessment of sample size and acceptability made.
- Photograph of the sample with station details taken in grab and once released.
- Sample emptied onto 0.5 mm sieve net laid over 4.0 mm sieve table and washed through using gentle rinsing with seawater hose.
- Sample backwashed into a suitable sized sample container and diluted 10 % formalin solution added to fix the sample prior to laboratory analysis.
- Sample containers clearly labelled internally and externally with date, sample ID and project name.

Detailed field notes were taken including station number, fix number, number of attempts, sample volume, sediment type, conspicuous fauna, any sign of protected features and water depth.

Plate 2 0.1m^2 Hamon grab used for grab sampling.

5. Laboratory Analysis & Interpretation

5.1. Seabed Imagery Analysis

All seabed imagery analysis collected by DDC was undertaken in consideration of the latest NE Atlantic Marine Biological Analytical Quality Control (NMBAQC)/JNCC Epibiota Quality Assurance Framework (QAF) guidance and identification protocols available on the NMBAQC website. Final datasets are presented using the latest NMBAQC/JNCC epibiota monitoring proformas available for stills and video footage and were quality assured using the QAF form check and comparison tools.

The seabed imagery analysis was undertaken in two stages using the Bio-Image Indexing and Graphical Labelling Environment (BIIGLE) annotation platform (Langenkämper et al., 2017). The first stage, "Tier 1", consisted of labels that refer to the whole image being assigned providing appropriate metadata for the image including EUNIS habitat classifications assigned in line with (Parry, 2019). The second stage, "Tier 2", was used for establishing presence/absence of key epibiotic species within each image and to assign percentage cover of key reef attributes.

A full reef habitat assessment (HA) was conducted on all DDC imagery to determine whether habitats met the definitions of Annex I reef habitats as detailed in Table 3 and Table 4. The latest JNCC guidance on the characterisation of 'low resemblance' Annex I stony reef was also considered (Golding et al., 2020). The annotation label tree used during analysis had major headings for each of the reef types. Under each reef type, labels were assigned for each of the categories required to determine whether Annex I reef habitat is present.

Table 3 Characteristics of stony reef (Irving, 2009).

Characteristic	'Reefiness'			
	Not a Reef	Low	Medium	High
Composition (proportion of boulders/cobbles (>64 mm))	<10 %	10-40 % matrix supported	40-95 %	>95 % clast-supported
Elevation	Flat seabed	<64 mm	64 mm - 5 m	>5 m
Extent	<25 m^2	>25 m^2		
Biota	Dominated by infaunal species	>80 % of species present composed of epibiotal species		

Table 4 Characteristics of *Sabellaria spinulosa* reef (Gubbay, 2007).

Characteristic	'Reefiness'			
	Not a Reef	**Low**	**Medium**	**High**
Elevation (cm)	< 2	2 - 5	5 – 10	> 10
Extent (m^2)	< 25	25 – 10,000	10,000 – 1,000,000	> 1,000,000
Patchiness (% Cover)	< 10	10 - 20	20 – 30	> 30

5.1.1. Tier 1 Analysis

The first stage, "Tier 1", consisted of assigning labels that referred to the whole image, providing appropriate metadata for the image. Metadata "Image Labels" included:

- Broadscale Habitat (BSH) type.
- Substrate type (and percentage cover in 10% intervals).
- Bedforms present.
- The presence of any Annex I habitats, FOCI, HOCI and Invasive Non-Native Species (INNS).
- The presence of any visible impacts or other modifiers (such as discarded fishing gear or marine litter (as per the Marine Strategy Framework Directive (MSFD) categories), visible physical damage to the seabed, evidence of strong currents, non-native species, etc.).
- Image quality categories (including "Not Analysable" category).

Depending on the presence of reef, labels also included:

- Extent: As it was not possible to fully determine the extent of reef habitats from a single image alone this label was used to identify areas that were highly unlikely to constitute reef habitats. An example is an image that showed a large boulder being preceded and succeeded by images of unconsolidated sandy sediments.
- Biota: Labels assigned to determine whether epifauna dominate the biological community observed.
- Elevation: Labels assigned depending on reef type. Laser points were used to assist in the assignment of categories.

5.1.2. Tier 2 Analysis

The second stage, "Tier 2", was used to assess epibiotal presence/absence data as "annotations" within each image for visible flora and fauna. This was undertaken as follows:

- Using the BIIGLE Annotation Platform, (detailed below) enumeration of visible taxa was undertaken using point annotation. A single representation of each taxa present was assigned a point to generate presence absence analysis.
- To assist the Tier 1 analysis of reef presence, polygons were drawn at the Tier 2 stage to delineate percentage cover of biogenic and geogenic reef features.

- Identification of any INNS and species non-native to UK waters. Information has also been included on species non-native to the local habitat types (e.g., hard-substrate specialists in a wider sedimentary habitat).

The substratum observed in each still image was recorded as a percentage cover using Collaborative and Annotation Tools for Analysis of Marine Imagery (CATAMI) (Althaus et al., 2015) substratum types where possible.

Determination of sediment type (such as coarse, mixed, sand etc.) was facilitated using the adapted Folk sediment trigon (Long, 2006) incorporated into a sediment category correlation table. Percentage cover of the different substrate types was used to determine and assign EUNIS codes and BSH.

5.2. PSD Analysis

PSD analysis of the sediment samples was undertaken by in-house laboratory technicians at OEL's NMBAQC participating laboratory in line with NMBAQC best practice guidance (Mason, 2022).

Frozen sediment samples were first transferred to a drying oven and thawed at 80°C for at least 6 hours before visual assessment of sediment type. Before any further processing (e.g., sieving or sub-sample removal), samples were mixed thoroughly with a spatula and all conspicuous fauna (>1 mm) which appeared to have been alive at the time of sampling were removed from the sample. A representative sub-sample of the whole sample was then removed for laser diffraction analysis before the remaining sample screened over a 1 mm sieve to sort coarse and fine fractions. The >1 mm fraction was then returned to a drying oven and dried at 80°C for at least 24 hours before dry sieving. Once dry, the sediment sample were run through a series of Endecott BS 410 test sieves (nested at 0.5 φ intervals) using a Retsch AS200 sieve shaker to fractionate the samples into particle size classes. The dry sieve mesh apertures used are given in Table 5.

Table 5 Sieve series employed for PSD analysis by dry sieving.

Sieve aperture (mm)												
63	45	32	22.5	16	11.2	8	5.6	4	2.8	2	1.4	1

The sample was then transferred onto the coarsest sieve at the top of the sieve stack and shaken for a standardised period of 20 minutes. The sieve stack was checked to ensure the components of the sample had been fractioned as far down the sieve stack as their diameter would allow.

The sub-sample for laser diffraction was first screened over a 1 mm sieve and the fine fraction residue (<1 mm sediments) transferred to a suitable container and allowed to settle for 24 hours before excess water syphoned from above the sediment surface until a paste texture was achieved. The fine fraction was then analysed by laser diffraction using a Beckman Coulter LS13 320.

The dry sieve and laser data was then merged for each sample with the results expressed as a percentage of the whole sample. Once data was merged, PSD statistics and sediment classifications were generated from the percentages of the sediment determined for each sediment fraction using Gradistat v9.1 software.

Sediment descriptions are defined by their size class based on the Wentworth classification system (Wentworth, 1922) (Table 6). Sediment data collected across the three replicates were first averaged for each station. Statistics such as mean and median grain size, sorting coefficient, skewness and bulk sediment classes (percentage silt, sand and gravel) were then derived following the Folk classification (Folk, 1954).

Table 6 The classification used for defining sediment type based on the Wentworth Classification System (Wentworth, 1922).

Wentworth Scale	Phi Units (φ)	Sediment Types
>64 mm	<-6	Cobble and boulders
32 – 64 mm	-5 to -6	Pebble
16 – 32 mm	-4 to -5	Pebble
8 – 16 mm	-3 to -4	Pebble
4 - 8 mm	-3 to -2	Pebble
2 - 4 mm	-2 to -1	Granule
1 - 2 mm	-1 to 0	Very coarse sand
0.5 - 1 mm	0 – 1	Coarse sand
250 - 500 µm	1 – 2	Medium sand
125 - 250 µm	2 – 3	Fine sand
63 - 125 µm	3 – 4	Very fine sand
31.25 – 63 µm	4 – 5	Very coarse silt
15.63 – 31.25 µm	5 – 6	Coarse silt
7.813 – 15.63 µm	6 – 7	Medium silt
3.91 – 7.81 µm	7 – 8	Fine silt
1.95 – 3.91 µm	8 – 9	Very fine silt
<1.95 µm	<9	Clay

5.3. Macrobenthic Analysis

All elutriation, extraction, identification, and enumeration were undertaken at OEL's NMBAQC scheme participating laboratory in line with the NMBAQC Processing Requirement Protocol (Worsfold & Hall, 2010) . All processing information and macrobenthic records was recorded using OEL's cloud-based data management application ABACUS that employs MEDIN validated, controlled vocabularies ensuring all sample information, nomenclature, qualifiers, and metadata are recorded in line with international data standards.

For each macrobenthic sample, the excess formalin was drained off into a labelled container over a 0.5 mm mesh sieve in a well-ventilated area. The samples were then re-sieved over a 0.5 mm mesh sieve to remove all remaining fine sediment and fixative. The low-density fauna was then separated by elutriation with freshwater, poured over a 1 mm mesh sieve, transferred into a Nalgene and preserved in 70 % Industrial Denatured Alcohol (IDA). The remaining sediment from each sample was subsequently separated into 0.5 mm, 1 mm, 2 mm and 4 mm fractions and sorted under a stereomicroscope to extract any remaining fauna (e.g., high-density bivalves not 'floated' off during elutriation).

All fauna present was identified to species level, where possible, and enumerated by trained benthic taxonomists using the most up to date taxonomic literature and checks against existing reference collections. Nomenclature utilises the live link within ABACUS to the World Register of Marine Species (WoRMS) web services to ensure the most up to date taxonomic classifications are recorded. Colonial fauna (e.g., hydroids and bryozoans) were identified to species level where possible and recorded as present (P). For subsequent data analysis, taxa recorded as P were given the numerical value of 1. A full reference collection was retained including at least one example specimen of each taxon.

Biomass was measured as blotted wet weight in grams to at least 4 decimal places for all countable taxa (i.e., at species level where possible). As a standard, the conventional conversion factors as defined by (Eleftheriou & Basford, 1989) was applied to biomass data to provide equivalent dry weight biomass (Ash Free Dry Weight (AFDW)).

The conversion factors applied are as follows:

- Annelida = 15.5%
- Crustacea = 22.5%
- Mollusca = 8.5%
- Echinodermata = 8.0%
- Miscellaneous = 15.5

5.3.1. Data Truncation and Standardisation

The macrobenthic species list was checked using the R package '*worms*' (Holstein, 2018) to check against WoRMS taxon lists and standardise species nomenclature. Once the species nomenclature was standardised in accordance with WoRMS accepted species names, the species list was examined carefully by a senior taxonomist to truncate the data, combining species records where differences in taxonomic resolution were identified.

5.3.2. Pre-Analysis Data Treatment

All data were collated in excel spreadsheets and made suitable for statistical analysis. All data processing and statistical analysis was undertaken using R v 1.2 1335 (R Core Team, 2022) and PRIMER v7 (Clarke & Gorley, 2015) software packages.

In accordance with the OSPAR Commission guidelines (OSPAR, 2004) records of colonial, meiofaunal, parasitic, egg and pelagic taxa (e.g., epitokes and larvae) were recorded, but were excluded when calculating diversity indices and conducting multivariate analysis of community structure. Newly settled juveniles of macrobenthic species may at times dominate the macrobenthos, however the OSPAR (2004) guidelines suggest they should be considered an ephemeral component due to heavy post-settlement mortality and not therefore representative of prevailing bottom conditions (OSPAR, 2004). OSPAR (2004) further states that "Should juveniles appear among the ten most dominant organisms in the data set, then statistical analyses should be conducted both with and without these in order to evaluate their importance". As juveniles of *Abra* and *Spisula* appeared in the top ten of the most dominant taxa across survey area, a 2STAGE analysis was conducted to compare the two data sets (with and without juveniles) which revealed a high level of similarity (~98 %) between the two and therefore juveniles were retained in the dataset for all further analyses and discussion.

In accordance with NMBAQC PRP (Worsfold & Hall, 2010), Nematoda were recorded during the macrobenthic analysis and included in all datasets for all further analyses and discussion.

5.3.3. Univariate Statistics

The vegan package in R Studio (Oksanen et al., 2012) was used to calculate diversity indices for the macrobenthic and epibenthic data including:

- Number of Species (S): the number of taxa present in a sample, with no indication of relative abundances.
- Number of individuals (N): total number of individuals counted.

5.3.4. Multivariate Statistics

Prior to multivariate analyses, data were displayed as a shade plot with linear grey-scale intensity proportional to macrobenthic abundance (Clarke et al., 2014) to determine the most efficient pre-treatment method. Macrobenthic abundance from grab sample data was square root transformed to prevent taxa with intermediate abundances from being discounted from the analysis.

To fully investigate the multivariate patterns in the biotic data, a suite of analytical routines was employed as summarised below and described in detail in Appendix V.

5.4. Determining EUNIS Classifications

Sampling stations were grouped based on their macrobenthic assemblage composition using hierarchical clustering; the SIMPER routine was then applied to identify key and characterising taxa that contributed the most to the similarity within each group. EUNIS classifications were then assigned to each sampling station based on their macrobenthic group and key, characterising taxa as well as based on their sediment type and composition following the latest JNCC guidance (Parry, 2019).

6. Results

6.1. Seabed Imagery Analysis

Digital photographic stills and video footage were obtained at nine DDC transects and four kelp transects across the survey area. This resulted in the collection of 415 still images and 27 videos which were analysed to identify the BSH and biotopes across the survey area. Images were further assessed to inform on the distribution and extent of any protected and/or sensitive habitats and species (e.g., Annex I reef features/ PMFs).

Eight BSHs, four EUNIS Level 4, thirteen EUNIS Level 5, and six EUNIS Level 6 were identified in the seabed imagery collected (Figure 3 to Figure 6, and Table 7). The dominant BSH observed was A5.5, characterised as 'Subtidal Macrophyte Dominated Sediment'. This classification was identified at six DDC transects, and three kelp transects. The most frequently identified EUNIS biotope at these transects was A5.521, described as '*Laminaria saccharina* and red seaweeds on infralittoral sediments', which includes potential PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment'. The second dominant BSH observed was A5.4 ‘Subtidal Mixed Sediment’. This was identified at six DDC transects, and one kelp transect within the survey area. The most commonly identified EUNIS habitat at these transects was A5.43 ‘Infralittoral mixed sediments’.

DDC video and stills logs are presented in Appendices I and II, respectively. Example imagery is presented in Plate 3

The most common epifauna and macroalgae observed in the seabed imagery for the DDC transects included the tube worms *Serpulidae,* macroalgae including reds (Calcareous), and browns (*Laminaria* sp. and *Saccharina latissima)* and the bryozoan *Electra Pilosa*. For the kelp transects the scene was similar to the one observed for the DDC transects (Plate 4).

Table 7 EUNIS BSH and biotope complexes identified in seabed imagery throughout the survey area.

BSH	EUNIS Code	EUNIS Description
A3.1	A3.115	*Laminaria hyperborea* with dense foliose red seaweeds on exposed infralittoral rock
	A3.116	Foliose red seaweeds on exposed lower infralittoral rock
	A3.125	Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock
	A3.126	*Halidrys siliquosa* and mixed kelps on tide-swept infralittoral rock with coarse sediment
A3.2	A3.2121	*Laminaria hyperborea* forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock
	A3.2143	Grazed *Laminaria hyperborea* forest with corraline crusts on upper infralittoral rock
	A3.222	Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids
A3.3	A3.3131	*Laminaria saccharina* and *Laminaria digitata* on sheltered sublittoral fringe rock
	A3.322	*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock
A4.1	-	High Energy Circalittoral Rock
A4.2	A4.2142	*Alcyonium digitatum*, *Pomatoceros triqueter*, algal and bryozoan crusts on wave-exposed circalittoral rock
A5.1	A5.131	Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles)
A5.4	A5.43	Infralittoral mixed sediments
	A5.445	*Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment
A5.5	A5.5211	Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles
	A5.5212	*Laminaria saccharina* and robust red algae on infralittoral gravel and pebble
	A5.5213	*Laminaria saccharina* and filamentous red algae on infralittoral sand
	A5.523	*Laminaria saccharina* with *Psammechinus miliaris* and/or *Modiolus modiolus* on variable salinity infralittoral sediment

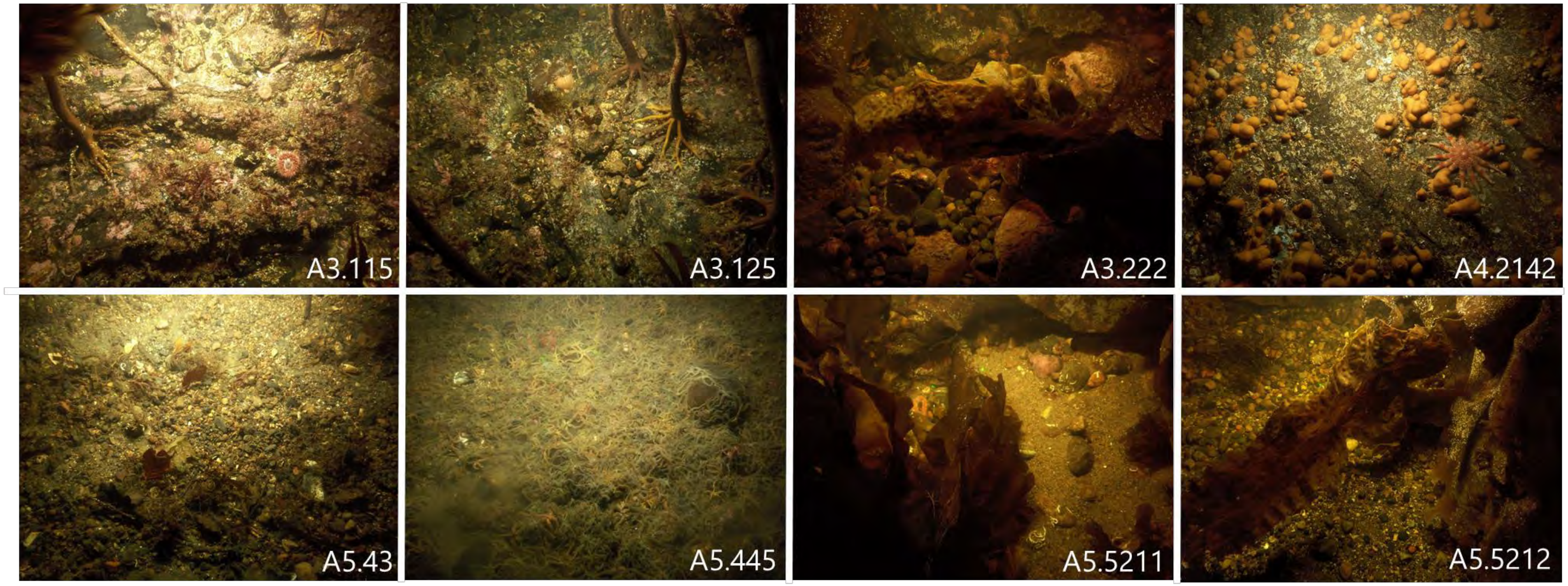

Plate 3 Examples of the most common habitats and biotopes captured via DDC across the survey area. Clockwise from top left: T08, T06, T04, T07, T02, T01, T05, and T04.

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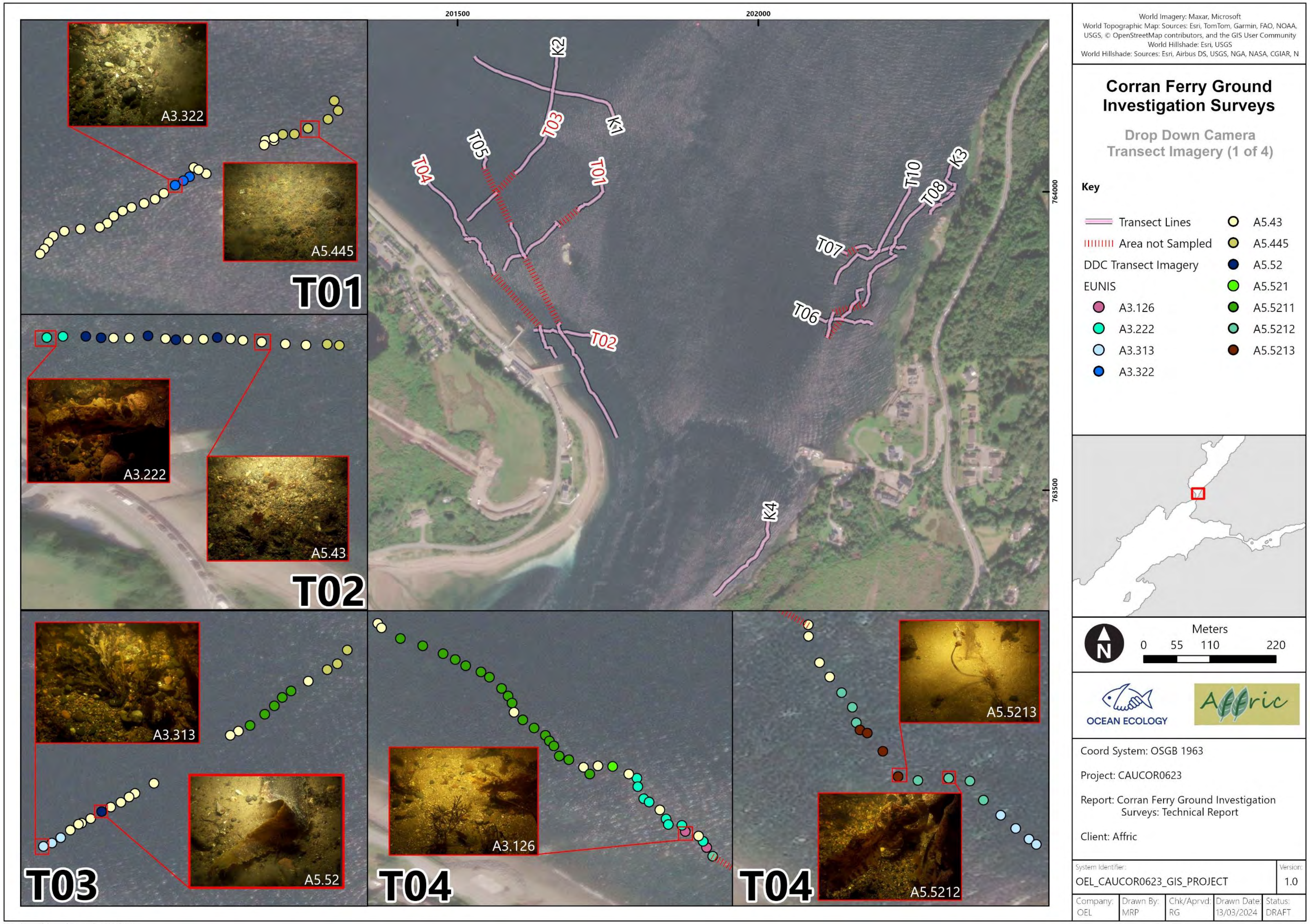

Figure 3 EUNIS classifications derived from seabed imagery collected along transects in the survey area (1 of 4).

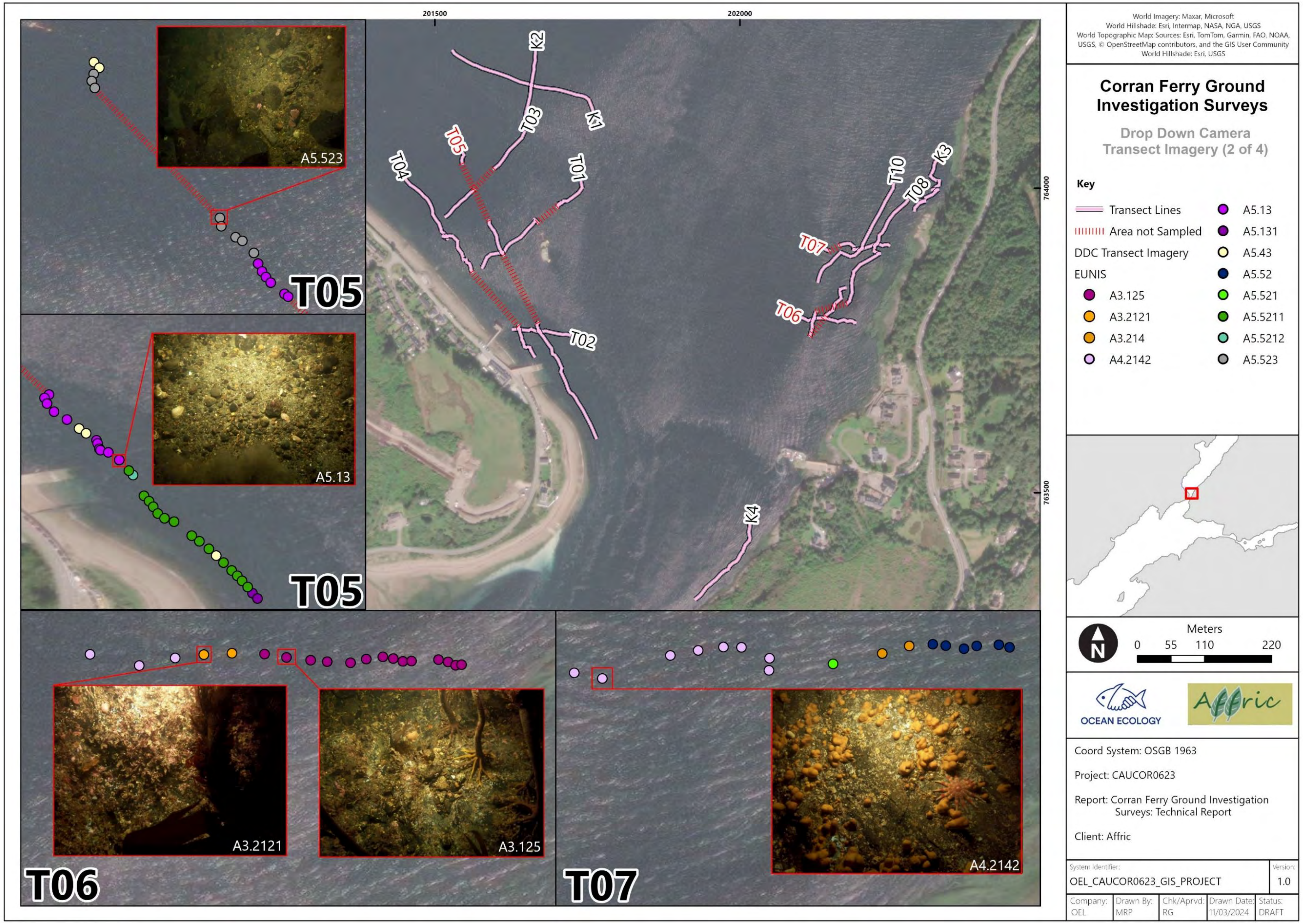

Figure 4 EUNIS classifications derived from seabed imagery collected along transects in the survey area (2 of 4).

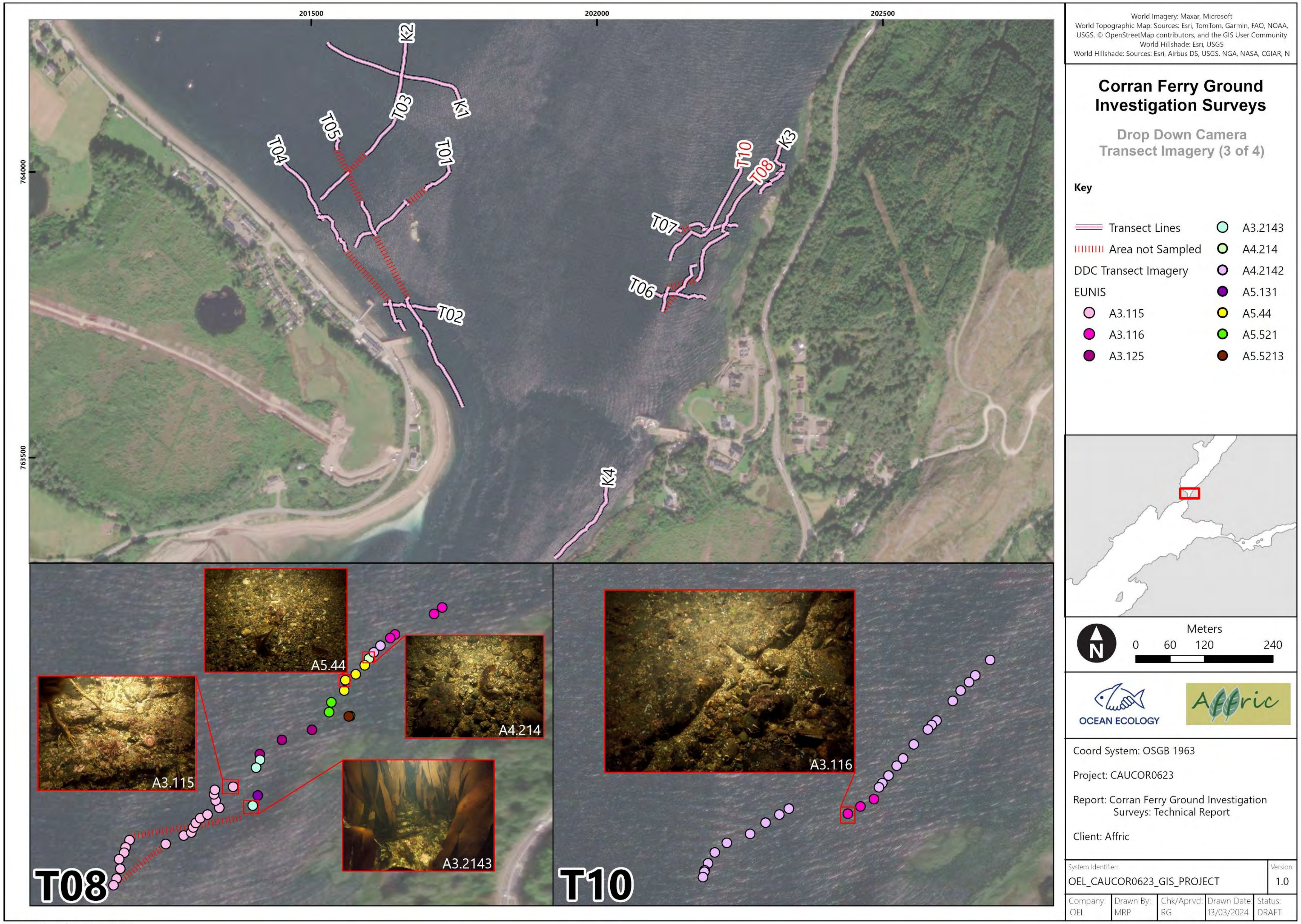

Figure 5 EUNIS classifications derived from seabed imagery collected along transects in the survey area (3 of 4).

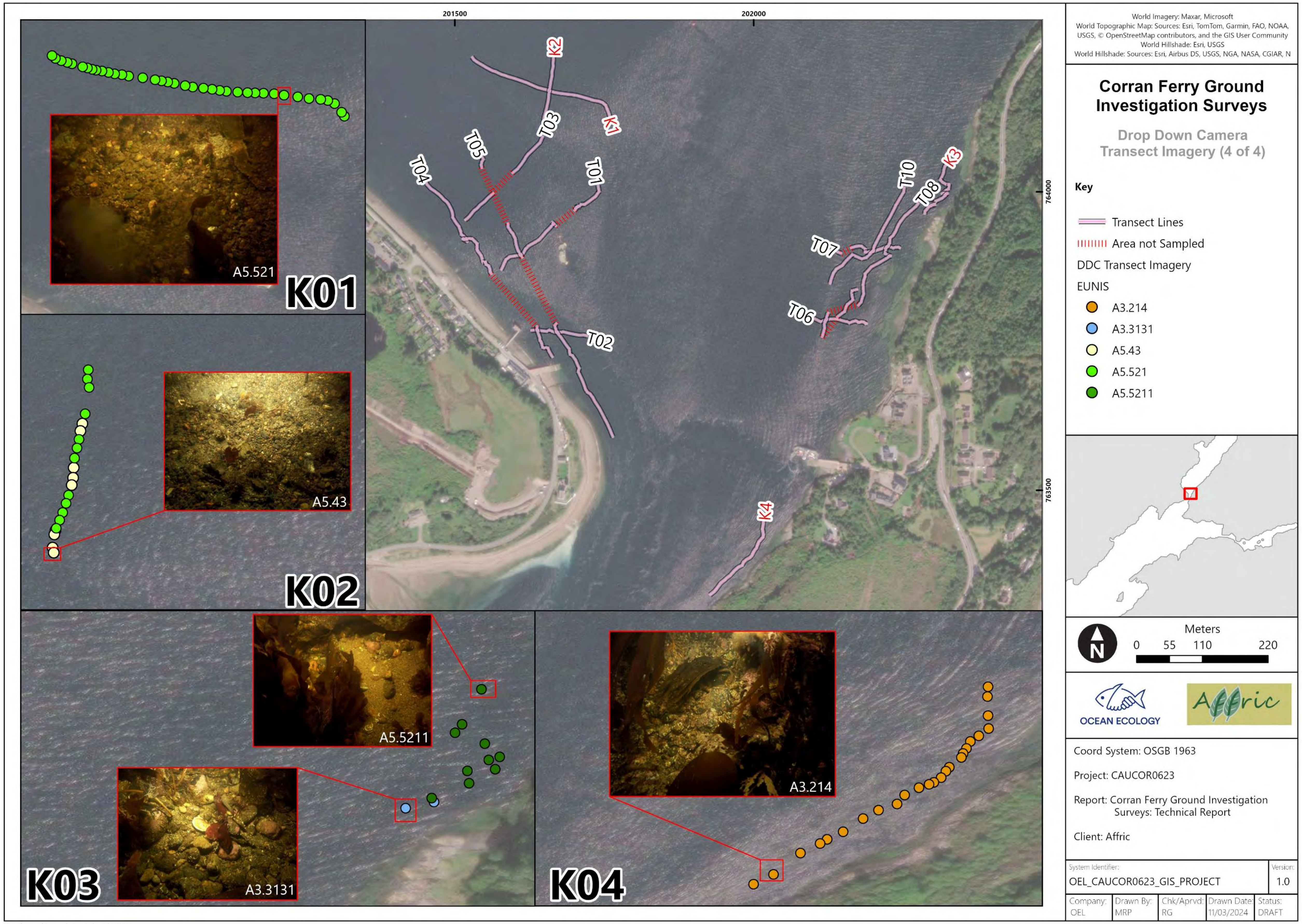

Figure 6 EUNIS classifications derived from seabed imagery collected along transects in the survey area (14 of 4).

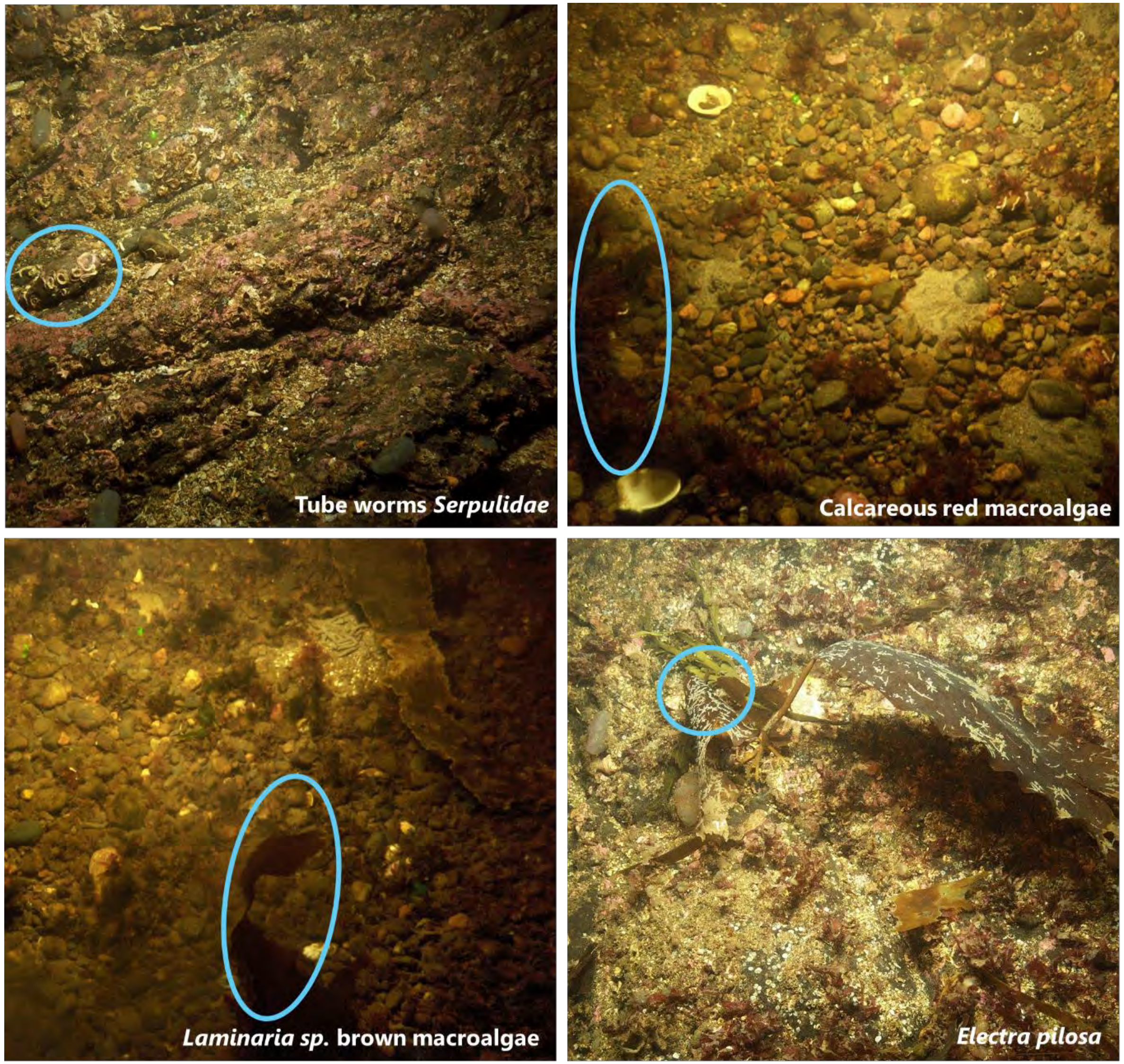

Plate 4 Examples of common epifaunal and macroalgae taxa identified across the survey area. Clockwise from top left: T07, K1, K1 and T10.

6.1.1. Annex I Reef Assessment

A comprehensive Annex I reef assessment was conducted on all imagery (Table 8). Annex I reef was observed within 111 images throughout the survey area (Plate 5).

Table 8 Annex I reef assessment results.

Annex I Reef	Transects	Kelp Transects
Low stony	T04, T05, and T08	K3 and K4
Low stony and bedrock		K4
Bedrock	T06, T07, T08, and T010	K4
Bedrock and low stony	T08	

Results of the Annex I reef assessment are presented spatially in Figure 7 to Figure 8 and full assessment proforma is provided in Appendix VII.

Plate 5 Examples of Annex I reef habitats identified across the survey area. Clockwise from top left: T04, K4, T08, T08.

6.1.2. PMF Assessment

The PMF habitats 'Kelp Beds' and 'Kelp and Seaweed Communities on Sublittoral Sediment' were identified in 52 images for Kelp Beds and 137 images for 'Kelp and Seaweed Communities on Sublittoral Sediment'(Figure 7 to Figure 10, Table 7 and Appendix VI). The biotope A3.322 '*Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock' was identified in three images on Transect T01 and was the biotope component of PMF habitat 'Low or Variable Salinity Habitats'. The biotopes A3.222 'Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids', and A3.126 '*Halidrys siliquosa* and mixed kelps on tide-swept infralittoral rock with coarse sediment' were identified in 12 images from two transects (T02 and T04) and were the biotope components of the PMF habitat 'Tide-Swept Algal Communities' (Plate 6).

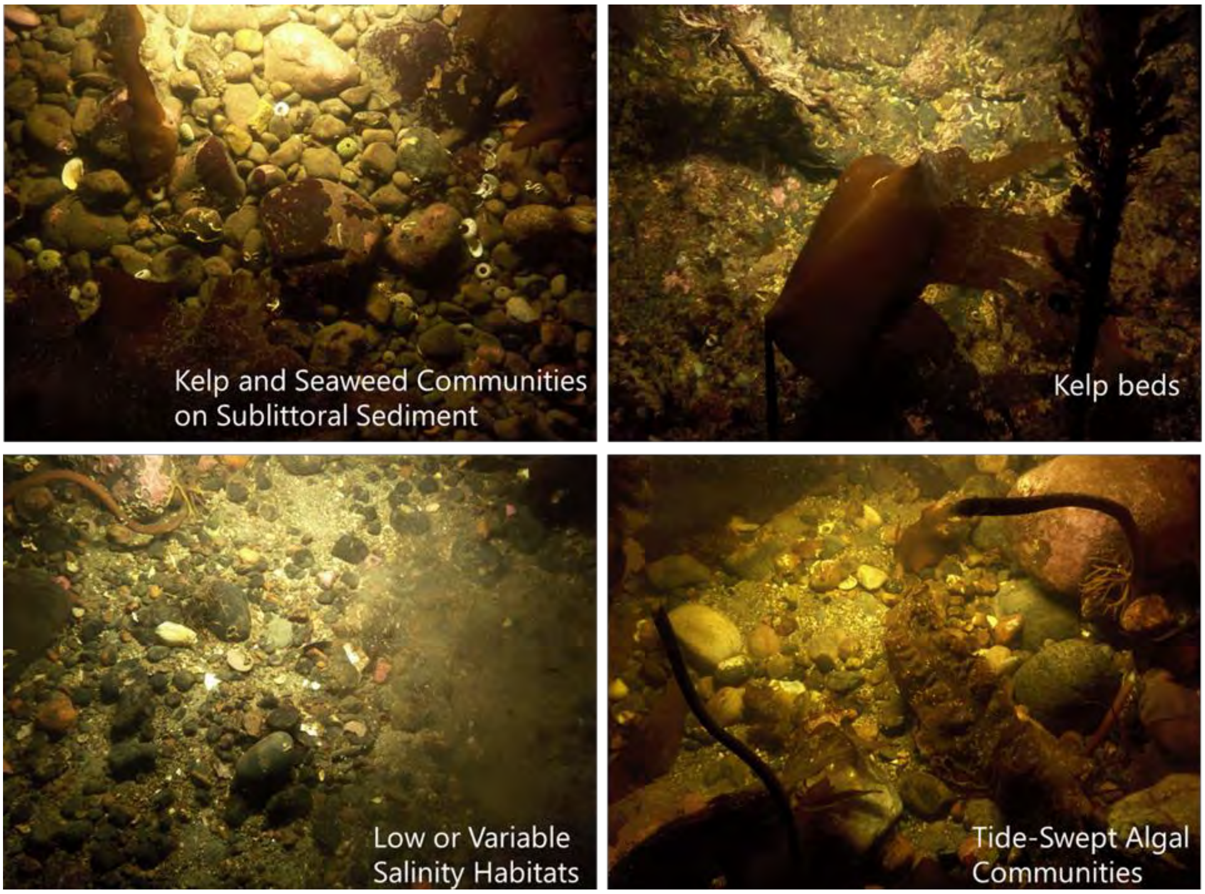

Plate 6 Examples of PMF habitats found across the survey area. Clockwise from top to left: K1, K4, T01, T04.

Table 9 EUNIS BSH and biotope complexes identified in seabed imagery throughout the survey area.

PMF	EUNIS
Kelp and Seaweed Communities on Sublittoral Sediment	A5.52, A5.521, A5.5211, A5.5212, A5.5213, A5.523
Kelp Beds	A3.115, A3.21.21, A3.214, A3.2143
Low or Variable Salinity Habitats	A3.322
Tide-Swept Algal Communities	A3.126, A3.222

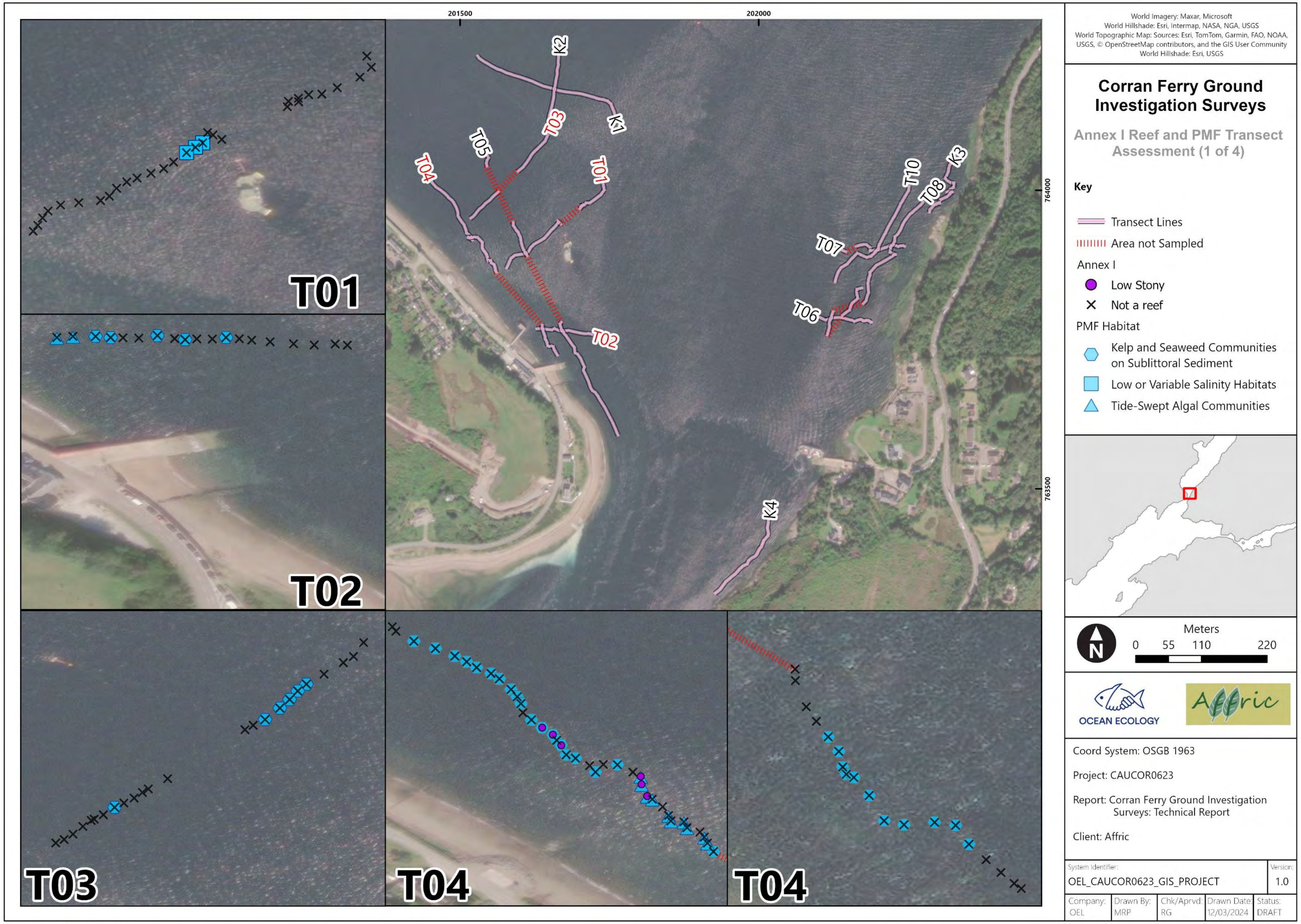

Figure 7 Annex I and PMFs identified in the survey area (1 of 4).

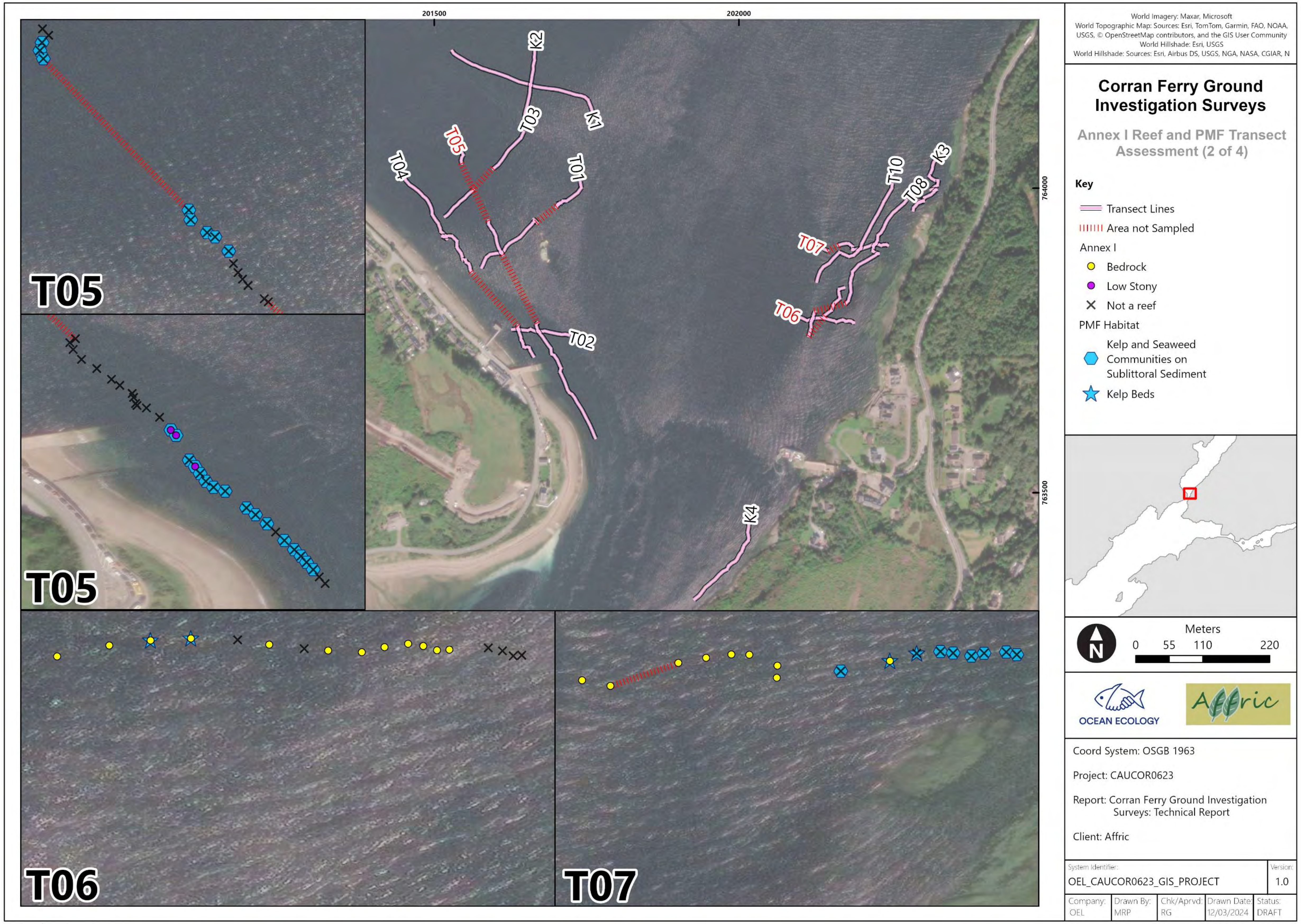

Figure 8 Annex I and PMFs identified in the survey area (2 of 4).

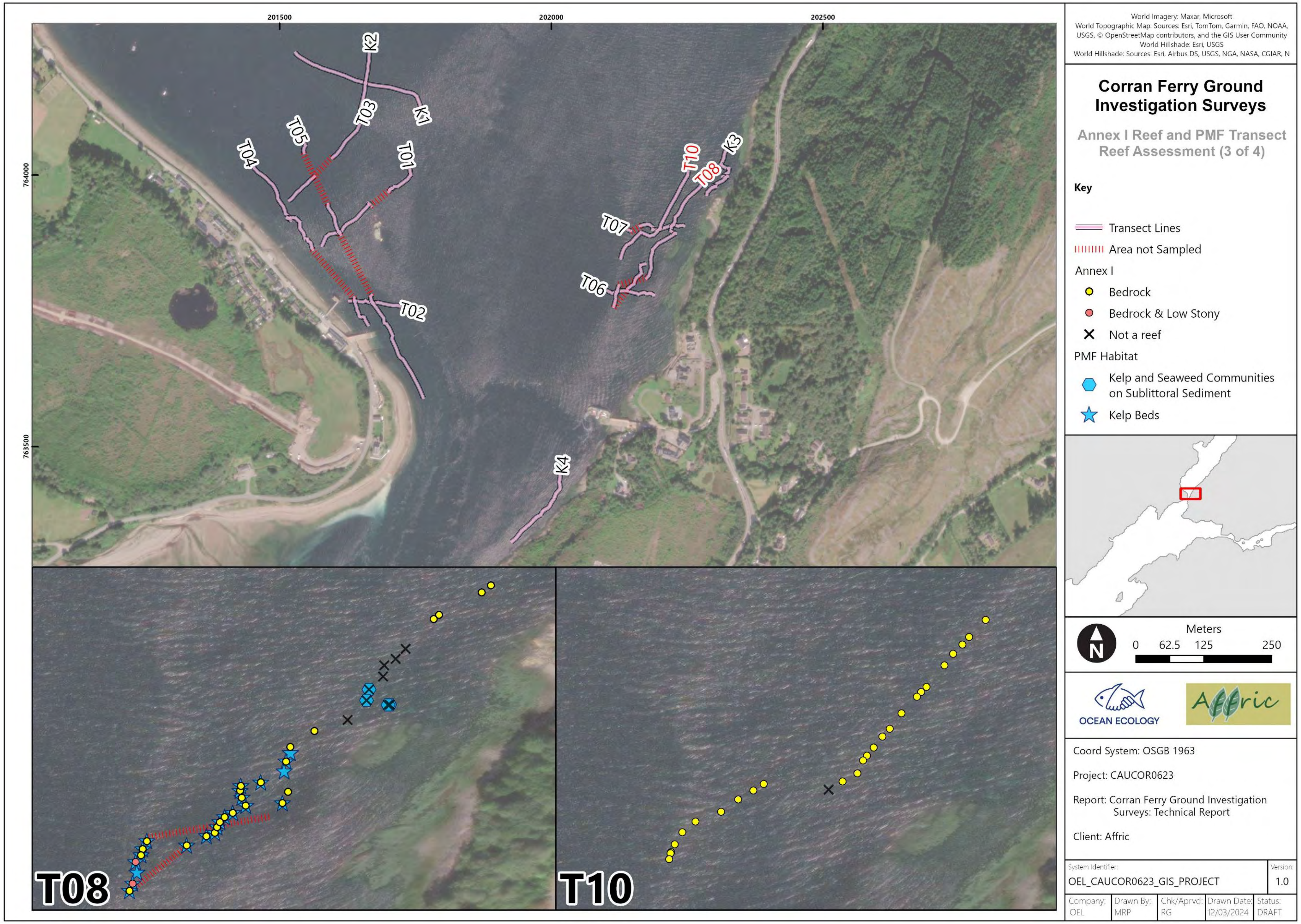

Figure 9 Annex I and PMFs identified in the survey area (3 of 4).

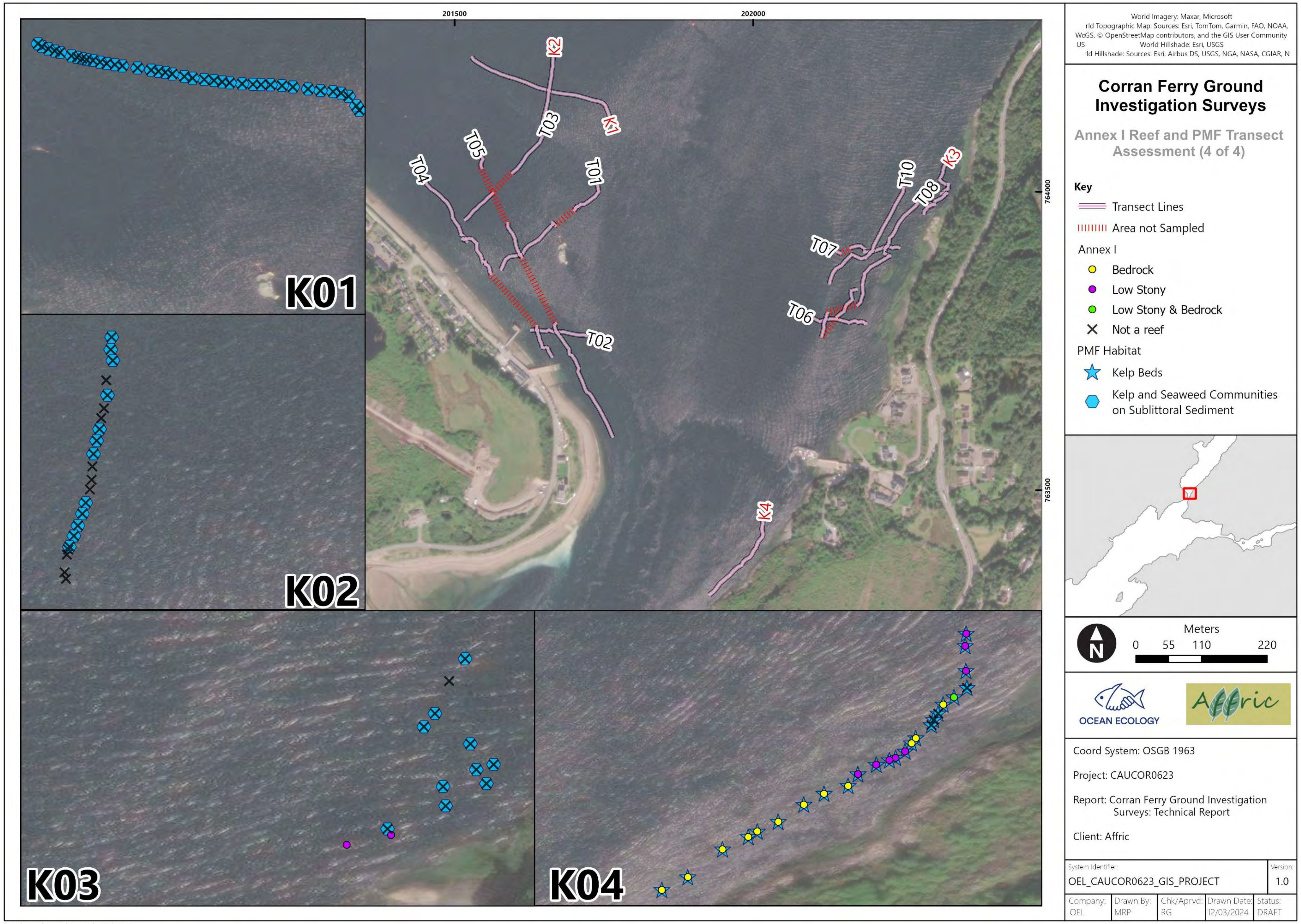

Figure 10 Annex I and PMFs identified in the survey area (4 of 4).

6.2. PSD Data

In total, 7 sediment samples were analysed for full particle size classification. Example images of all sampled sediment types are presented in Plate 7 with full particle size data provided in Appendix VIII and summary data provided in Appendix IX.

6.3. Sediment Type

Sediment types, as classified using the Folk triangle (Folk, 1954) for each station sampled across the survey area are presented in Figure 11. Each Folk classification was converted to BSH type (EUNIS Level 3) using the adapted Folk triangle (Long, 2006). Sediments were heterogeneous across the survey area, characterized by contributions of sand and gravel at all stations, with mud present in minimal quantities. Sediment textural group and BSH are mapped in Figure 12 and Figure 13.

Of the 7 stations sampled, 4 were representative of EUNIS BSH A5.4 (Mixed Sediment), all of which were classified by the textural group Muddy Sandy Gravel (msG). The other three stations were representative EUNIS BSH A5.1 (Coarse Sediment) and included the textural groups Gravelly Sand (gS) and Sandy Gravel (sG) (Figure 11).

6.4. Sediment Composition

Sediment was characterised by a predominance of sand and gravel and varying, generally low mud content across the survey. The percentage contribution of gravels (> 2 mm), sands (63 µm to 2 mm), and fines (< 63 µm) at each station are presented in Figure 13. The mean proportion (± Standard Error, SE) of sands across all stations was 49 % (± 7 %), the mean (± SE) gravel and mud content across the survey area was 45 % (± 7 %) and 6% (± 2 %) respectively. Spatial trends of sediment composition are mapped in Figure 14.

Plate 7 Sediment types sampled. Left to right: ST01, Muddy Sandy Gravel (msG). ST02, Gravelly Sand (gS). ST04, Sandy Gravel (sG).

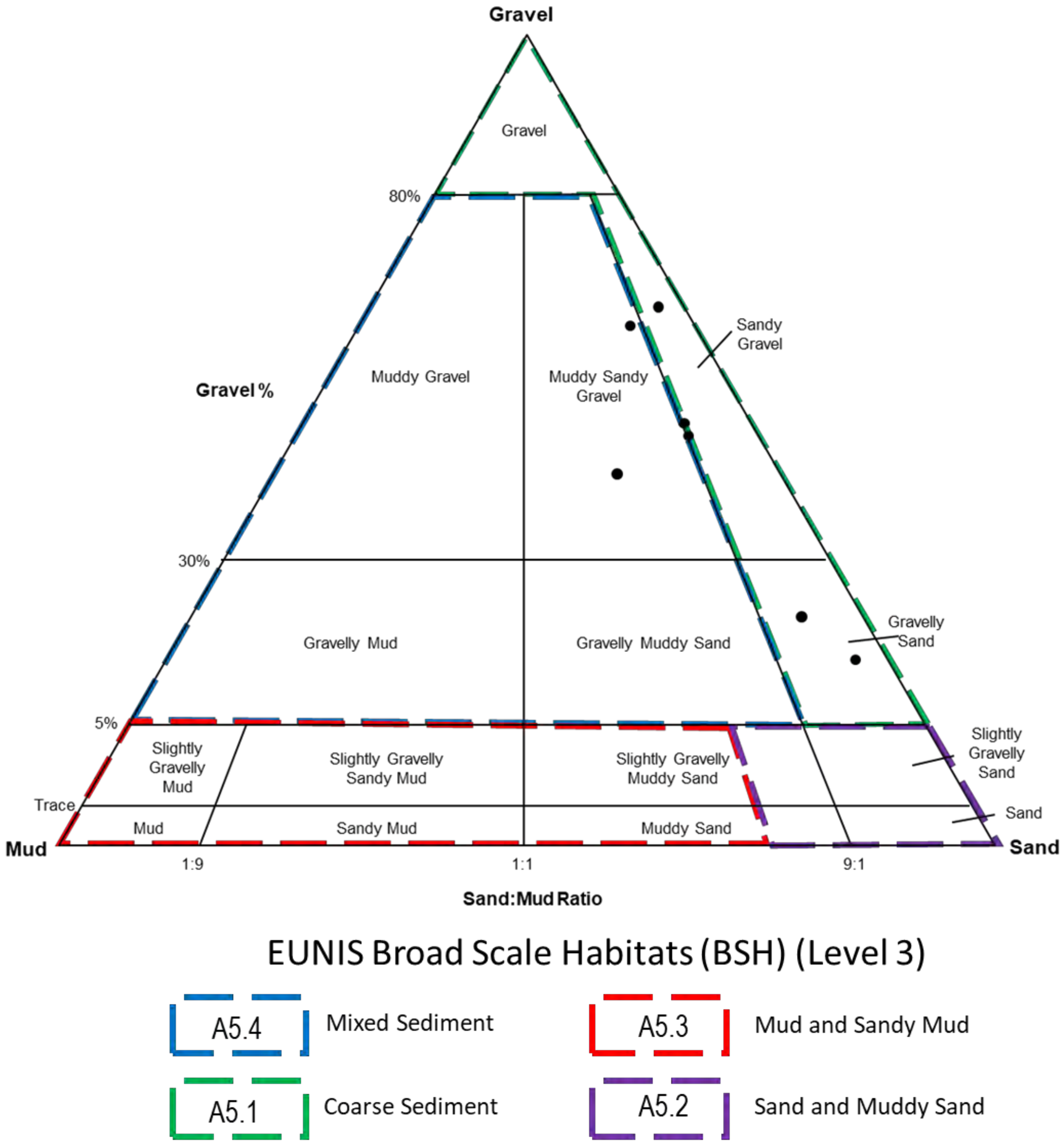

Figure 11 Folk (1954) triangle classifications of sediment gravel percentage and the sand-to-mud ratio of samples collected across the ruptured pipeline subtidal sampling area, overlain by the modified Folk triangle for determination of mobile sediment BSHs under the EUNIS habitat classification system (adapted from (Long 2006)).

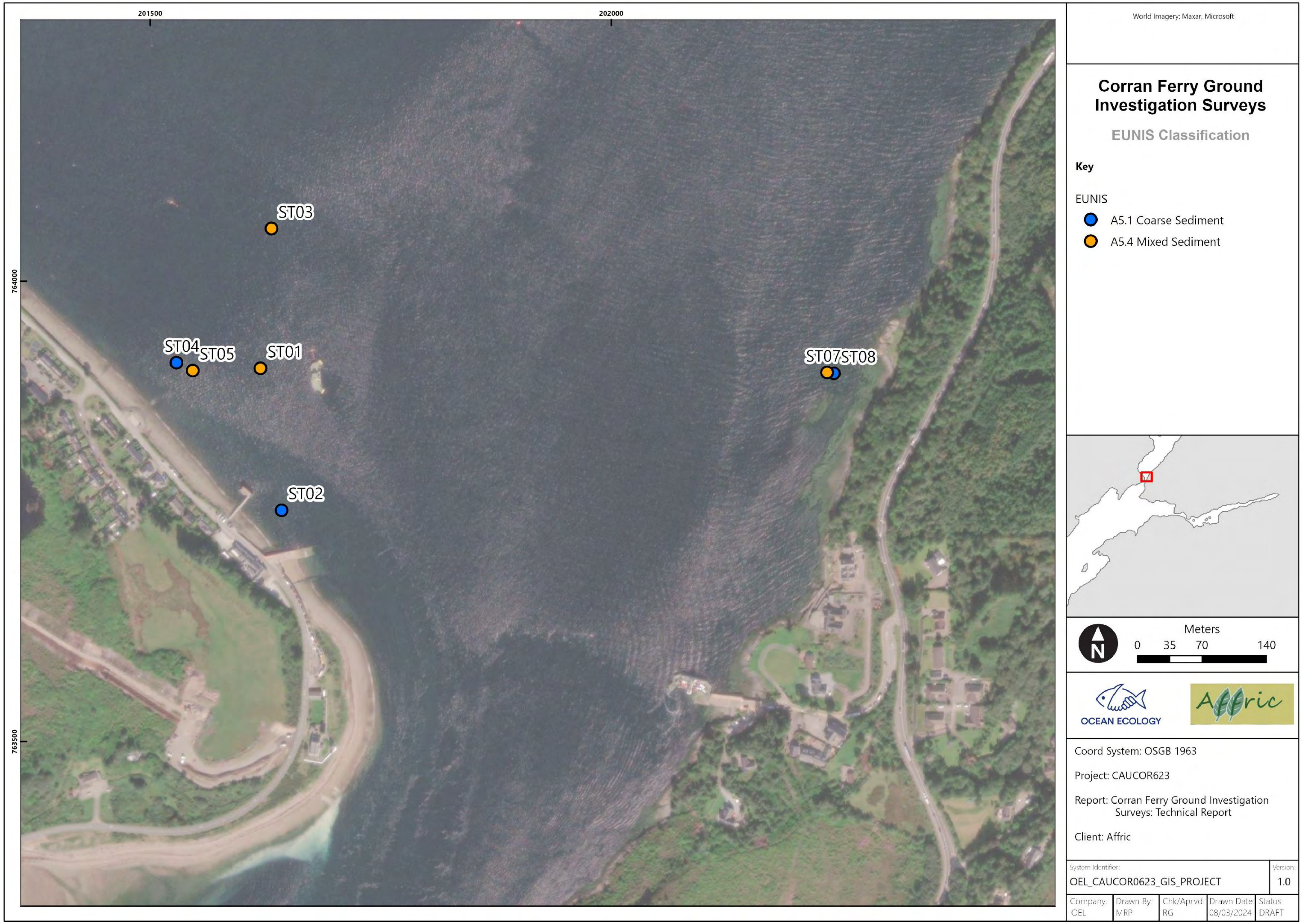

Figure 12 EUNIS BSH classification as determined based on PSD of sampled collected during the survey.

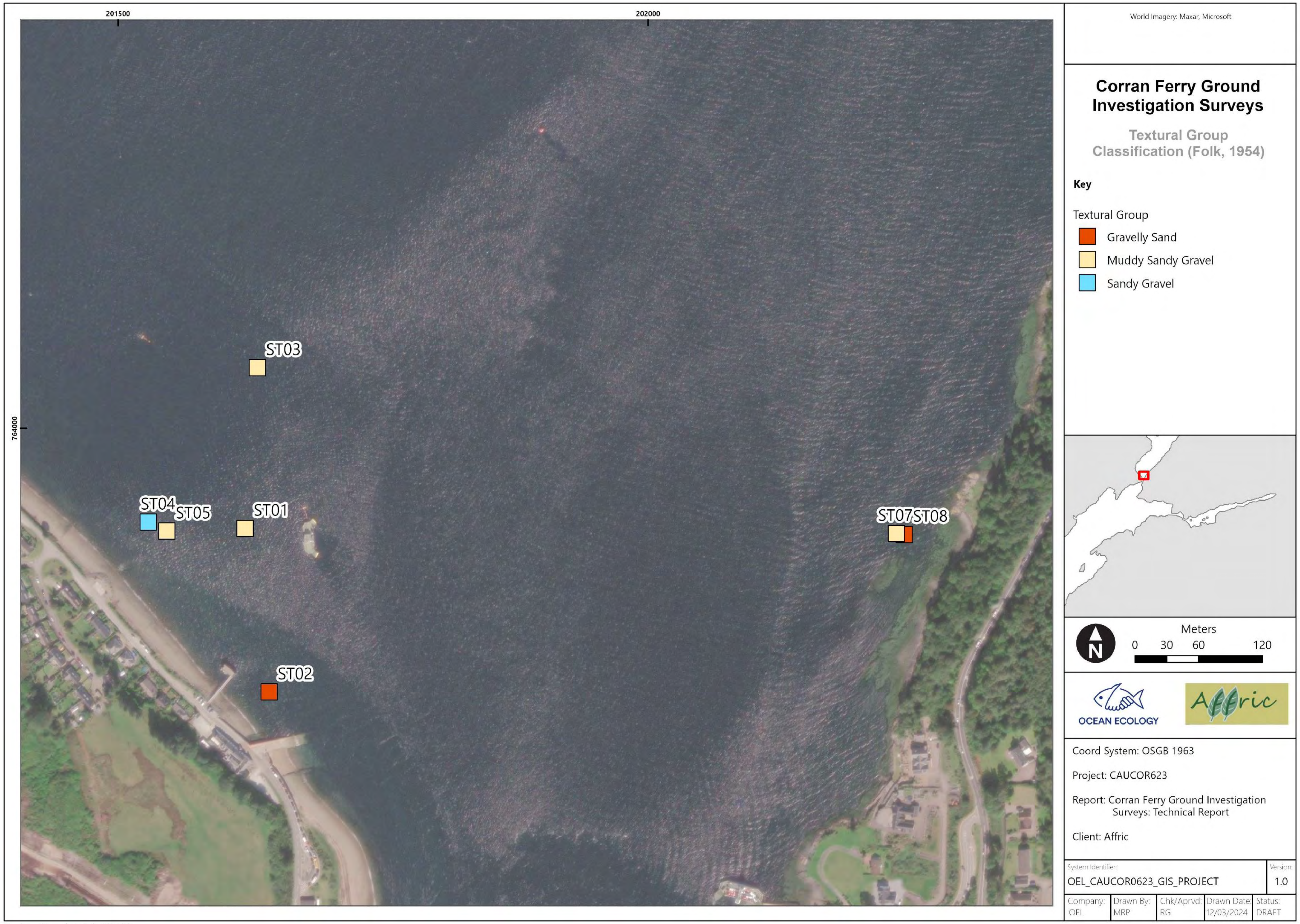

Figure 13 Textural Groups as determined from PSD analysis of samples acquired during the survey.

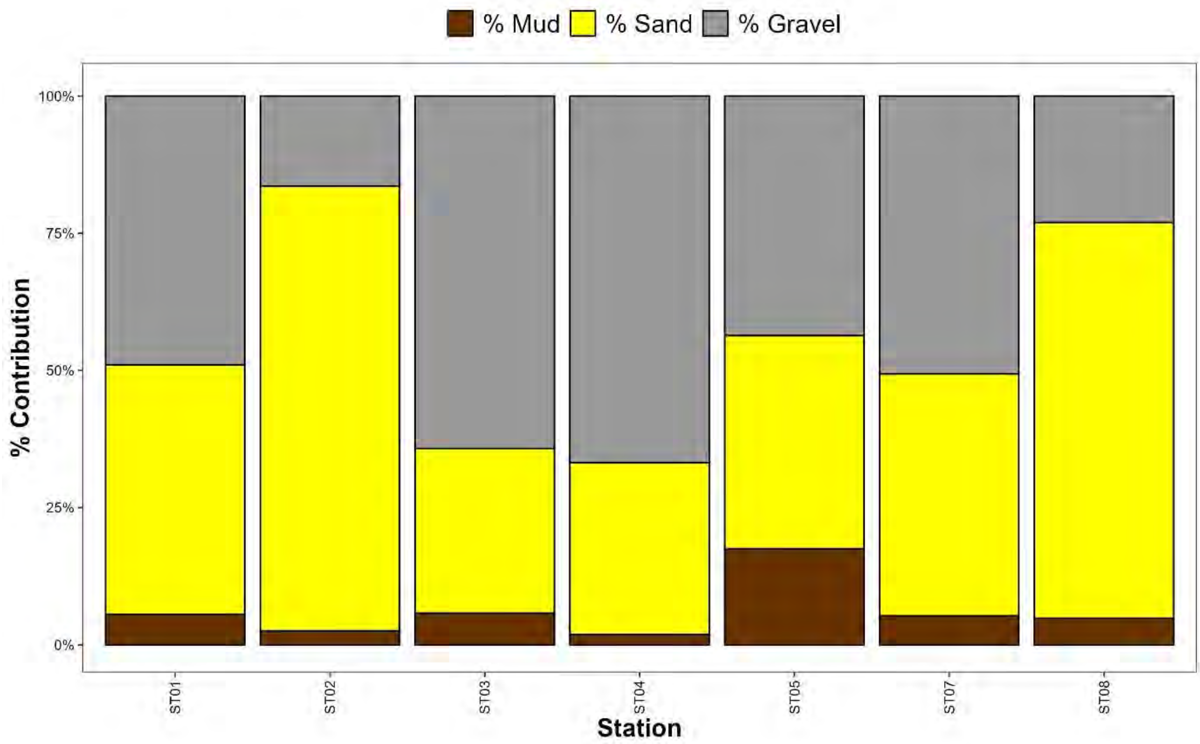

Figure 14 Relative contribution of major sediment fractions (Gravel, Sand, Mud) by volume at each sampling station.

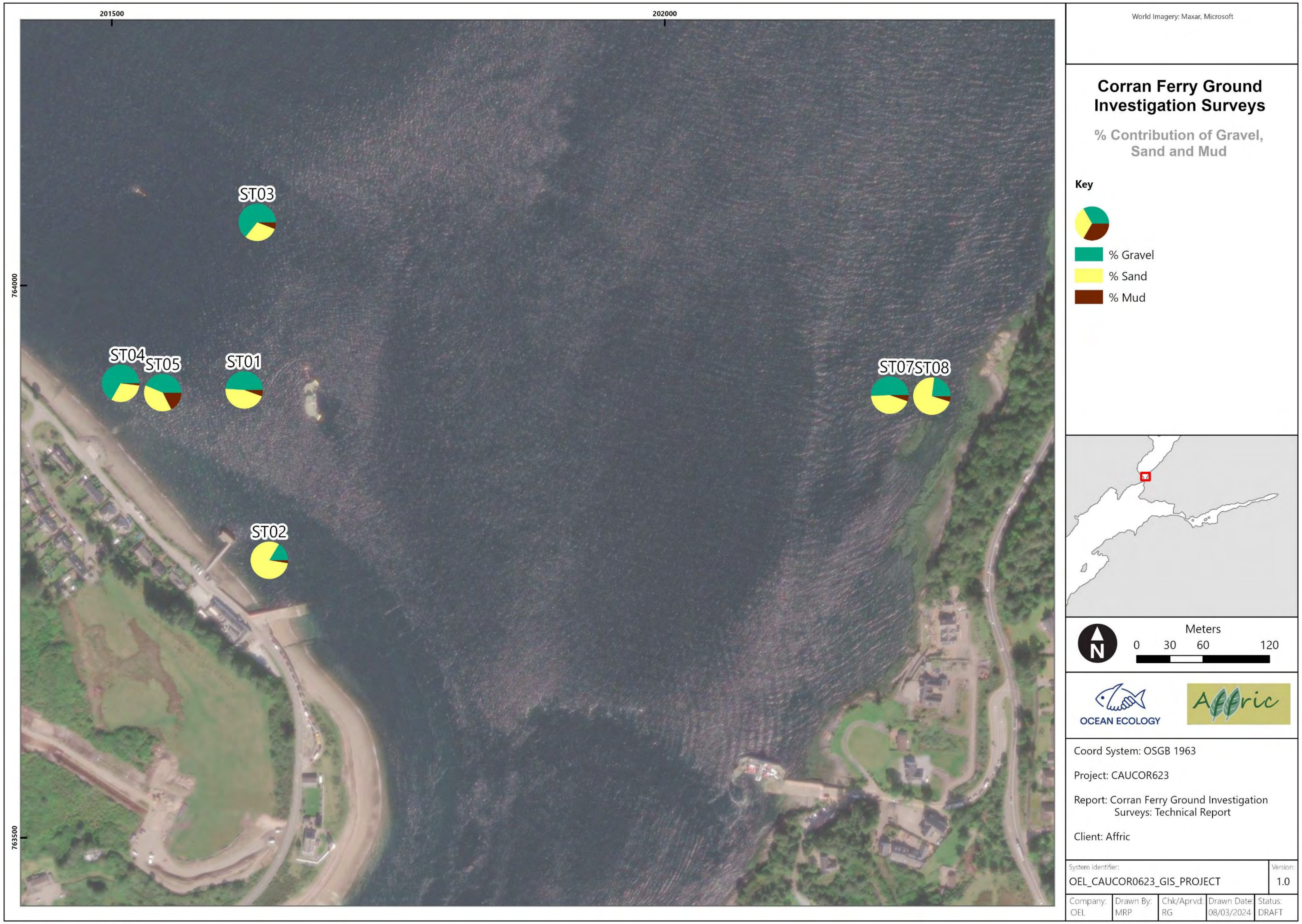

Figure 15 The principal sediment components (Gravel, Sand, Mud) as determined from PSD analysis of samples acquired during the survey.

6.5. Macrobenthic Composition

6.5.1. Univariate analysis

A diverse macrobenthic assemblage was identified across the survey area from the 7 macrobenthic samples collected across the subtidal stations (0.5 mm size fractions) including a total of 3,780 individuals and 185 taxa recorded. The mean (± SE) number of taxa per station was 27 ± 1, mean (± SE) abundance per station was 143 ± 11, and mean (± SE) biomass per station was 0.4189 ± 0.0973 gAFDW (Ash Free Dry Weight).

The full abundance matrix is provided in Appendix X. The biomass (gAFDW) of each major taxonomic group (Annelida, Crustacea, Mollusca, Echinodermata, and Miscellaneous) in each sample collected is presented in Appendix XI.

Figure 16 shows the main infaunal taxa characterising the stations. The phylum Nematoda was the most abundant accounting for 35 % of all individuals recorded. It occurred at all stations and accounted for the maximum abundance per sample and maximum average density per sample. Another key taxon was the polychaete *Pholoe inornata* occurring in 100 % of samples.

Figure 17 illustrates the relative contributions to total abundance, diversity, and biomass of the major taxonomic groups in the macrobenthic community sampled across the survey area. Miscellaneous taxa (in the main driven by high abundances of Nematoda) dominated abundance as they accounted for 38% of all individuals recorded. Biomass was dominated by Mollusca contributing to 59% of the total biomass. Annelid taxa dominated the diversity accounting for 47% of all taxa recorded.

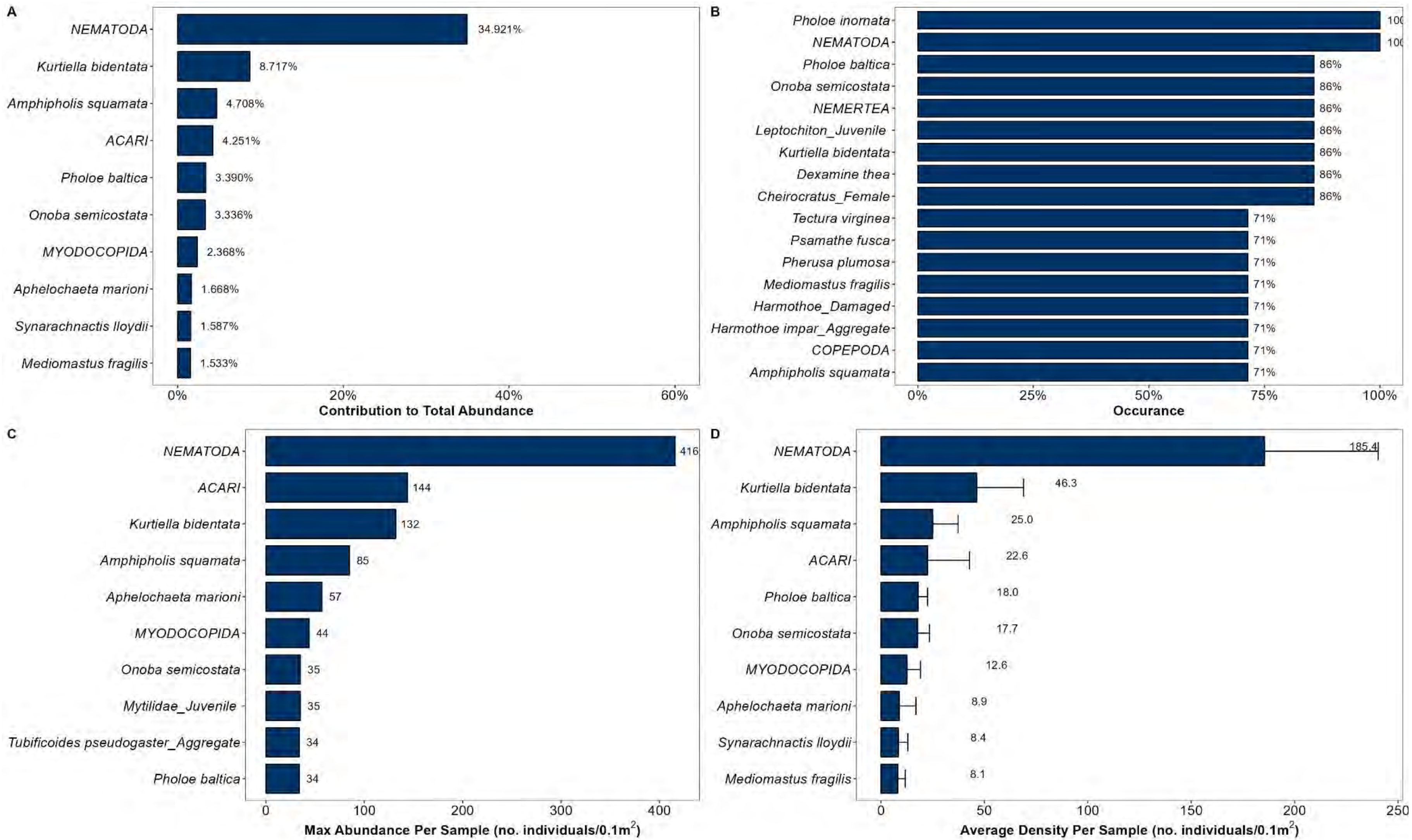

Figure 16 Percentage contributions of the top 10 taxa to total abundance (a) and occurrence (b) from samples collected across the stations. Also shown are the maximum densities of the top 10 taxa per sample (c) and average densities of the top 10 taxa per sample (d).

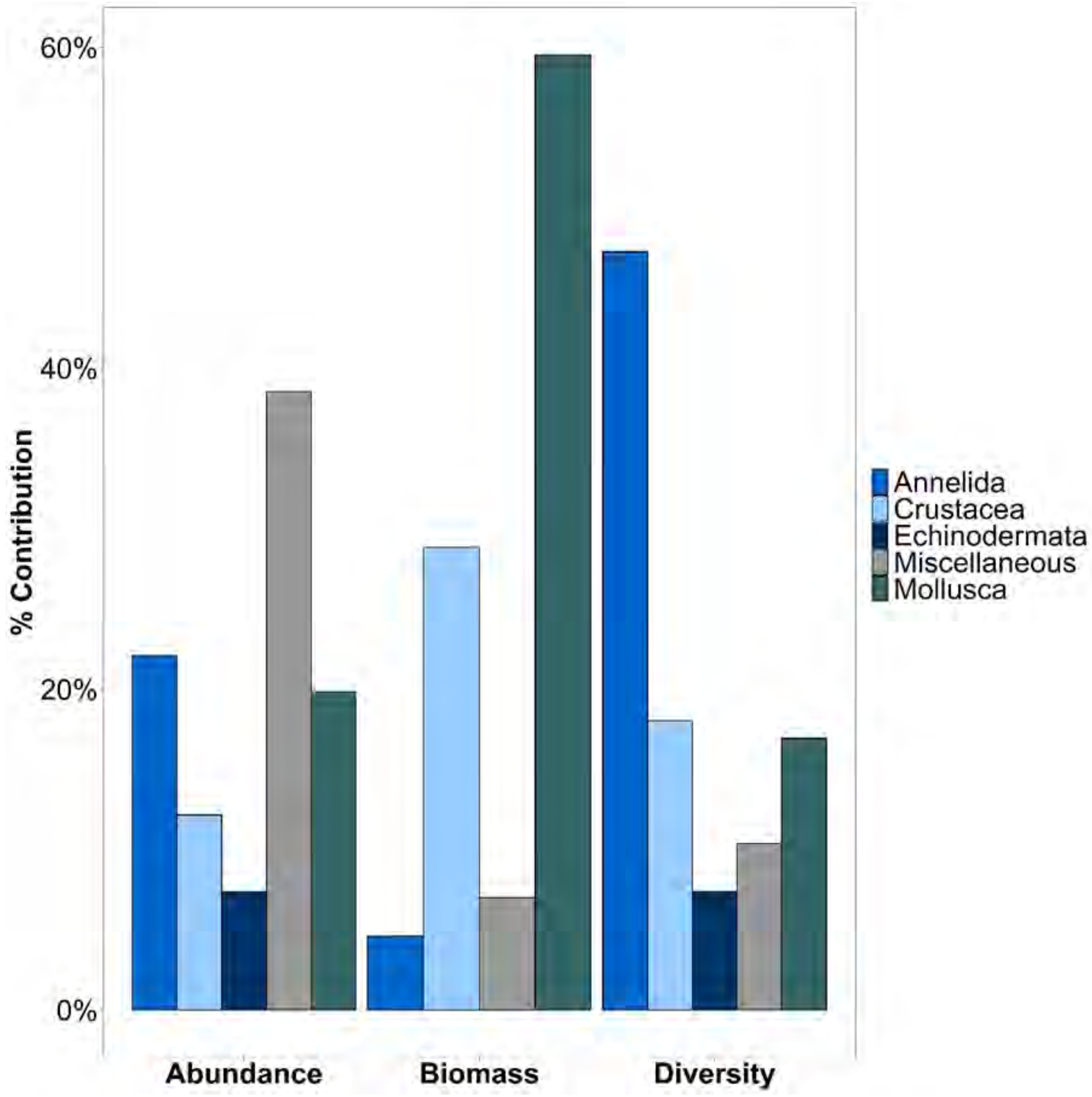

Figure 17 Relative contribution of the major taxonomic groups to the total abundance, diversity, and biomass of the taxa sampled at the survey area.

6.5.2. Notable Taxa

The mollusc *Ceratia proxima* is in the Scottish Biodiversity List of species of principal importance for biodiversity conservation. Eight individuals were recorded and were confined to a single station (ST04).

The arthropod *Crassicorophium crassicorne* and the mollusc *Mya arenaria* are classified as invasive and non-native species. *C. crassicorne* was recorded on three occasions across two stations (ST02 and ST03) and two *M. arenaria* individuals were recorded at ST03.

The Ross warm *S. spinulosa* is a protected species under the OSPAR list of threatened and/or declining species and the Habitats Directive when in reef habitat form. A single individual was recorded at Station ST07.

6.5.3. Macrobenthic Groups

Multivariate analysis was undertaken on the square-root transformed macrobenthic grab abundance data to identify spatial distribution patterns in the macrobenthic assemblages across the survey area and identify characterising taxa present.

Cluster analysis of the macrobenthic data was performed on a Bray-Curtis similarity matrix to analyse the spatial similarities in macrobenthic communities recorded across all sampled stations. The dendrogram resulting from the cluster analysis (Appendix XII) and associated Type 1 SIMPROF similarity (similarity profile routine) permutation test of all nodes within the dendrogram, identified one statistically significantly similar group ($p < 0.05$) including three stations and four outliers. The spatial distribution of this macrobenthic group and outlier stations is presented in

Figure 18.

To visualise the relationships between the sampled macrobenthic assemblages, a non-metric multi-dimensional scaling (nMDS) plot was generated on the abundance data (

Figure 18). The nMDS represents the relationships between the communities sampled, based on the distance between sample (station) points. The low stress value of the nMDS ordination plot indicates that the two-dimensional plot provides a good representation of the similarity between stations.

SIMPER (similarity percentage analysis) was used to identify the key taxa contributing to the within group similarity of the macrobenthic group recognised; the full SIMPER results are provided in Appendix XIII. Note that only three stations belonged to Macrobenthic Group A, while four stations were stand alone outliers. Of these, ST04 was the only one where the presence of red algae (*Rhodophyta, Corallinaceae*, *Phycodrys ruben)*, the sea moss *Chondrus crispus,* and brown seaweed (*Ochrophyta*) was consistently noted.

Macrobenthic Group A – Three stations belonged to this group: ST01, ST03, and ST05. These stations were characterised by the presence of Nematoda, the brittle star *Amphipholis squamata*, other brittle stars from the genus Myodocopida, the mollusc *Onoba semicostata*, the annelid *Pholoe baltica*, the mollusc *Kurtiella bidentata*, and the anemone *Synarachnactis lloydii* all together contributing to about 75% of the group average similarity of 49.42 %.

Figure 18 Two-dimensional nMDS ordination of macrobenthic communities at the subtidal stations based on square root transformed and Bray-Curtis similarity abundance data.

Figure 19 Spatial distribution of macrobenthic groups as determined from cluster analysis of abundance data.

6.5.4. Biotope Assignment

For the Macrobenthic Group determined using cluster analysis, biotope / habitat were assigned in line with JNCC guidance based upon their faunal and physical characteristics (Parry, 2019). Outlier stations were assigned to the most accurate EUNIS classification possible based on PSA results and seabed imagery from close by locations.

Macrobenthic Group A – One biotope aligned with the community observed within this group: A5.433 '*Venerupis senegalensis*, *Amphipholis squamata* and *Apseudes latreilli* in infralittoral mixed sediment'. This is consistent with the sediment analysis indicating that stations belonging to Macrobenthic Group A consisted of mixed sediments representative of BSH A5.4 'Sublittoral mixed sediments'. The key taxa found in this group was *Amphipholis squamata*.

Station ST02 classified as an outlier based on cluster analysis with the main difference in the community composition between this station and macrobenthic group A being a notably lower abundance of Nematoda and the absence of the brittle star *A. squamata* and the bivalve *K. bidentata*. In turn, characterising taxa at ST02 were the oligochaetes *T. pseudogaster* and *Tubificoides benedii* and amphipods of the family Corophiidae. Based on the shallow location of this station and PSA results ST02 was assigned to habitat A5.13 'Infralittoral coarse sediments'.

Station ST04 was also an outlier whose macrobenthic community differed from that of macrobenthic group A due to a higher abundance of Nematoda, Acari, *T. benedii*, the ascidian *Dendrodoa grossularia* and the sea spider *Callipallene brevirostris*. In contrast, *A. squamata* was absent in ST04. Considering that the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' was observed in proximity to ST04 on cobbles, pebbles and gravel, and that PSA indicated the presence of coarse sediment, ST04 was assigned to habitat A5.13 'Infralittoral coarse sediments'.

Outlier station ST07 had a macrobenthic community that diverged from that observed in macrobenthic group A as it presented a higher abundance of Nematoda, *K. bidentata,* the sea cucumber *Leptosynapta inhaerens,* the amphipod *Dexamine thea,* the sea snail *Caecum glabrum* and the polychaete *Pseudosyllis brevipennis,* while *A. squamata* occurred in lower abundances. Considering the presence of the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' in proximity to this station and the results of the PSA indicating mixed sediments, ST07 was assigned to habitat A5.43 'Infralittoral mixed sediments'.

Lastly, ST08 also categorized as an outlier and exhibited lower abundance of Nematoda, *A. squamata* and *K. bidentata* than macrobenthic group A, while it was characterised by the presence of the oligochaetes *T. pseudogaster* and *Grania* sp.. Considering that the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' was observed in proximity to this station and that PSA indicated the presence of coarse sediment, station ST08 was assigned to habitat A5.13 ‘Infralittoral coarse sediments’.

7. Discussion

This report presents the results and interpretation of the seabed imagery, sediment, and macrobenthic analyses with the aim to set out the environmental baseline conditions to inform the EIA process in support of upgrades to ferry infrastructure for the introduction of electric vessels on the Corran Ferry route.

7.1. Seabed Imagery

Seabed imagery was successfully captured across nine pre-determined DDC transects and four kelp transects determined in the field, resulting in the acquisition of 415 still images and 27 videos. A diverse range of habitats was identified across the survey area including rocky habitats including BSHs A3.1, A3.2, A3.3, A4.1 and A4.2, soft sediment habitats including BSHs A5.1, A5.4, and A5.5. The dominant biotope among all the observed BSHs was A5.521 '*Laminaria saccharina* and red seaweeds on infralittoral sediments' being the most frequently encountered.

EUNIS classification A5.52, A5.521, A5.5211, A5.5212, A5.5213, and A5.523 were recorded biotope components of the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' recognised for its conservation significance in Scottish waters. This PMF was observed in 3 out of 4 kelp transects (K1, K2, and K3) and 6 out of 9 DDC transects (T02, T03, T04, T05, T07, and T08). Three additional PMF habitats were observed across the survey area: 'Kelp beds,' 'Low or Variable Salinity Habitats,' and 'Tide-Swept Algal Communities.' More specifically, EUNIS classifications A3.115, A3.2121, A3.214, and A3.2143 were observed on the east side of the survey area at K4, T06, T07, and T08 and were biotope components of the PMF habitat ‘Kelp beds’. Biotope A3.322 was observed on the west of the survey area at T01 and represented the PMF habitat 'Low or Variable Salinity Habitats', while the following habitats and biotopes were also observed in transects on the western side of the survey area at T02 and T04 and represented the PMF habitat 'Tide-Swept Algal Communities’: A3.322 and A3.126 for A3.115, A3.126, A3.2121, A3.214, A3.2143, A3.222, A3.322, A5.52, A5.521, A5.5211, A5.5212, A5.5213, and A5523.

The Annex I Reef assessment identified various reef types, including Low Stony, Low Stony and Bedrock, Bedrock, and Bedrock and Low Stony reefs. These rocky habitats have the characteristics to qualify as Annex I stony and bedrock reefs however as the survey area does not sit within the boundaries of a marine protected site, these habitats are therefore not afforded protection as such. However, they are considered important components of the biodiversity of Scottish seas and should be recorded to provide evidence for future nature conservation actions. The transects covering stony and bedrock reefs included T04, T05, T06, T07, T08, T10, K3 and K4.

Owing to dense areas of red and brown macroalgae and kelp across the survey area, numerous images could not be fully analysed as they were deemed of poor visual quality or 'zero (not analysable)' as it was impossible to see the substrate. This meant that the Annex I reef assessment could not be carried out at these locations resulting in a potential underestimation of the extent of reef features across the survey area.

7.2. Sediments

For the seven sediment samples collected during the survey, analysis confirmed the BSH A5.1 'Coarse sediment' at stations ST04, ST02, ST08 and BSH A5.4 'Mixed sediment' at ST01, ST03, ST05, ST07. Sand emerged as the most abundant textural grouping, followed by gravel. These findings align with the area's topography, especially given their proximity to the coast.

7.3. Macrobenthos

A diverse macrobenthic assemblage was identified across the survey area from the seven macrobenthic samples collected, with a total of 3,780 individuals and 185 taxa recorded. The most abundant taxon with the maximum abundance per sample, and average density per sample was Nematoda. The annelid *P. inornata* exhibited the greatest occurrence in the survey area.

Macrobenthic communities can be highly heterogenous as they are heavily influenced by ambient environmental conditions such as sediment composition (Cooper et al., 2011), hydrodynamic forces and physical disturbance (Hall, 1994), depth (Ellingsen, 2002), and salinity (Thorson, 1966). This was reflected in the macrobenthic communities observed across the survey area where three stations grouped together based on the similarity in their macrobenthic community supported by mixed sediments. A key species at these stations was *A. squamata* suggesting that the biotope present across stations ST01, ST03 and ST05 was A5.433 '*Venerupis senegalensis*, *Amphipholis squamata,* and *Apseudes latreilli* in infralittoral mixed sediment'. All other stations did not belong to a specific macrobenthic group based on their community compositions however they were all characterised by coarse sediments except for Station ST07 which was made of mixed sediments. A reason behind this could be that in the analysis of macrobenthic data, seaweed and kelp were recorded as presence/absence data and not counted. Thus, meaning that their presence was factored into diversity calculations, but not considered in abundance calculations or included in the multivariate analysis. Consequently, stations that did not belong to a specific macrobenthic group could have been stations where seaweed and kelp were predominant. Seabed imagery collected in closed proximity of grab samples ST02, ST04, ST07 and ST08 provided evidence of the PMF habitat 'Kelp and Seaweed Communities on Sublittoral Sediment' being present. Despite this some of the macrobenthic community recorded at stations ST02, ST04, ST07 and ST08 aligned with that typically found associated with kelp and seaweed communities including ascidians, gastropods and amphipods, the habitat assignment of these stations was left a level 4 rather than 5 due to the lack of consistent data pointing to a specific biotope.

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Appendix 6. Transport Assessment Scoping Report

Pell Frischmann

Corran Ferry Improvement Scheme

Scoping Report
Body Document only. Appendices can be provided on request.

108168

March 2024

Report Ref.		**Scoping Report**				
File Path		**https://pellf.sharepoint.com/sites/EdinburghOfficeTeam/Shared Documents/General/Projects/108168 Wallace Stone Corran Ferry/01 - WIP/Reports/Scoping Report.docx**				
Rev	**Suit**	**Description**	**Date**	**Originator**	**Checker**	**Approver**
V1		Draft	08-March-24	E Moran	S Cochrane	G Buchan
V2		Final	11-March-24	E Moran	S Cochrane	G Buchan
Ref. reference. Rev revision. Suit suitability.						

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Contents

Figures

Appendices

1 Introduction

1.1 Purpose of the Report

Pell Frischmann Ltd. (PF) has been commissioned by Wallace Stone, on behalf of The Highland Council (THC) to prepare a Transport Assessment (TA) for the proposed Corran Ferry – Infrastructure Improvement Scheme.

PF would be grateful for advice from both THC and Transport Scotland with regards to the scoping for the TA to support the planning application for the Proposed Development.

A scoping exercise for the Environmental Impact Assessment (EIA) in relation to access, traffic and transport matters will be undertaken separately to the TA scoping, with the proposed assessment methodology included within the EIA Scoping Report.

1.2 Consultation

Pre-application advice was received from THC and Transport Scotland Officers on 15 February 2023. These responses are provided in **Appendix A**.

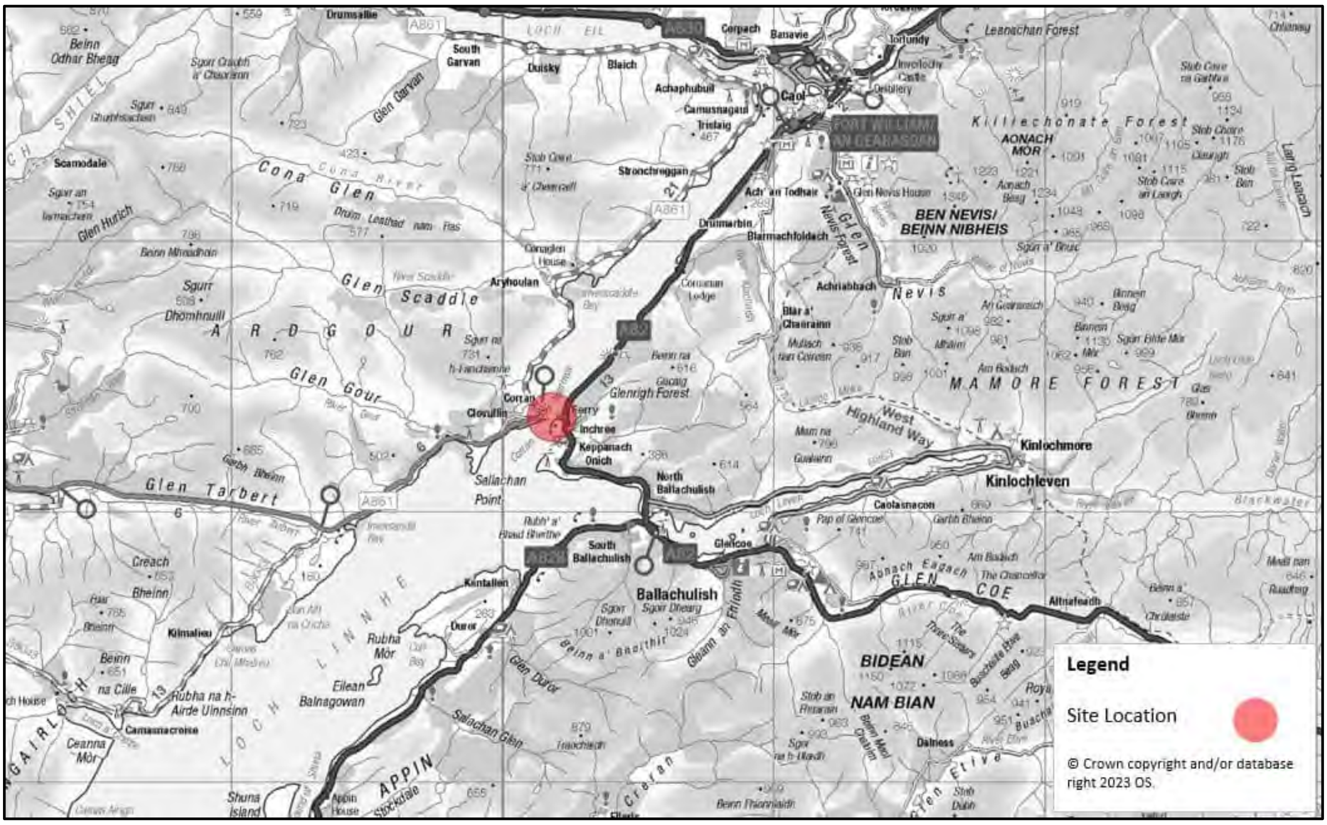
Email correspondence was undertaken in December 2023 between PF and Transport Scotland regarding appropriate surveys to measure speeds along the A82. The correspondence is provided in **Appendix B**.

1.3 Development Proposals

The Proposed Development is located at Ardgour and Nether Lochaber slipways which facilitate the existing Corran Ferry crossing.

The location of the slipways at Ardgour and Nether Lochaber associated with the Corran Ferry Service are shown in Figure 1.

Figure 1 Site Location



The project will involve replacing the existing ferries with two electric vessels and construction of new infrastructure, which includes slipways, overnight berthing structure, marshalling area, public facilities and operator offices / accommodation, as well as new affordable housing.

Five options were investigated with regards to the upgrade to Nether Lochaber and were presented as part of the pre-application discussions as Option A, B, C, D and E. Option E is being taking forward as part of the Proposed Development (see **Appendix C**).

It is anticipated that the delivery of the Proposed Development will comprise four phases, with construction activities being undertaken in Phases 1 and 2. Phases 3 and 4 are to involve the building and delivery of the two new vessels.

Phase 1 is expected to involve the construction of Ardgour slipway, the overnight berth and the demolition of the pier. It is also expected to include the construction of Nether Lochaber slipway, marshalling area and A82 junction.

Phase 2 is anticipated to comprise the refurbishment of the Ferry office, the construction of public facilities, installation of charging infrastructure, and the construction of new crew accommodation and new affordable housing. The construction of the new Ardgour marshalling area and the removal of the old Ardgour slipway would occur in Phase 2.

1.4 Report Structure

It is proposed that the structure of the TA will be as follows:

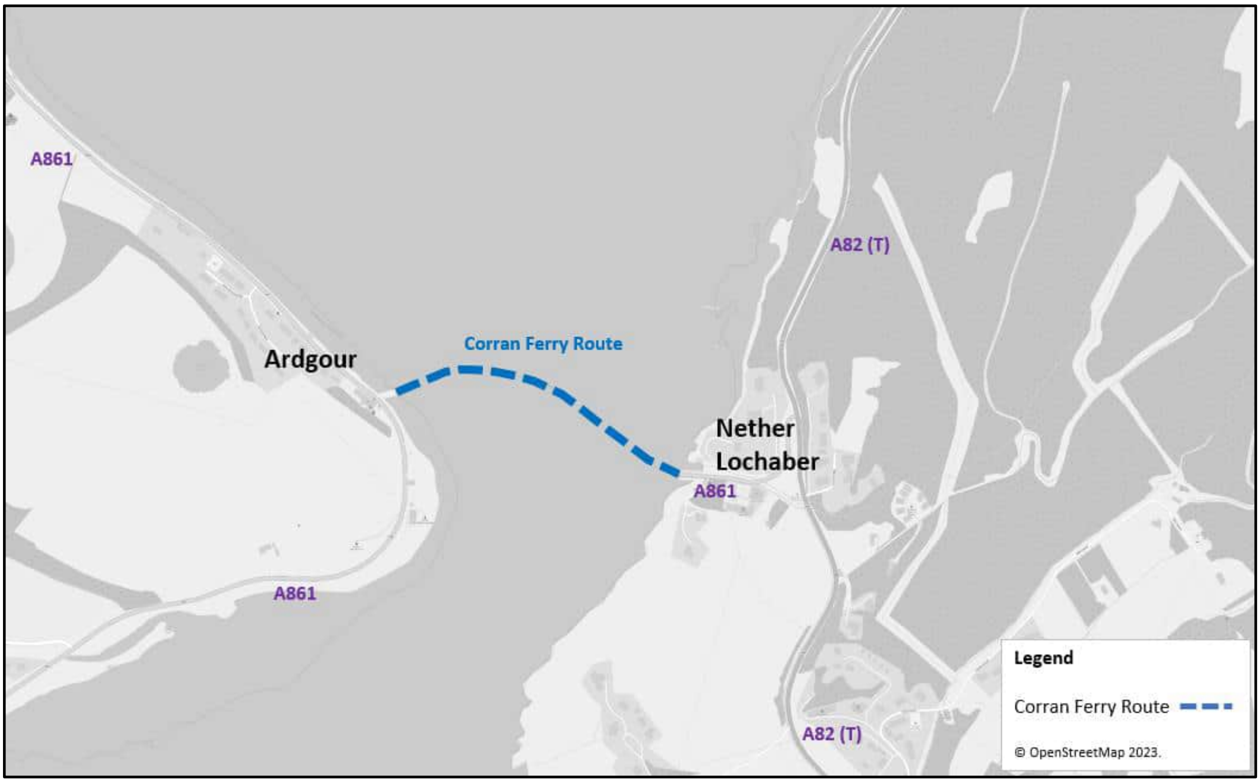
- Site Description and Current Uses;
- Transport Policy Review;
- Current Access Arrangements;
- Proposed Site Layout and Operation, including Parking Provision;
- Proposed Access Strategy;
- Multi-Modal Traffic Generation and Distribution;
- Traffic Impact Assessment, including Mitigation Measures; and
- Summary and Conclusions.

2 Site Description and Current Uses

The Proposed Development is located at Ardgour and Nether Lochaber slipways which facilitate the existing Corran Ferry crossing. The Corran Ferry is operated by THC and provides a connection between the two slipways.

The existing Corran Ferry Route location is shown in Figure 2.

Figure 2 Corran Ferry Route



2.1 Current Land Uses

At the eastern side of the Corran Ferry Route at Nether Lochaber, there are a number of existing facilities located at a building near the slipway, which include an Information Point where Ferry timetables, a bus stop and a seating area are located. Public toilet facilities are also located in this same building. There are approximately ten car parking spaces located at the Ferry car park, as well as a bicycle shelter.

At the western side of the Corran Ferry Route at Ardgour, public toilet facilities are available beside The Inn at Ardgour. There is an unmarked area to the north-west of the Ardgour slipway which appears to be used for unofficial car parking.

Designated marshalling areas are located at both Ardgour and Nether Lochaber entrances to the slipways to control the vehicles waiting to use the Ferry and aims to avoid queueing along the road network.

Corran Ferry provides a connection for foot passengers, cyclists, private and light goods vehicles (LGVs), Heavy Goods Vehicles (HGVs) and buses. Fares are dependent on the vehicle types; however, pedestrians and cyclists can travel free of charge. The Ferry usually provides a regular service seven days a week and takes approximately five minutes to cross.

3 Transport Policy Review

The following local and national policy and guidance documents will be reviewed with regard to the Proposed Development in the TA report.

- National Planning Framework 4 (2003);
- Planning Advice Note 75 (PAN75) (2005);
- Transport Assessment Guidance (2012);
- West Highland and Islands Local Development Plan (WestPlan) (2019);
- Highland-wide Local Development Plan (2012);
- Guidance on the Preparation of Transport Assessments (2014); and
- Roads and Transport Guidelines for New Developments (2013).

4 Current Access Arrangements

Within the TA, a review of site accessibility for all modes of transport will be reviewed in a hierarchical manner, which is as follows:

- Pedestrian Access;
- Cyclist Access;
- Public Transport Access; and
- Vehicular Access

This section of the TA will also provide an overview of local facilities in the area.

Details of accidents which occurred over a five-year period between 2018 and 2022 will also be provided in this section of the report. Accident information has been provided by THC Road Safety Team regarding injury collisions which have been recorded along the A82 (between 1 January 2020 and 6 April 2023) and the A861 (between 19 February 2018 and 18 March 2023). Additional accident information will be requested from Transport Scotland for five of the previously available years. Accident information for the local road network will be also obtained from the online source CrashMap.

5 Proposed Site Layout and Operation, including Parking Provision

5.1 Description of the Proposed Development

The Proposed Development will comprise the replacement of the existing Ferry with two electric vessels, which require new and upgraded infrastructure in the villages of Ardgour and Nether Lochaber. These are to comprise the key features presented in the subsequent sections.

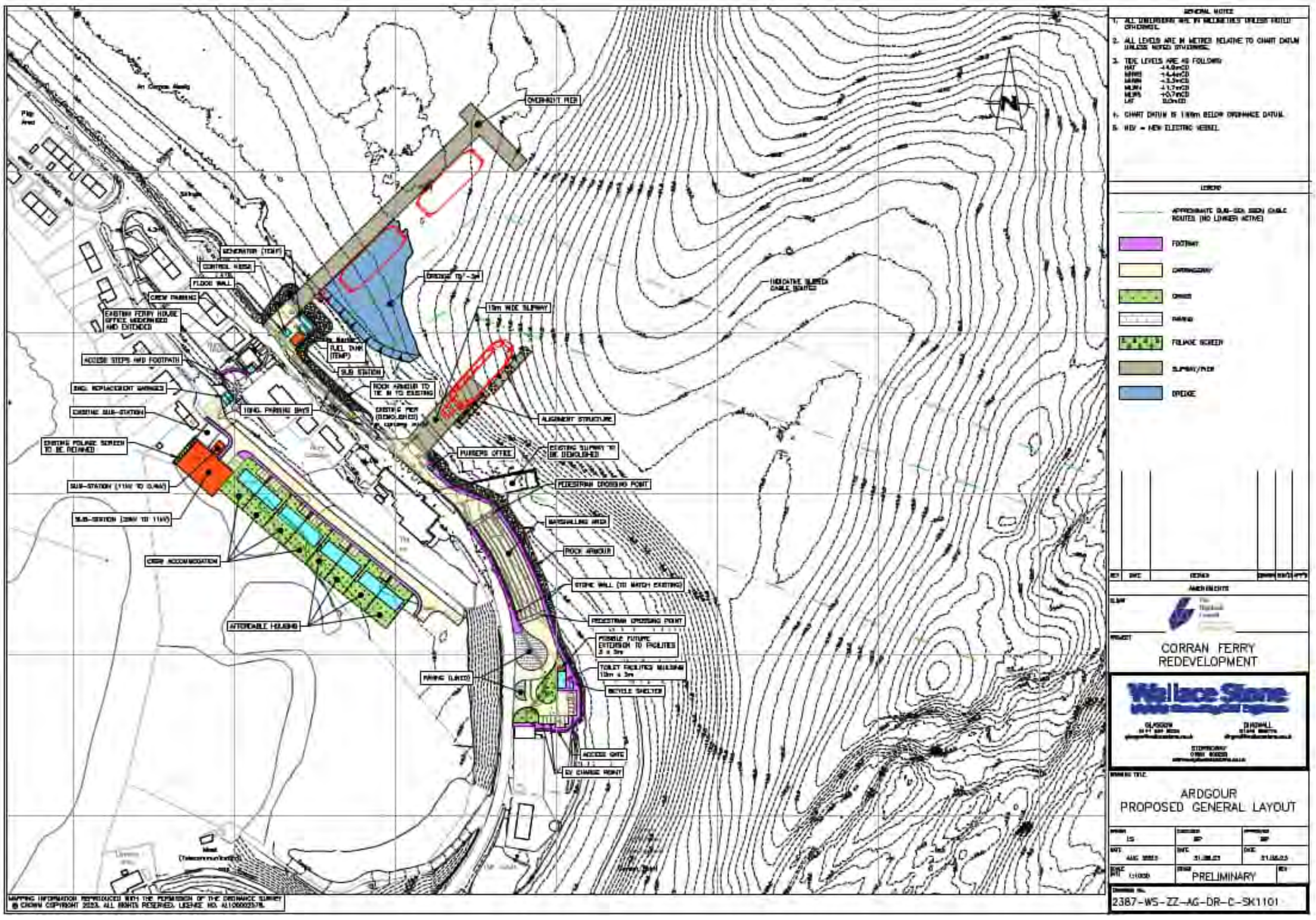
Ardgour (West) Side

The Ardgour side of the Proposed Development is to comprise:

- New Slipway with Alignment Structure;
- Overnight Berth Structure, including Vessel Charge Infrastructure;
- Increased Marshalling;
- Parking Areas, including EV Car Charging;
- Interface with the A861;
- Crew Accommodation equating to four houses;
- Four new affordable houses;
- Improvements to Ferry Offices; and
- Toilet Facility.

An indicative layout of the Ardgour side of the Proposed Development is presented in Figure 3 (and **Appendix D**).

Figure 3 Ardgour Indicative Layout

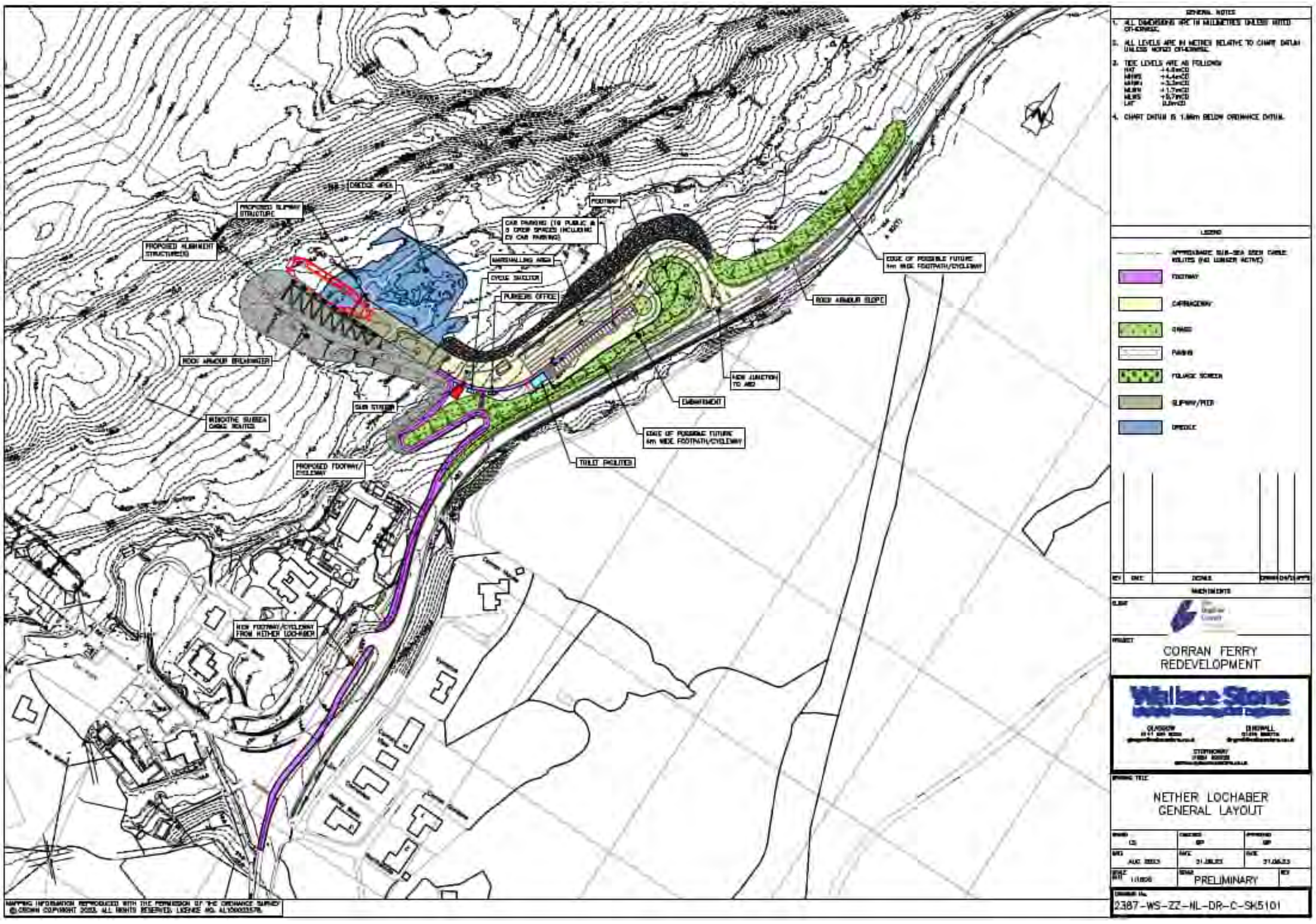


Nether Lochaber (East) Side

- New Slipway and Alignment Structure;
- New Marshalling Area;
- Parking Areas, including EV Car Charging;
- New Junction with the A82; and
- Toilet Facility.

An indicative layout of the Nether Lochaber side of the Proposed Development is presented in Figure 4 (and **Appendix C**).

Figure 4 Nether Lochaber Indicative Layout



5.2 Operation, including Parking Provision

The TA will outline details of the proposed operation of the Proposed Development, including details on the Ferry services.

Proposed parking provision and details on the proposed marshalling areas will also be described in the TA. Disabled parking will be provided in accordance with Table 6.11 of The Highland Council's Roads and Transport Guidelines for New Developments (May 2013).

6 Proposed Access Strategy

6.1 Vehicular Site Access

Ardgour (West) Side

It is proposed that vehicles wishing to access the Ferry from the upgraded Ardgour slipway, will join the upgraded marshalling area which will be accessed via the A861. To the south of the marshalling area, car parking facilities will be provided.

Vehicles exiting from the Ferry will use the upgraded slipway which will form a priority junction to the A861, in a similar form as is currently used. Appropriate drawings, including visibility splay drawings, will be provided in the TA. Swept path analysis drawings will be included to demonstrate that the layouts are appropriate and that vehicles can manoeuvre efficiently within the site.

Nether Lochaber (East) Side

A new access, in the form of a priority junction, leading to the new slipway will be constructed to the north of the existing slipway access from the A82. The new access junction will lead to the proposed marshalling area, and a separate parking area. Vehicles wishing to access the Ferry will be directed through signage to join the marshalling area before accessing the proposed slipway to enter the Ferry.

Vehicles exiting from the Ferry will do so by the proposed slipway and will follow the exit lane towards the new priority junction with the A82. Vehicles exiting the parking area will do so in a similar manner. Appropriate drawings, including visibility splay drawings, will be provided in the TA. Swept path analysis drawings will be included to demonstrate that the layouts are appropriate and that vehicles can manoeuvre efficiently within the site.

6.2 Pedestrian and Cycle Access

Ardgour (West) Side

Footways will be provided which will lead to the upgraded slipway. Pedestrian crossing points will be provided at the marshalling area to promote safer crossing. A cycle parking shelter will be provided as part of the proposals.

Nether Lochaber (East) Side

A new footway / cycle way will be provided, which will connect the new slipway to the existing bus stop along the A82, to the south. A cycle parking shelter will be provided as part of the proposals.

6.3 Public Transport Access

The TA will outline details of proposed public transport access to the Proposed Development.

6.4 Internal Road Layout

Details regarding the circulation and movements associated with the Proposed Development will be provided within the TA.

7 Multi-Modal Traffic Generation and Distribution

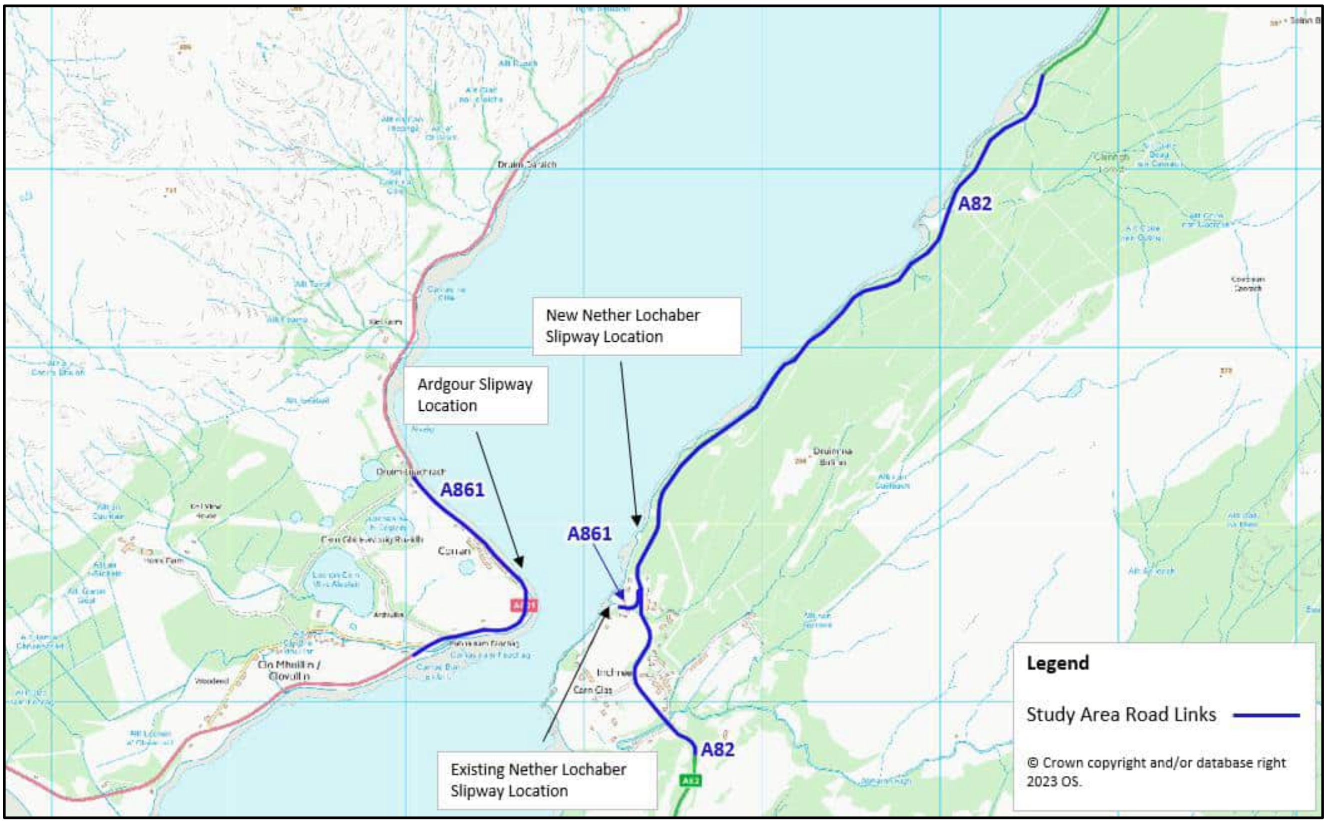
7.1 Study Area

It is proposed that the study area for the TA will comprise the following road links:

- A82, between Keppanach and Corrychurrachan;
- A861, between A82 and Ferry Terminal; and
- A861, between Clovullin and Ardgour Parish Church.

The extent of the study area is shown in Figure 5 below.

Figure 5 Study Area Road Links



7.2 Traffic Data

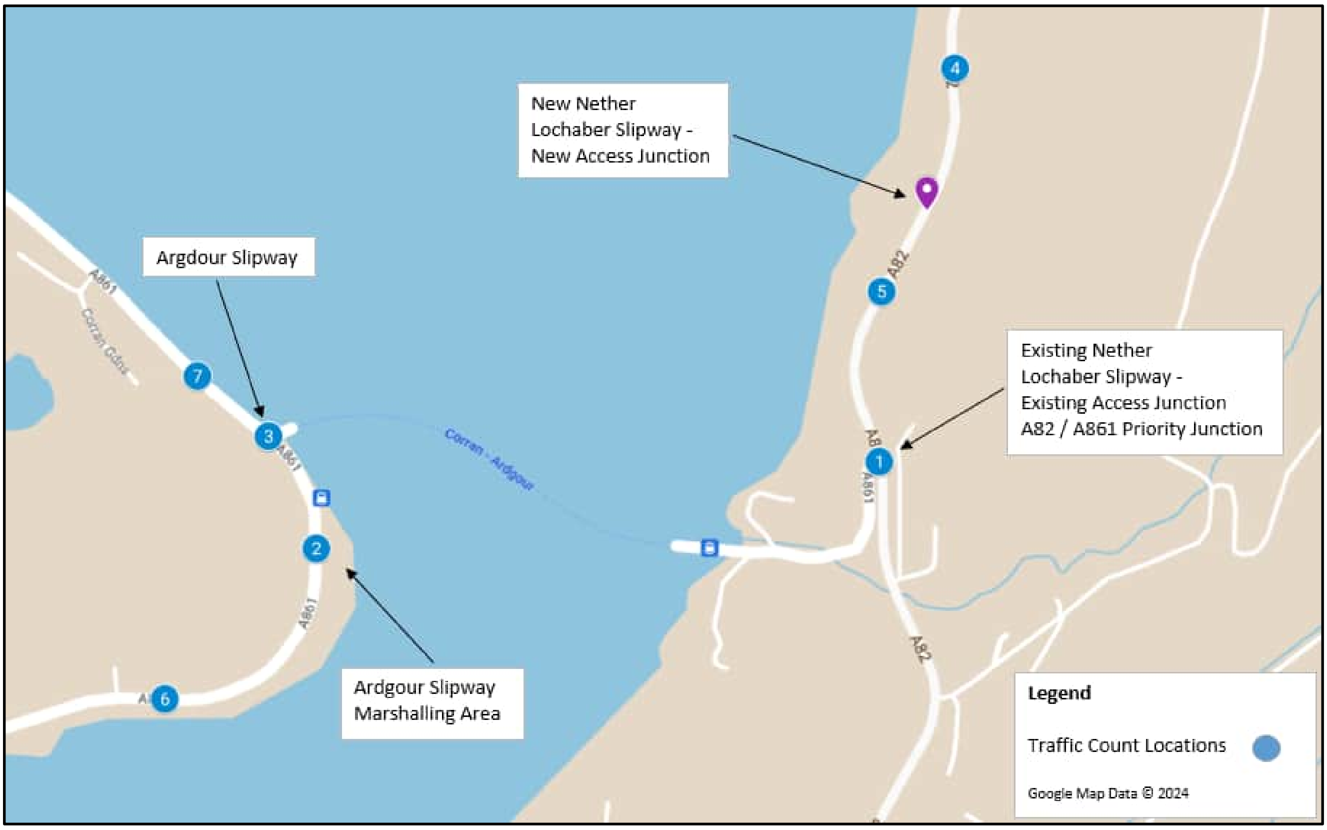
It is proposed that traffic surveys will be undertaken to establish baseline traffic conditions on the local and trunk road network and to determine the distribution of vehicles using the Ferry. The surveys will comprise Turning Count surveys and Automatic Traffic Count (ATC) surveys which are to be undertaken during the second week of the Easter holidays, as holiday movements traditionally capture tourist traffic in the area.

The proposed traffic surveys are detailed as follows and can be seen in Figure 6. :

1. A82 / A861 priority junction - A turning count survey (a weekday survey from 05:30 am to 22:30 pm);
2. A861 / Ardgour Ferry Terminal access to marshalling area - A turning count survey (a weekday survey from 05:30 am to 22:30 pm);
3. A861 / Ardgour Ferry Terminal slipway junction - A turning count survey (a weekday survey from 05:30 am to 22:30 pm);
4. A82 north of proposed new access junction to the improved Nether Lochaber Slipway – A seven-day ATC survey over 24 hours to obtain traffic volume data and speed data;

5. A82 south of proposed new access junction to the improved Nether Lochaber Slipway – A seven-day ATC survey over 24 hours to obtain traffic volume data and speed data;
6. A861 south of Ardgour Slipway – A seven-day ATC survey over 24 hours to obtain traffic volume data and speed data; and
7. A861 north of Ardgour Slipway – A seven-day ATC survey over 24 hours to obtain traffic volume data and speed data.

Figure 6 Proposed Traffic Count Locations



7.3 Trip Generation

Construction Trips

The trip generation during the construction phases will be estimated from first principles and based on the volume and tonnage of construction materials. This will then be converted to two-way vehicle movements and allocated to the appropriate section of the construction programme. Note it is not proposed to undertake assessment of the construction phase of the Proposed Development within the TA, this would be included within the Access, Traffic and Transport Chapter of the EIA Report.

Operational Trips

With regards to the traffic impact assessment on local highway links within the study area, it is proposed that information received from THC will be used to estimate the increase in annual operational trips. For the year 2019, THC estimated that there were a total of 315,500 PCU carryings per year (**Appendix E**). A Marshalling Area Capacity Review which was undertaken by Wallace Stone on behalf of THC and is based on traffic information from Friday 27 August and Saturday 28 August 2021, which was the Summer Bank Holiday weekend (England, Wales and Northern Ireland). A copy of the document is presented in **Appendix F.** Within the document, it is noted that THC has estimated that the annual growth of vehicles using the Ferry will be 2.1% per annum. It is proposed that this annual growth percentage above will be applied to this estimation in order to forecast future year carryings to be used in the impact assessments.

The proposals include the provision of eight houses (four for crew accommodation and four as new affordable housing). Is it considered that trips associated with the housing provision will have a negligible impact on the transport network included in the study area, and Ferry crossing, and it is therefore proposed that trips associated with this element of the Proposed Development will be scoped out of the operational assessment.

For the junction capacity assessment to be undertaken on the newly provided junction along the A82, it is proposed that the operational trips will be estimated from the traffic movements observed at A82 / A861 priority junction (**Figure 6**, Location 1) during the turning count surveys and appropriate growth factors will be applied to estimate future year trips.

7.4 Trip Distribution

Construction Trips

The trip distribution of construction trips will be based on the locations of material suppliers and will be detailed within the TA, which will be used to inform the Access, Traffic and Transport Chapter of the EIA Report.

Operational Trips

It is proposed that the operational trip distribution will be based on the observed ratio of movements calculated from turning count surveys.

7.5 Parking Accumulation

A capacity assessment on the existing marshalling areas has been undertaken as part of the Marshalling Area Capacity Review prepared by Wallace Stone, which has been approved by THC (**Appendix F**). This review has been used to inform the design and masterplan of the Proposed Development. It is therefore not considered necessary to undertake a parking accumulation assessment, however, it is proposed that a summary of the document will be provided in the TA.

8 Traffic Impact Assessment, including Mitigation Measures

8.1 Assessment Year

The Proposed Development will be delivered in a total of four phases. An indicative Construction Programme will be provided within the TA. Construction traffic trips will be plotted on the indicative Construction Programme to illustrate the peak journeys on the network for Phase 1 and 2.

It is estimated that construction will begin on Phase 1 in 2025 and that it will be operational in 2027, and construction will begin on Phase 2 in 2027 and it will be operational in 2028. Any changes in the projection of the Proposed Development prior to submission will be reflected in the TA.

8.2 Traffic Growth

It is proposed that low National Road Traffic Forecast (NRTF) growth factors would be used to appropriately factor the baseline flows to future year flows.

As previously noted, the future years of the Proposed Development trips will be subject to the projected to the estimated annual growth of vehicles using the Ferry which is estimated to be 2.1% per annum.

8.3 General Approach

Construction Phase

It is proposed that an impact assessment will be undertaken of the peak construction months in Phase 1 and Phase 2.

Operational Phase

The estimated traffic generation of the Proposed Development will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage traffic increase during the operation of Phase 1 and Phase 2 on links within the study area.

Committed development traffic, i.e. those from proposals with planning consent, will be included in baseline traffic flows, where traffic data for these schemes is considered significant and is publicly available. Developments that are proposed or at scoping would not be included.

The newly provided priority junction on the A82 would be assessed using Junctions 10, in terms of Ratio of Flow to Capacity (RFC) and maximum queues (PCUs). Only the highest RFC values recorded during the modelled period would be presented.

8.4 Mitigation measures

Suitable mitigation measures would be proposed should the impact of the Proposed Development cause an unacceptable impact on the Study Area.

A framework Construction Traffic Management Plan (CTMP) will be included as a proposed mitigation measure.

9 Key Questions

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining bodies:

- Do the Consultees agree with the proposed method of assessment?
- Are the Consultees aware of any significant traffic generating developments that have planning approval that should be included as committed development?
- Are the proposed traffic surveys acceptable, both in scope and timings proposed?
- Are the Consultees satisfied with the proposed trip generation and distribution?
- Are the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?