Port Ellen Terminal Development

Habitats Regulations Appraisal

July 2025

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	23/09/2024	Marine Environmental Scientist	Principal Marine Environmental Scientist	Technical Director	First Issue
B	15/01/2025	Marine Environmental Scientist	Principal Marine Environmental Scientist	Technical Director	Second Issue
C	14/07/25	Civil Engineer	Principal Environmental Consultant	Project Manager	Third Issue. Addressing MD-LOT feedback.

Document reference: 115031-MMD-PE-XX-RP-O-0019 B

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Executive summary

Mott MacDonald has been commissioned by Caledonian Maritime Assets Limited (CMAL) to prepare this Habitat Regulations Appraisal (HRA) report relating to the Port Ellen Terminal Development (hereafter referred to as the "Proposed Development"). The aim of the report is to establish any likely impacts from the Proposed Development on European sites within the United Kingdom (UK) National Network of protected sites, nearby protected areas and the marine species that inhabit the waters. This is so that an informed decision can be made by regulating bodies on the Proposed Development and implementation of any suitable mitigation or enhancements where required.

The Proposed Development involves upgrading the existing port to allow capacity to match the size of the next generation CMAL major vessels currently under construction. In addition, some elements of the existing infrastructure are approaching the end of their serviceable life, are now beyond economic repair and should be replaced.

This document describes the HRA for the Proposed Development, including both the Stage 1 Screening and Stage 2 Appropriate Assessment. The Stage 2 Appropriate Assessment also provides the in-combination assessment to understand if the Proposed Development is likely to result in Likely Significant Effect (LSE) when considered in combination with other plans or projects in the area.

Six European sites (The Oa Special Protected Area (SPA), South-East Islay Skerries Special Area of Conservation (SAC), Rinns of Islay SPA, Ramsar Site and SAC, and Laggan Islay SPA) are located within the Zone of Influence (ZoI) of the Proposed Development. Another three European sites (Eilean na Muice Duibhe SPA, Ramsar Site and SAC) are also included in view of mobility of the qualifying bird species of these sites, despite being just outside the 10km ZoI for hydrological connection.

Potential effects that were identified for their possibility to trigger LSEs include:

- Underwater noise;
- Airborne noise;
- Physical harm;
- Pollution event;
- Smothering (increased sedimentation);
- Changes to water quality (increased turbidity);
- Release of contaminants;
- Generation of dust/reduced air quality;
- Temporary habitat loss;
- Permanent habitat loss;
- Reduction in foraging habitat and prey availability; and
- Introduction and spread of invasive and non-native species (INNS).

Screening determined that there were LSEs from underwater noise on South-East Islay Skerries SAC due to the construction activities, and that during operation there is no potential LSEs.

Following the Appropriate Assessment suitable mitigation was identified to prevent any effect on the integrity of the designated sites. These are outlined in Section 6. It was concluded that when considering mitigation, it is not anticipated that any adverse effect on the integrity of the

designated sites and the associated features will occur. No in-combination effects were identified.

It should be noted that this HRA has been produced based on project information available at the time of writing (September 2024). Therefore, should any aspects of the proposed development change (including construction methodology and programme), this HRA should be revisited to re-assess potential effects.

1 Introduction

1.1 Project background and overview

Port Ellen Ferry Terminal, located on the island of Islay, Scotland, currently serves Ro-Ro (roll on – roll off) ferry services to and from Kennacraig on the mainland of Scotland and provides infrastructure to support the import of grain to Islay, alongside wider harbour operations such as commercial, fishing and leisure activities. Caledonian Maritime Assets Limited (CMAL) are the statutory harbour authority for the harbour at Port Ellen and wholly own the infrastructure required to support the ferry services. The Islay service from Kennacraig operates to two ports on Islay, Port Askaig (which is owned and operated by Argyll & Bute Council) and Port Ellen. Port Askaig and Port Ellen are operationally complementary to each other in that they are affected by different wind and sea conditions and thus when one port is unusable due to conditions, the other will generally be available. Moreover, there are a wider set of activities at both ports beyond the ferry service, including the ferry connection from Port Askaig to Jura, and the import of grain to Islay via dedicated infrastructure at Port Ellen. Thus, each plays a key role in supporting the economy of Islay and ensuring the resilience of passenger travel and its supply-chain.

The existing ferry terminal at Port Ellen is currently not able to provide sufficient marshalling capacity for the ferries servicing the harbour, and for next generation of major vessels (the New Islay Vessels (NIV)) which are under construction. Additionally, several elements of the existing infrastructure at the ferry terminal are approaching the end of their serviceable life and are now beyond economic repair.

A full redevelopment of the Port Ellen Ferry Terminal is proposed (hereafter referred to as the 'Proposed Development') which would build over the current ferry terminal footprint to provide:

- A significant area of reclaimed land to facilitate the required marshalling area;
- Unaccompanied trailer facilities;
- A new terminal building;
- Improvements to passenger access throughout the terminal;
- An improved traffic management layout and segregated commercial spaces; and
- Dredging to facilitate access for the New Islay Vessels.

1.2 Location and site characteristics

The proposed development at Port Ellen Ferry Terminal is on the south coast of Islay, at the existing Port Ellen Harbour (National Grid Reference (NGR) NR 36300 45000) within the town of Port Ellen (see Figure 1-1 for site location plan and Figure 1-2 for the proposed development overview plan). The existing Port Ellen Harbour is currently accessible via an Argyll & Bute Council owned access road that leads from Frederick Crescent to the north, past properties and business premises onto CMAL's existing marshalling area and pier. The pier is bound by Loch Leòdamais to the east and Kilnaughton Bay to the west, north and south.

The existing Port Ellen Harbour consists of the following features;

- Two ferry berths;
  - Linkspan berth, which is on the southeast side of the pier;
  - Fixed ramp berth, which is on the northwest side of the pier;
- Finger pier;

- Commercial berth;
- Quay for fishing vessels;
- Private marina pontoons;
- Eight vehicle marshalling lanes
- Terminal building;
- Four disabled parking bays; and
- Electric vehicle charge point.

1.3 Purpose of this document

The purpose of this Habitats Regulations Appraisal (HRA) is to establish whether the Proposed Development will affect the integrity of European sites that are part of the United Kingdom (UK) National Network of protected sites, nearby protected areas and the marine species that inhabit the waters. This is so that an informed decision can be made by regulating bodies on the Proposed Development and implementation of any suitable mitigation or enhancements where required.

This report therefore documents the assessment of the potential for effects of the Proposed Development on designated European Sites as required by Regulation 48 of The Conservation (natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019. The process followed is described in Section 3.

Figure 1-1: Site Location Plan

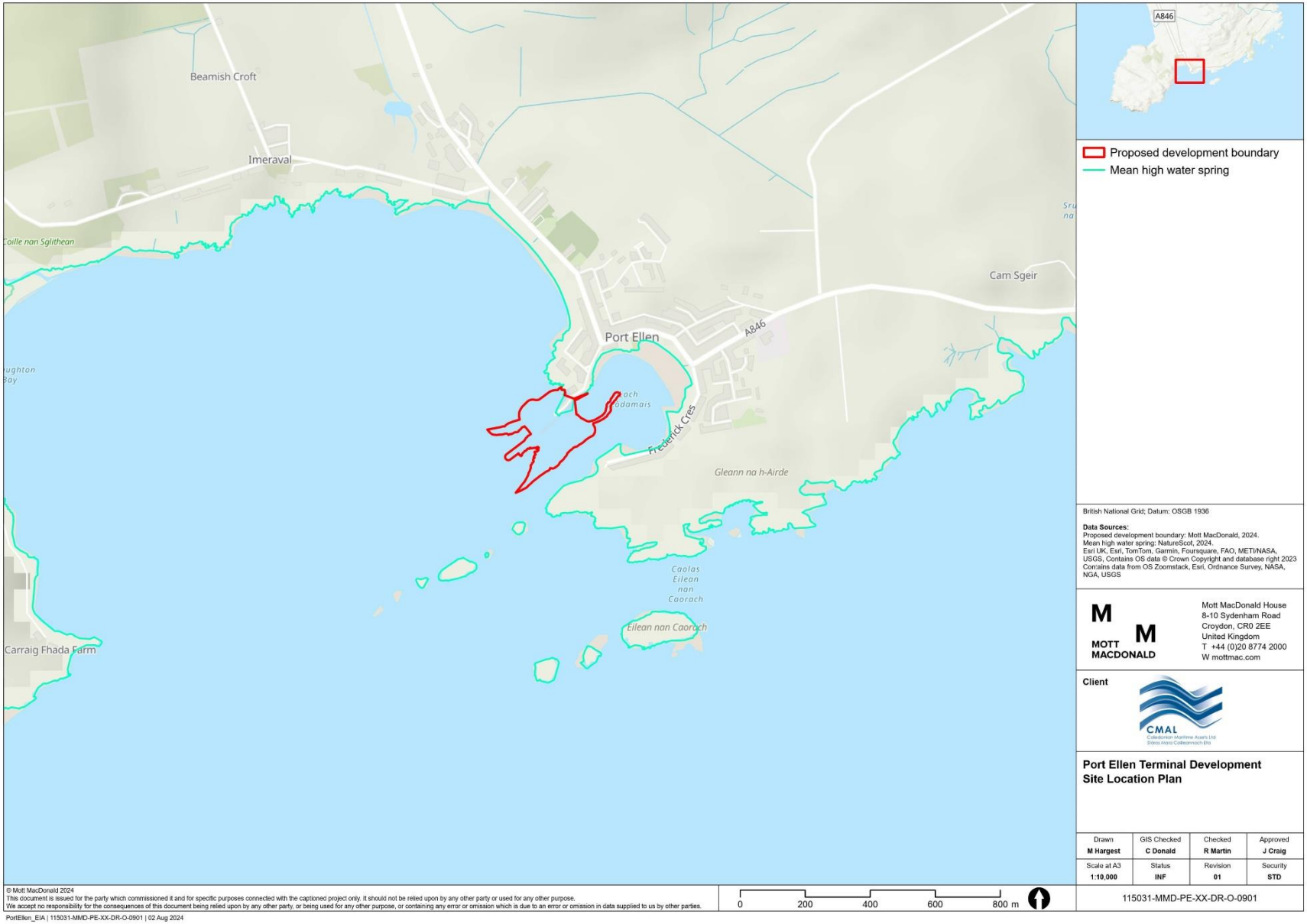
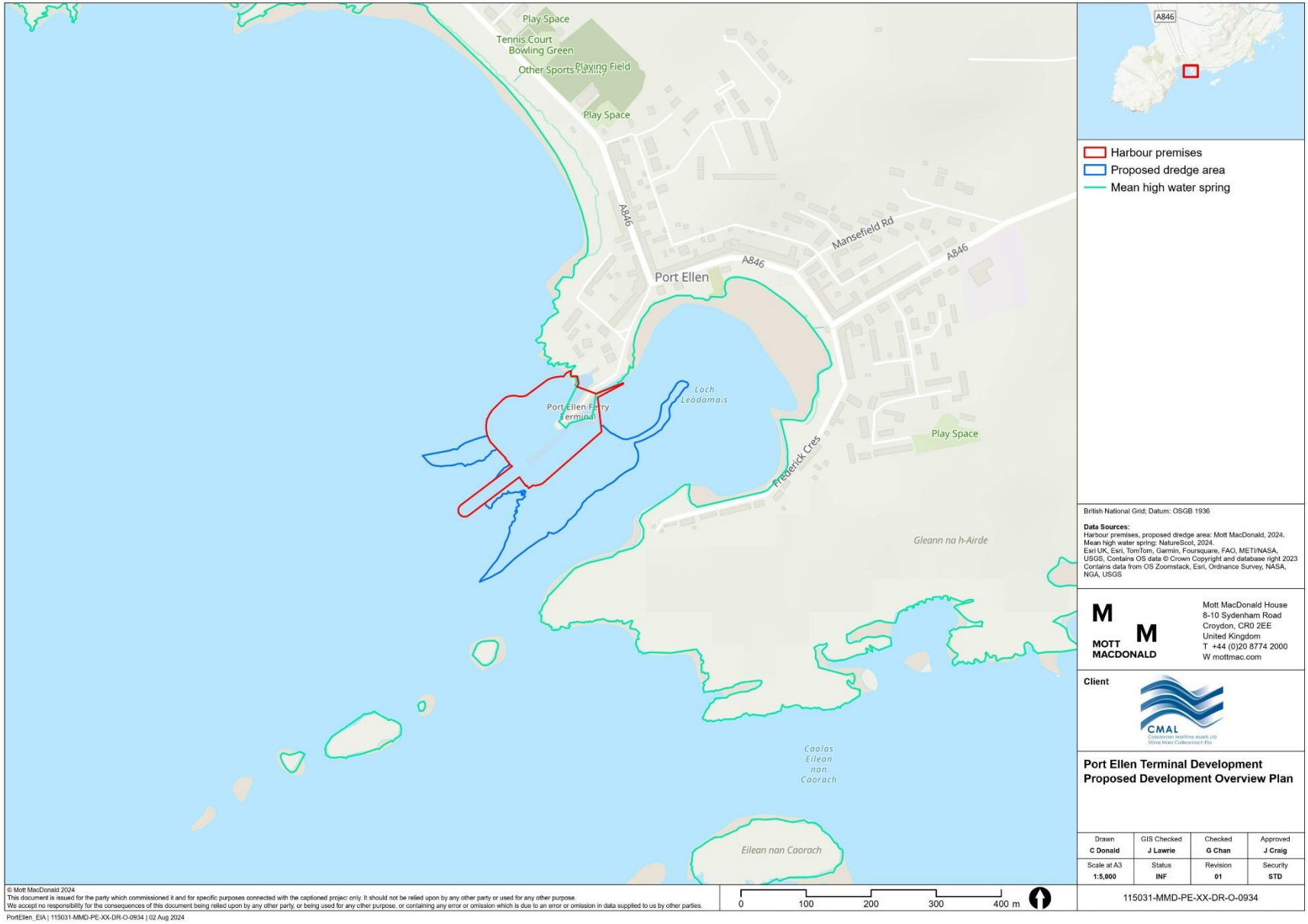


Figure 1-2: Proposed Development Overview Plan



2 Proposed Development

2.1 Description of Proposed Development

The proposed development comprises a full redevelopment of the Port Ellen ferry terminal. It would build over the current ferry terminal footprint and include the following elements:

- The reclamation of land to form (with adjoining land) an area of approximately 2.01 hectares to facilitate the required marshalling area, unaccompanied trailer facilities, new terminal building, associated parking, improvements to passenger access and general quayside working space. The land reclamation will be retained seaward on the northern and western sides by armoured revetments and, on the south and southeast sides by a quay structures incorporating a commercial berth and fishing berths for vessels;
- An open piled jetty structure extending over the armoured revetment from the reclaimed area, forming berthing faces each side with bollards and fenders, and incorporating cable handling equipment and a passenger access gangway;
- A hydraulically operated linkspan, providing access to and from vessels extending from the reclaimed area, including a linkspan control building, pile supported bankseat and lifting frame on supporting dolphin structures;
- An open piled structure forming a fixed ramp, providing access to and from vessels, extending from the reclaimed area;
- Single storey terminal building to be constructed, comprising of passenger waiting area sales areas, management offices, staff welfare facilities and store areas;
- Associated ancillary works including;
  - the demolition of the existing terminal building and partial demolition of the existing pier and marshalling area;
  - the removal of fenders, fender sponsons, bollards, fencing and relocation of Diageo's grain handling equipment;
  - rerouting existing roads through the terminal; and
  - dredging to -5.5mCD maintained dredge depth on ferry berths and commercial berth.
- Construction of permanent aids to navigation, as required by CMAL's Harbour Master.

See Figure 1-2 for the layout of the proposed development.

2.2 Construction phasing

Outwith ferry operations, Port Ellen Harbour is an essential facility for a variety of activities including the import of grain to Islay and, by extension, to the production of Scotch whisky. The current grain vessel MV *Victress* visits the island for approximately 3-4 days every three weeks. When the vessel comes alongside on the fixed ramp berth, the dedicated grain handling equipment on the pier is used to unload the cargo and move it via a piped conveyor to the grain silo at the rear of the marshalling area. The grain is then collected by local hauliers and taken the short distance to the Diageo-owned Port Ellen maltings at the head of Kilnaughton Bay.

Whilst ferry services can be diverted to Port Askaig, the required grain handling equipment is not available at that port, and the continued availability of Port Ellen during construction is therefore economically essential.

The Harbour serves a range of local industries including timber, fishing, and tourism. Timber is delivered to the island for roughly one day every three months to maintain supplies. Local fishing vessel frequently use the facilities for mooring and landing their catch. Additionally, Port

Ellen is a popular destination for tourism and leisure activities. The marina accommodates approximately 1,600 visiting yachts per season, and the harbour welcomes cruise ships that anchor in the Bay. These activities occur regularly throughout the year, with around 100 commercial vessels attending the port annually. Fishing activities are ongoing, and the marina sees significant seasonal use, with cruise ship visits subject to scheduling.

The phasing of construction has been developed to ensure that Port Ellen Harbour can remain open for existing harbour activities, with the exception of the existing ferry service which will temporarily operate to Port Askaig, as agreed with CMAL and CFL. All other activities, for example, the grain deliveries, access for fishing activities and the nearby marina will generally remain open, but there may be some disruption with rolling temporary berth closures as the construction works progress. Commercial and fishing quays will generally remain accommodated, although the length of quay and shoreside facilities available will vary as construction takes place.

All harbour users will be segregated from the construction works to ensure safety for all landside operations functioning at the port. The Project Team will be in constant liaison with CMAL's Harbour Master, CFL's Port Manager and Port Operations teams to ensure that all parties are aware of construction progress and future activities, and to allow sufficient 'Notice to Mariners' to be kept up-to-date with the construction programme and planned activities. CFL will continue to maintain a presence at Port Ellen throughout construction works, in order to manage third-party use of the harbour.

A navigational risk assessment is in place for current harbour operations at Port Ellen and will be updated and kept up-to-date to ensure all relevant parties are aware of the potential navigational risks during construction and the measures taken to ensure that those risks are managed.

It is expected that construction will be phased to manage disruption and maximise the continued operational use of the harbour. CMAL have confirmed that ferries will not operate from Port Ellen during the construction works, however, there is a requirement to maintain access to a suitable berth for Diageo's grain handling operations, local fishing fleet and to maintain access to the marina in the inner harbour. Consultation is ongoing with users of the harbour and for the purposes of the EIA, indicative construction phases have been defined below, which will be confirmed and developed by the Main Contractor when appointed. While phasing may develop, and the sequencing may change, it is not anticipated to affect the key activities outlined below:

- Phase 0: Mobilisation and enabling works
- Phase 1: Dredging works;
- Phase 2: Demolition of some areas of the existing ferry terminal, general site clearance works, land reclamation and construction of the finger pier, linkspan and fixed ramp;
- Phase 3: Further land reclamation and construction of the fishing quay, then construction of commercial berth; and
- Phase 4: Remaining demolition of other areas of existing ferry terminal (where no longer required), resurfacing and construction of terminal building and other associated infrastructure.

Enabling and site establishment works are anticipated to start in summer 2025 for approximately 12 weeks.

The construction works are anticipated to be undertaken over 18 months to 36 months due to phasing requirements to accommodate the grain vessel, starting from summer 2025. Table 2-1 contains the expected durations of each construction activity. It should be noted that construction activities listed below may be seasonally constrained (i.e. work can only take place during safe weather conditions, which tends to be late spring to early autumn) and that activities

may overlap. The below durations are indicative of activities which are uninterrupted by seasonal constraints.

Table 2-1: Assumed duration of construction works

Phase		Overall timescale	Construction activity (some activities overlap during the course of the works)	Approximate construction duration (including overlaps and representing worst case)
0	Site establishment and enabling works	3 months	Site establishment and enabling works	3 months
1	Dredging	6 months	Dredging	6 months
2 and 3	Partial demolition of pier Construction of finger pier, fixed ramp, linkspan, fish quay and commercial berth and rock revetment	30 months	Construction of new sheet piled walls	22 months
			Infill reclaimed area (excluding commercial quay)	14 months
			Concrete works	20 months
			Infill behind between new sheet piled walls and the existing quay walls / pier	11 months
			Install rock bund around northern extent of reclaim area, place rock armour	7 months
			Construct fixed ramp	7 months
			Construct linkspan	6 months
4	Construction of new terminal building, surfacing and ancillary works	12 months	Construct new terminal building	12 months
		4 months	Complete surfacing and ancillary works on new reclaimed area	4 months
	Demolition works	5 months	Demolition works	5 months

2.3 Construction activities

Construction activities will be undertaken from 7am till 7pm every day including Saturday and Sunday. The exception to this is dredge disposal operations that are expected to be carried out 24 hours 7 days a week, due to the anticipated transit to the licensed disposal site. This will be agreed through the marine licencing process. Dredging works would be restricted to 7am till 7pm as per the above.

It is anticipated the works will comprise of the following key activities described in Table 2-2. As note above there may be different forms of construction for some of the elements of the proposed development that cannot be confirmed until a Contractor is appointed. Where relevant these are explained in the table, and the assessment has considered the worst-case activity (i.e. those with a longer duration, or greater use of materials etc.).

Table 2-2: Construction activities

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
0	Site establishment and enabling works	1. Delivery and installation of site cabins. 2. Connection to electricity and running water. 3. Formation of site parking area, laydown area and storage area.	Above

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		4. Compound area will be fully fenced off with gates at pedestrian access points. 5. Segregated access routes established for Diageo's grain handling operations. 6. Installation of marker buoys and aids to navigation to segregate other harbour users from the construction site. 7. Demolition of the existing terminal building and general site clearance.	
0-4	Demolition works	1. Site Preparation: – Clear the site of all redundant services. – Maintain and protect necessary services (e.g. navigational lights). 2. Terminal Building Demolition: – Top-down de-construction using mechanical plant with materials removed off-site. 3. Linkspan Removal: – The steel linkspan may be lifted out by crane and removed off-site for recycling either by barge or having been cut into smaller sections, by road. – The concrete foundations may be lowered with any residual elements incorporated into the general land reclamation. 4. Quay Demolition: – Existing quay and pier may be partially demolished once land reclamation has surrounded all sides providing temporary support. – Top sections of quay walls and existing pier broken to below new proposed ground level with lower sections incorporated into the land reclamation.	Above
1	Dredging of the new berths at the finger pier and commercial berth	1. Mobilisation: – Mobilise a backhoe dredger capable of dredging to the design depth. – Supported by multicat vessel and split hopper barges. 2. Dredging Process: – Dredge marine deposits, glacial deposits, weathered rock, and competent rock. Hard material that cannot be directly dredged with the backhoe dredger will require pre-treatment, this will be a combination of ripping tooth, underwater hydraulic rock breaker, hydraulic rock wheel or drilling and if these techniques are not sufficient, compressed gas blasting. – Load dredged material into split hopper barges. 3. Material Disposal: – Transport dredged material to the offshore disposal site. Note that it has been assumed all dredge material will be disposed, however re-use options will be considered for suitable material. Total current dredge estimate is approximately 27,900m^3.	Below

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		– 25,100m^3 soil; and – 2,800m^3 rock	
2	Construction sequence reclamation areas and partial pier demolition	1. Reclamation Areas: – Material will be delivered to site via a combination of road deliveries and barges / vessels by sea. – Reclamation areas will be constructed within bunded cells using infill materials to form a perimeter to the works. Note that infilling may commence before the bund is closed where infill material has a lower fines content (to reduce the likelihood of excessive suspended sediments). – The reclamation area will be constructed by end tipping infill material or direct discharge from a barge / vessel. – Rock armour will be placed on side slopes of the perimeter bund as work progresses. 2. Compaction and Material Handling: – Deep compaction equipment may be necessary to compact the reclamation material, this could be a combination of vibratory tandem rollers or High Energy Impact Compaction, Rapid Impact Compaction, Polygon Compaction Roller, deep vibro compaction / water jetting. (Methodology dependent on settlement modelling). 3. Pier Demolition: – Pier demolition will progress in tandem with the reclamation works. – Strip deck furniture, partial demolition down to circa1m below finished level, removing surfacing, copes, and upper section of existing roundhead. 4. General Earthworks: – Completion of earthworks to place and compact materials up to the formation level of surfacing and install services as necessary. 5. Surfacing and M&E: – Final surfacing works across the site – Installation of mechanical and electrical equipment	Above and below
2	Construction of open-piled finger pier with reinforced concrete deck and associated pier furniture	1. Pile Installation Preparation: – Deliver and stockpile piles at the existing pier or on a supply barge. 2. Marine Equipment Setup: – Position a crawler crane on a spud leg / jack up barge and supply barge. – Position the spud leg/jack up barge ensuring it does not hinder vessel passage in the inner port area. – A materials supply barge may also be necessary for storage of piles and precast elements. – Piles will be installed using a combination of vibratory and rotary bored techniques predominantly installed using a combination of	Above and below

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		vibratory techniques with final depth achieved using an impact hammer.. – Rotary or percussive boring may be necessary to construct rock sockets or tension anchors for piles, this may be from a jack up barge / spud leg or land-based platform. – Operations supported by a multicat vessel. 3. Pile Installation: – Install piling gate supported by temporary piles driven into the seabed, additional piling gates will be necessary for raking pile installation. – Pitch piles into the piling gate and drive piles using a combination of vibratory piling hammer and impact hammer to the required depth. – Remove the piling gate and extract the temporary piles and repeat the gate set up process. – Where necessary rotary or percussive boring may be required to construct rock sockets for piles or toe pins, and tension anchors in the raking piles, this may be from a jack up barge/spud leg or land-based platform. – Install piles for both the finger pier and linkspan dolphins/bankseat using the same equipment and methodology. 4. Cross beams and edge beam: – Pier will be progressively constructed from land moving seawards in sections. – Place column heads onto outer columns and cast top pile plug. – Place pile caps and beams on top of installed piles using the crawler crane on the spud leg/jack up barge and seal around the gaps using grout tubes. – Fix prefabricated reinforcement steel within each precast beam. – Fill beams with in-situ concrete to form a structural member. 5. Deck Construction: – Position precast concrete planks between the beams to form the deck soffit and permanent form work. – Fix prefabricated reinforcement steel within each precast beam. – Fill beams with in-situ concrete to form a structural member. – Place deck reinforcement steel then pour and finish in-situ concrete to the deck. 6. Final Installation: – Install Quay furniture and fenders. – Install Cathodic Protection (Anodes) with divers. 7. Scour Protection – Scour protection will be installed using via excavators working from landside or marine plant. The rock will be delivered by barge and placed on the seabed. Final scour protection	

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		along the new pile lines may be placed from a land based long reach excavator, or from marine plant. – Alternatively, scour protection measures (a propriety geotextile mattress or rock armour units) will be placed by divers and filled insitu with concrete or grout.	
2	Construction of linkspan and supporting structures (north and south side)	1. Construction of Lifting Dolphins and Bankseat: – This will be concurrent with the finger pier construction using similar piling and concrete details. 2. Linkspan Installation: – Position using a crane on the quay and/or crane barge, secure to bank seat and lifting dolphins per design specifications. 3. Testing and Commissioning: – Conduct trial berthing during testing phase to ensure seamless operational transition.	Above and below
3	Construction sequence for quay wall construction (fishing berths)	1. Pile Installation Preparation: – Deliver and stockpile piles at the existing pier or on a supply barge. 2. Marine Equipment Setup: – Piling may be undertaken from land or a spud leg/jack up barge. – A materials supply barge may also be necessary for storage of piles and precast elements. – Piles will be installed using a combination of predominantly vibratory and rotary bored techniques with final depth achieved using an impact hammer. – Rotary or percussive boring may be necessary to construct rock sockets for piles or toe pins, this may be from a jack up barge/spud leg or land based platform. 3. Temporary Stability Measures: – Place a temporary stability bund along the front of the quay wall to support the existing structure. 4. Pile Installation Preparation: – Install temporary piles and erect a piling gate once the temporary bund is in place. 5. Quay Wall Pile Installation: – Pitch piles into the piling gate and install using a combination of vibratory and rotary bored driven piles using vibratory techniques predominantly with impact hammer only used to achieve the final required depth. – Remove the piling gate and extract the temporary piles and repeat the gate set up process. – Where necessary rotary or percussive boring may be required necessary to construct rock sockets for piles or toe pins, this may be from a jack up barge/spud leg or land based platform. 6. Anchor Wall Construction:	Above and below

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		– Install the rear anchor wall after completing the quay wall piles. – Anchor wall construction will require existing deck slabs to be broken up and removed. 7. Excavation and Tie Rod Installation: – Excavate the area between the quay wall and anchor wall to the underside of tie rod level. – Demolish elements of the existing quay wall as necessary to facilitate tie rod installation. – Install tie rods to secure the quay wall to the anchor wall. 8. Backfilling: – Backfill the excavated area up to the underside of cope level. 9. Removal of Temporary Bund: – Remove the temporary stone stability bund using a long reach excavator. 10. Final Installation: – Construct openings for outfalls. – Construct cope beams. – Install Quay furniture and fenders. – Install Cathodic Protection (Anodes) with divers. 11. Scour Protection – Scour protection will be installed using via excavators working from landside or marine plant. The rock will be delivered by barge and placed on the seabed. Final scour protection along the new pile lines may be placed from a land based long reach excavator, or from marine plant. – Alternatively, scour protection measures (a propriety geotextile mattress or rock armour units) will be placed by divers and filled insitu with concrete or grout.	
3	Construction sequence for quay wall construction (commercial berth) Note the following construction sequence accounts for the design of a combi-pile wall design or a suspended deck design. This will be determined during detailed design.	1. Pile Installation Preparation (applicable to combi-pile wall and suspended deck design): – Deliver and stockpile piles and precast concrete elements at the existing terminal site or on a supply barge. – Set up a supporting jack up barge or spud leg barge with driven spud piles to support the piling gate along the pile line. 2. Marine Equipment Setup (applicable to combi-pile wall and suspended deck design): – Position a crawler crane on a jack up barge or spud leg barge. – Position the jack up barge or spud leg barge so not to prevent vessel passage in the inner port area. – A materials supply barge may also be necessary for storage of piles and precast elements. – A combination of vibratory piling hammer and impact hammer will be required to drive the piles.	Above and below

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		– Rotary or percussive boring may be necessary to construct rock sockets for piles or toe pins, this may be from a jack up barge/spud leg barge or land-based platform. – Operations supported by a multicat vessel. 3. Suspended deck installation (applicable to suspended deck design only): – Place beams on top of installed piles using the crawler crane on the spud leg/jack up barge and seal around the gaps using grout tubes. – Position precast concrete planks between the beams to form the deck soffit and permanent form work. – Fix prefabricated reinforcement steel within each precast beam and on each deck slab. – Pour and finish in-situ concrete to the deck. 4. Quay Wall Construction (applicable to combi-pile wall and suspended deck design): – Install piling gate supported by temporary piles driven into the seabed. – Pitch piles into the piling gate and install using a combination of vibratory and rotary bored techniques predominantly with impact hammer only used to achieve the final required depth. – Remove the piling gate and extract the temporary spud piles and repeat the gate set up process. – Where necessary rotary or percussive boring may be necessary to construct rock sockets for piles or toe pins, this may be from a jack up barge/spud leg or land based platform. 5. Infilling and Tie Rod Installation (applicable to combi-pile wall and suspended deck design): – After completing the front quay wall, proceed with infilling behind the wall to a level for tie rod installation. – Erect a land-based piling gate. – Use a crawler crane with a vibro/impact hammer to install the rear anchor wall piles using vibratory techniques with impact hammer only used to achieve the final required depth. – Install tie rods to secure the quay wall to the anchor wall. – Backfill up to the underside of the cope beam level. 6. Final Installation (applicable to combi-pile wall and suspended deck design): – Construct openings for outfalls. – Construct cope beams. – Install Quay furniture and fenders. – Install Cathodic Protection (Anodes) with divers. 7. Scour Protection – Scour protection will be installed using via excavators working from landside or marine plant. The rock will be delivered by barge and placed on the seabed. Final scour protection	

Phase	Construction activity	Description	Above or below Mean Highwater Springs (MHWS)
		along the new pile lines may be placed from a land based long reach excavator, or from marine plant. – Alternatively, scour protection measures (a propriety geotextile mattress or rock armour units) will be placed by divers and filled insitu with concrete or grout.	
4	Construction of new terminal building	8. Foundation and Piling: – Construct a piling platform and install piles to required depth. – Build pile caps and concrete ground beams. 9. Steel Frame Erection: – Assemble steel columns and beams with cranes, bolting components together. 10. Envelope Construction: – Install blockwork for side walls. – Install roofing panels on the steel frame for weather-tight completion. – Construct glazed front gable end. 11. Interior Works: – Commence internal construction, including walls, flooring, ceilings, and essential services installation (electrical, plumbing). – Finish with painting, tiling, and fixture installation. 12. Inspections and Commissioning: – Verify operational systems through inspections and testing. – Rectify identified issues before commissioning for use.	Above

2.4 Material requirements

Further detailed design work is required to determine exact quantities of materials but Table 2-3 identifies the assumed materials required for the proposed development, their source and the method of transportation from source to site.

Table 2-3: Material requirements and sources

Material	Likely source	Distance from Proposed Development	Transportation method
Steel piles	Europe	300+ miles	Motor Vessel
Tie rods	Europe	300+ miles	Motor Vessel
Steel rebar	Glasgow	0-130 miles	HGV / ferry
Concrete	Local Supply	0-25 miles	HGV
Precast Concrete	Scotland Mainland or Ireland	0-130 miles	HGV / Ferry
Duct / pipe	Local / Glasgow	0-130 miles	HGV / ferry
Timber	Glasgow	0-130 miles	HGV / ferry
Fenders	Asia	300+ miles	HGV / ferry
Bitumen	Scotland Mainland	0-130 miles	HGV / ferry

Material	Likely source	Distance from Proposed Development	Transportation method
Linkspan	Europe	300+ miles	Motor vessel / HGV / ferry
General building material	Scotland Mainland	300+ miles	HGV / ferry
M&E (e.g. substation, electrical cables, lighting towers)	Scotland Mainland	300+ miles	HGV / ferry
Aggregates	Local Supply	0-25 miles	HGV
Aggregates	Glensanda	90 miles	Motor vessel / barge
Rock armour	Glensanda	90 miles	Motor vessel / barge
Quay furniture	Europe	300+ miles	HGV / ferry

2.5 Construction plant and equipment

Plant and equipment required during construction is still to be determined, with an indicative list set out in Table 2-4 for each construction activity. This list will be refined by the contractor once they have been appointed.

Table 2-4: Assumed construction plant and equipment

Phase	Construction activity	Plant/equipment
1	Dredging	Backhoe dredger
		Split hopper barge
		Harbour tug
		Multicat vessel / workboats
2	Quay wall and land reclamation works	Jack-up barge/spud leg w/ piling crane
		Materials barges
		Multi-cat workboats
		Crane (350Te)
		Backhoe excavator (40Te)
		RIC Rig (60Te)
		Piling Rig (120Te)
		Site dumper (20Te)
		Tipper truck (20Te)
		Tractor & trailer
		Vibratory roller
		Diesel generators
		Mobile lighting columns
2 and 3	Finger pier, linkspan and fixed ramp	Jack-up barge/spud leg w/ piling crane
		Materials barges
		Multi-cat workboats
		Crane (350Te)
		Jack-up barge/ spud leg
		Concrete truck
		Concrete pump
		Diesel generators

Phase	Construction activity	Plant/equipment
4	Terminal building	Excavator (30Te)
		Bulldozer (20Te)
		Site dumper (20Te)
		Tipper truck (20Te)
		Crane (350Te)
		Piling rig
		Concrete truck
		Concrete pump
		Diesel generators
4	Demolition	Excavator w/ breaker & crusher jaw (40Te)
		Bulldozer (20Te)
		Backhoe loader (10Te)
		Site dumper (20Te)
		Tipper truck (20Te)
		Crane (350Te)
		Mobile crusher equipment
		Diesel generators
4	Roads and marshalling area	Excavator (30Te)
		Bulldozer (20Te)
		Backhoe loader (10Te)
		Site dumper (20Te)
		Tipper truck (20Te)
		Asphalt paver
		Vibratory roller
		Diesel generators

2.6 Site compound

During the construction phase, an area of the site will be required for a laydown area for the potential storage of materials, equipment and plant and including site welfare. This is anticipated to be approximately 30 m x 30 m. Due to the existing spatial constraints; it is anticipated that some areas of the existing ferry terminal marshalling area will be used for site offices, welfare facilities, and storage.

An off-site compound will be required to support construction of the proposed development. This is expected to be approximately 150 m x 150 m, for general storage and the buildings will be no greater than 10m in height. The facilities at this off-site compound will be for parking, welfare units, offices and storage. It is assumed that the compound will be located somewhere in the vicinity of the harbour. It should be noted however, that the location of the off-site compound has yet to be determined. As such, the assessment of the off-site compound has not been assessed within this EIA report. The off-site compound will therefore be subject to a separate environmental assessment and consenting process where required.

2.7 Construction workforce

The following workforce is expected to be required for each construction activity, and not all the activities will be undertaken concurrently:

- Piling gang – 20 people;

- Ground works – 15 people;
- Concrete works - 15 people;
- Dredging – 10 people;
- Terminal building – 20 people;
- Surfacing works – 10 people;
- Rock revetement works – 6 people;
- Mechanical and electrical – 10 people;
- Miscellaneous works – 10 people; and
- Management / supervision – 5 people.

2.8 Construction traffic

The following methods will be used to transport materials to site:

- Deliveries by sea
  - **Primary Delivery Port:** Deliveries by sea will be prioritised to Port Ellen whenever possible. This will minimise the distance for transporting materials and equipment to the construction site but will be subject to the available lay down areas within the site.
  - **Secondary Delivery Port:** Port Askaig may be used for small scale deliveries by ferry (where there is space to do so), and transported directly to Port Ellen by road.

Movement of materials, equipment and waste will be carried out by:

- Access Routes:
  - **Primary Route:** From Port Ellen, vehicles will use the A846 road to access the construction site. This route will be used for transporting materials, equipment, and waste.
  - **Secondary Route:** If deliveries are made to Port Askaig, the A846/B8016 road will also be used, albeit starting from a different point on the island. This route connects Port Askaig to Port Ellen and other key locations on the island.

Specific details will be set out within the final Construction Environment Management Plan (CEMP) and mitigation included if required.

There is likely to be increased HGV traffic on Pier Road during construction due to deliveries of construction materials and removal of waste but there is no work proposed on or adjacent to the existing public road network, such as Pier Road, School Street and Frederick Crescent, that would require traffic management. It is also unlikely that traffic closures would be required on any public roads. However, it is likely that access to the current fishing berths and commercial berth would be restricted during construction, but this would be managed by CMAL as the harbour authority and CalMac Ferries Ltd as the harbour operator. As the ferry terminal will be closed to ferries during construction there will be a reduction in ferry-related traffic through the village during the construction period.

Traffic management during construction will be carried out with the following measures:

- **Ongoing throughout construction:** Traffic management measures will be implemented throughout the entire duration of the construction proposed development. This includes continuous monitoring and adjustment of traffic control measures to respond to changing conditions, available areas and to ensure safety.
- **Specific Interventions:** Short-term traffic interventions may be required for specific activities, such as the delivery of oversized equipment or materials. These interventions will be planned and communicated in advance to minimise disruption.

2.9 Construction waste

Table 2-5 identifies typical waste that is anticipated to be generated during construction, along with the management considerations.

Table 2-5: Anticipated waste during construction

Waste material types	Description	Management consideration
Dredged material	Sediments / rock removed from the seabed during dredging operations.	Dredge material highly unlikely to be suitable for reuse and it is assumed all will be disposed of at the sea disposal site at Site IDMA035 South of Port Wemyss approximately 20km west of Port Ellen.
Excavated soil and rock	Soil / rock excavated during ground works.	Reuse on-site for backfill where possible. Dispose excess material at approved disposal sites.
Steel	Off-cuts and waste from rebar, structural steel, and metal fittings.	Segregate for recycling. Store in designated bins to prevent contamination with other waste.
Concrete	Excess concrete from pouring operations	Crushed concrete can be reused for reclamation works, providing a sustainable source of aggregate for construction and reducing the need for new materials.
General waste	Miscellaneous waste generated from site activities and welfare facilities	Segregate recyclable materials and minimise the amount of waste sent to landfill.
Plastics	Waste plastic materials including packaging, piping etc.	Segregate and recycle where possible. Ensure proper disposal of non-recyclable plastics.
Timber	Waste wood from formwork, temporary works etc.	Segregate and recycle where possible.
Rubber	Waste rubber materials, such as gaskets, seals, and hoses.	Recycle where possible. Dispose of according to local regulations for non-recyclable rubber waste.
Bitumen or coal tar	Waste from road surfacing materials containing bitumen or coal tar.	Test for hazardous content and dispose of at approved special (hazardous) waste facilities.
Asbestos	Potential for asbestos to be present in structures for demolition	Engage licensed asbestos removal contractors. Follow strict regulatory guidelines for handling, transportation, and disposal of asbestos-containing materials.
Packaging materials	Waste packaging from construction materials, including plastic wrap, cardboard, pallets, and strapping.	Segregate and recycle packaging materials. Minimise packaging waste by using bulk orders where possible.
Electrical waste	Waste from electrical installations, including wiring, conduit, and fixtures.	Segregate for recycling.
HVAC and plumbing waste	Waste materials from the installation of heating, ventilation, air conditioning systems, and plumbing, including pipes, ducts, and insulation.	Recycle metal components. Dispose of other materials according to local regulations.
Fenders	Waste from existing fenders which are not reusable.	The condition of the existing fenders will be assessed to determine if they can be reused.

Table 2-6 identifies the likely locations for waste disposal and recycling, and the expected transportation method of waste management.

Table 2-6: Waste disposal locations and recycling

Waste materials	Disposal location	Distance from Proposed Development	Transportation method
Dredge Material	Disposal at sea	Site ID MA035 South of Portnahaven approximately 20km west of Port Ellen	Split Hopper Barges
General Waste	Local municipal disposal	0-25 miles	HGV
Steel	Glasgow	0-130 miles	HGV / Ferry
Crushed Concrete	Recycled on site	0 miles	On-site recycling

Construction waste produced as a result of the proposed development will be managed through a Site Waste Management Plan (SWMP). Further details on waste management are included within the Outline Construction Environment Management Plan (CEMP) (see Appendix A.5 of the EIA).

2.10 Embedded design mitigation

During the design stages of the project embedded mitigation has been included throughout and the environmental team has been actively involved to 'design out' adverse environmental effects as far as possible. The following mitigation has been embedded within the design;

- Selecting the option that is the most optimal for the environment;
- The development is water compatible use and has been designed taking account of expected future climate change;
- Rock revetment for scour and coastal flood risk protection;
- Minimising materials through careful design and consideration of reuse of site-won materials where practical; and
- Minimising carbon emissions though consideration of material selection, review of material availability on Islay (including amending design and specification to suit) and minimising transportation movements associated with the construction stage.

2.11 Operation

The operational activities associated with the proposed development are not expected to change, with the frequency of the NIV services remaining the same as the existing timetable. CalMac Ferries Limited (CFL) have advised that shoreside staffing levels are expected to remain as per the current operations (8 CFL staff). The vehicle capacity of the NIV is greater than the current vessels, however this is not considered to significant change traffic levels in Port Ellen village. A key driver for the proposed development is to remove ferry-related parking and traffic queuing from within the village. The proposed development aims to provide a suitably sized, segregated area for all ferry-related and harbour operations within the harbour premises, alleviating issues in the village and on the approach to the terminal.

The proposed development has a design life of 60 years as a minimum.

2.11.1 Safe access and egress

The main objective of the proposed development is to allow the capacity of the New Islay Vessels to be realised through provision of improved berth infrastructure and landside facilities, designed to accommodate the vessels.

The proposed development provides clear segregation between ferry-related, commercial, and local fishing and leisure activities. All publicly accessible areas within the proposed development will be well defined, with clearly marked pedestrian walkways provided throughout.

The Port Operator will control access throughout the site during operational hours. There will be a 2m security fence provided to segregate the fixed ramp, pier, linkspan and commercial berth from the wider port area.

A flood risk assessment[1] was undertaken and demonstrated that the proposed development site will be protected for a 1 in 200-year (0.5% AEP) storm event for surface water flooding at key receptors including the terminal building and public car park. For other receptors including roads and marshalling areas, the level of protection for surface water flooding is 1 in 30-year (3.3% AEP). Coastal flooding from wave overtopping is a short-term phenomenon, with any overtopping water draining directly to sea due to the graded and cambered design of the site hardstanding. Coastal flooding from wave overtopping has been mitigated against along the northern and western boundaries by incorporating sea walls on top of the rock armoured revetments into the design (see Volume 3, Appendix A.6 Proposed Development Drawings. This allows for protection for key receptors including the terminal building and public car park up to and including a 1 in 200-year storm event.

If conditions are such that wave overtopping occurs at Port Ellen, it is expected that the ferry service would be suspended or diverted to Port Askaig. Additionally, if surface water cannot be managed in the drainage system during a storm event, it is likely that the public road network leading to the terminal will also be inundated and therefore there would be limited staff and/or public access to the terminal. If there were insufficient staff able to access the terminal, then the terminal would be closed to protect public safety.

The CFL Vessel Master is responsible for the safety of discharge and loading operations. At times of inclement weather or excessive wave motion (and wave overtopping) it is likely that the Vessel Master would suspend loading operations to protect public safety. Ferries may be diverted to Port Askaig if safe to do so.

2.11.2 Public movement

Members of the public may arrive on foot, on bikes (or equivalent) or by vehicle (private car, taxi or public bus). These will be managed as follows, with the proposed routes serving as emergency access and egress. Public movement will be directed by the Operator where applicable (i.e. during ferry operations). The Operator will be present at the port during operational hours (i.e. within the relevant ferry timetable which may vary seasonally).

2.11.2.1 Foot passengers

Foot passengers will enter the proposed development via the northern pedestrian footpath (see Volume 3, Appendix A.6 Proposed Development Drawings), following a clearly lit path with a pedestrian guardrail to the terminal building. In this area (along the western revetment) there is calculated to be no wave overtopping in a storm event up to 1 in 200-year (0.5% AEP). A wave wall will be located to the west and the north of the terminal building acting as a further barrier between the public and the sea at the revetment.

During normal operations when foot passengers access the vessel from the terminal building, the Operator will be responsible for guiding the public safely onto the pier via a segregated and lit path with handrails where appropriate**.** The Operator will manage boarding the public onto the ferry safely. These two operations, (1) accessing the pier; and (2) boarding the ferry, are managed by the Operator and should conditions exceed appropriate thresholds, foot passenger access would be suspended to protect public safety.

[1] Mott MacDonald (2024) Port Ellen Terminal Development Flood Risk Assessment

2.11.2.2 Bicycle passengers

Passengers traveling by bike or equivalent will either follow the access road on their bike, or dismount and access the terminal building as per foot passengers. Prior to boarding the vessel, passengers with bikes will be directed by the Operator to the bike marshalling area, where there will be a dedicated shelter.

During normal operations when bicycle passengers access the vessel from the bike marshalling area close to the terminal building, the Operator will guide them safely onto the vessel via the linkspan or fixed ramp. These operations are managed by the Operator and should conditions exceed appropriate thresholds, bicycle passenger access would be suspended to protect public safety.

2.11.2.3 Cars and non-commercial vehicles

Cars and non-commercial vehicles boarding the vessel will enter the site and queue within the marshalling area. This area will be securely fenced (2m security fence) and feature lighting and pedestrian crossings on the route to the terminal building. Operator staff will be present to assist in marshalling and loading vehicles onto the ferry and to manage passengers transiting between their parked vehicle and the terminal building should this be required.

Vehicles accessing the terminal building area for car parking or for drop-off and collection of passengers will enter the site via the access road, following the one-way system.

The commercial berth quay wall is calculated to experience wave overtopping during 1 in 100-year storm events and worse, and the marshalling area is at risk from minor surface water flooding at storm events of 1 in 30-years. Vehicles will not be permitted onto the site should these conditions prevail.

2.11.3 Commercial vehicles and unaccompanied trailers

Unaccompanied trailers will be delivered to the designated area in advance of the relevant booked sailing. Hauliers will not be permitted to stay on site overnight, as per the current arrangements.

Commercial ferry traffic will enter the site and queue within the 3.5m wide marshalling lanes within the marshalling area. This area will be securely fenced (2m security fence) and feature lighting and pedestrian crossings on the route to the terminal building. Operator staff will be present to assist in marshalling and loading commercial vehicles onto the ferry and to manage drivers to transit between their parked vehicle and the terminal building should this be required.

The commercial berth quay wall is expected to experience wave overtopping during 1 in 100-year storm events or worse. Commercial freight will not be permitted onto the site if these conditions prevail.

2.11.4 Fishing

The fishing quays will remain publicly accessible, as per the current arrangements at Port Ellen. Access is not limited to within the ferry terminal’s operational hours and therefore Operator staff may not be present.

2.11.5 Commercial quay

The commercial quay will remain publicly accessible, as per the current arrangements at Port Ellen. Access is not limited to within the ferry terminal’s operational hours and therefore Operator staff may not be present.

2.11.6 Recreational activities

The Port Ellen Harbour Authority pontoons will remain publicly accessible, as per the current arrangements at Port Ellen.

2.11.7 Emergency vehicles

During the ferry terminal's operational hours, emergency vehicle access is coordinated and managed by the Operator as per existing procedures in the existing terminal and this would continue for the Proposed Development.

2.12 Long-term management

The operational and long-term management of the assets at the Port Ellen Harbour will include repairs and maintenance over time, similar to the existing arrangements.

Maintenance dredging may be required during the operational lifetime of the proposed development, but it is not expected to be needed frequently and would not be a routine operation. The exact timescales of maintenance dredging cannot be determined at this stage, and as such maintenance dredging has been excluded from the scope of this report. Any future maintenance dredging will be managed through the marine licence consenting process with an appropriate level of environmental assessment undertaken at that point.

3 HRA Regulations and Process

3.1 Regulations

The requirement for HRA arises in Scotland under The Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitat Regulations)[2]. These regulations were amended in 2019[3] by Scottish Ministers after the UK left the European Union. The amendments transferred designated European Sites (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)), previously within the Natura 2000 network into a UK National Network.

As such existing EU guidance[4] and preceding case law from the European Court of Justice[5] [6] [7] remains valid as a source of direction and interpretation of the requirements of the legislation, although it should be noted that much case law has now been incorporated into guidance and/or best practice.

Under the Habitats Regulations, all competent authorities must consider whether any plan or project could affect a European site before it can be authorised or carried out. Where a plan or project is not directly connected with, or necessary to, the management of a designated site which may give rise to significant effects upon the site, a competent authority must make an assessment of the likely significant effects on the designated site and its conservation objectives, prior to consent for the plan or project being granted.

3.2 HRA process

The HRA process consists of four stages, each stage being informed by the one preceding, to ensure an iterative and objective assessment. If the conclusion of Stage 1 Screening is that there will be no likely significant effects on any features of a European site, there is no requirement to undertake further stages. Similarly, if the Stage 2 Appropriate Assessment concludes there will be no adverse effect on integrity of the European site, then the assessment is concluded. The HRA stages are summarised below.

3.2.1 Stage 1: Screening

The purpose of Stage 1 Screening is to assess the possible effects of the Proposed Development, alone and in combination with other projects to determine if these will have Likely Significant Effects (LSE) on any designated sites or their interest features.

During this stage, unless for measures that can reasonably be regarded as ‘standard practice’ or ‘best practice’ for projects of that type[8], mitigation measures are not taken into consideration when assessing if the Proposed Development will have LSE. These are taken into account

[2] Or where reserved matters are concerned certain provisions of The Conservation of Habitats and Species Regulations 2017 as amended apply. These reserved matters include activities consented under sections 36 or 37 of the Electricity Act 1989; activities consented under the Pipe-lines Act, 1962; matters related to the exploration for, and exploitation of, deposits of oil and natural gas; and matters related to defence of the realm.

[3] The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019

[4] Managing Natura 2000 Sites - The provisions of Article 6 of the ‘Habitats’ Directive 92/43/CEE (European Communities 2020)

[5] Landelijke Vereniging tot Behoud van de Waddenzee case/ Nederlandse Vereniging tot Bescherming van Vogels, European Court of Justice, Case C-127/02 ‘Waddenzee 2002’

[6] Sweetman et al v An Bord Pleanala, European Court of Justice, Case C-258/11 ‘Sweetman 2011’

[7] People over Wind/Sweetman v Coiltte Teorante, European Court of Justice Case C-323/17 ‘People over Wind 2017’

[8] Refer to The handling of mitigation in HRA (A2900547) (nature.scot)

during Stage 2. If the assessment identifies that there are no LSE, HRA stages 2 to 4 are not needed, and the report will conclude at the screening stage.

Information was collated and reviewed in respect of each feature of interest and potential development scales of effect / impact pathways to inform an assessment of any LSE. Key aspects and terms used in this assessment are defined below:

- **Likelihood**: Where an effect was considered to be potentially significant, then the assessment of its of occurrence was based on the likelihood of it occurring and not certainty that it would occur. Effects are scoped in unless there was evidence to the contrary demonstrating that they would not occur, e.g., there being no valid pathway, or the absence of the species in that area, at that time.
- **Significance**: The significance of any effect is considered objectively, against the scale and nature of the impact in relation to those of that particular feature or condition and in relation to the extent of that feature or condition over the entire designated site. A significant effect within this assessment is one which, if it occurred, would lead to a decline in the quality or status of the habitats or distribution, abundance, etc. of feature(s) of interest.
- **In combination**: The assessment of in combination effects considers those projects or plans which:
  - Are currently in operation; and
  - Those which are actually proposed – defined by being a valid live planning application, or any referenced with a local development plan where there is a strong likelihood of them being undertaken within a reasonable time period, specified within that plan.

To aid discussion within this report, in-combination effects are discussed at the end of Stage 2 to allow consideration of mitigation measures to be in place when considering other projects or plans.

3.2.2 Stage 2: Appropriate assessment

If LSE are identified in Stage 1 then a Stage 2 Appropriate Assessment will be undertaken. This assesses the implications of the project on designated sites conservation objectives. The information given must be extensive enough so the competent authority can undertake an Appropriate Assessment. Conservation objectives for the designated site, the conservation status of qualifying features and the potential effects of the project on the designated site must be included. The Stage 2 Appropriate Assessment will also include measures to avoid/mitigate impacts and will outline any residual effects if adverse effects from the project are likely.

3.2.3 Stage 3: Assessment of alternative solutions

If it is concluded that significant effects are likely to remain after mitigation measures identified at Stage 2, there must be an examination of alternative ways to complete the plan or project that avoids significant effects on the integrity of the site. Where alternatives exist, these should be subjected to Stage 1 and Stage 2 assessments if required.

3.2.4 Stage 4: Imperative reasons for overriding public interest (IROPI)

In certain cases, there may be no alternative solution that will minimise or avoid impacts on the designated site, the designated site's priority species and/or habitats. In these cases, the outcomes of undertaking the project should consider the environmental or human health/safety benefits that it would bring. Compensatory measures to offset the impact of the project and maintain the integrity of the designated site must be evaluated and implemented prior to works, if IROPI are determined.

3.3 Outcome of HRA

The HRA, specifically the detailed Appropriate Assessment stage, supports a decision by a 'Competent Authority' as to whether a proposed plan or project would have an adverse effect on the "integrity" of a designated site; ODPM[9] infers this to mean "the coherence of the site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified".

The decision is based upon the implications of a project on the conservation objectives of the site. These objectives set out the physical, chemical and biological thresholds, and limits of activity and disturbance, which must be met to maintain integrity. An Adverse Effect On Integrity (AEOI) is likely to be one that results in a deterioration of conservation status with regard to the qualifying feature(s) for which it was designated.

The assessment of effects on designated sites applies a precautionary principle, if any doubt exists as to the effect of projects (considering any necessary mitigation measures), then 'no adverse effect on integrity' cannot be concluded. In this situation alternative solutions must be sought. Where feasible alternatives do not exist then the project can only proceed on the basis of IROPI. This must be agreed by the Secretary of State and compensatory measures to offset damage/loss and to maintain the overall coherence of the European Site (including the wider UK National Network it resides in) must be secured and ecologically functional in advance of the damage.

[9] ODPM, 2005. Government Circular: Biodiversity and Geological Conservation-Statutory Obligations and Their Impact Within the Planning System 1 Office of the Deputy Prime Minister. Office of the Deputy Prime Minister Circular, 06/2005.

4 Assessment Methodology

The Proposed Development, as detailed in Section 2 has been reviewed following the regulations and process outlined in Section 3. This information has been reviewed as a desk-based assessment to determine whether it is considered that LSE will arise on any designated sites or their associated features which could potentially lead to an adverse effect on the integrity of that site.

4.1 Data evaluation

In undertaking this HRA, relevant data gathered informed the identification of:

- Potential effects resulting from the Proposed Development based upon publicly available research of established effects or examples from past construction within industry;
- The Zone of Influence (ZoI) of any potential effects. It should be noted that the ZoI may extend some distance from the site itself and are not confined to activities on or adjacent to the site. To confirm any potential effects in relation to underwater noise and sediment dispersion, modelling has been undertaken to identify the potential scale of construction effects in relation to these elements;
- Any Special Protection Areas (SPA)/ Special Areas of Conservation (SAC)/ potential Special Protection Areas (pSPA)/ candidate Special Areas of Conservation (cSAC)/Ramsar sites, including any marine or marine elements of these sites within the potential ZoI, and any known areas of land outside the site boundary itself, which plays an important role in supporting the site and its features of interest (functionally linked land);
- The features of interest of the designated site(s) in question;
- The conservation objectives of the designated site, including any site sensitivities given within any supplementary advice, site improvement plan, or equivalent document published by the relevant nature conservation body; and
- Any viable pathways for the project (or plan) to the receptor (designated site itself or functionally linked land).

During the EIA for the Proposed Development an underwater noise assessment and a sediment dispersion model were conducted (see Appendix D.9 and Appendix E.1 in Volume 3 of the EIA Report respectively). The underwater noise modelling and sediment dispersion modelling results have been used to identify the scale of construction effects where an impact pathway has been identified to the receptor.

4.2 Identification of Designated Sites within the study area

The Proposed Development works have the potential to impact on ecological features such as habitats and/or species beyond the confines of the boundary of the Proposed Development itself. ZoI has been used to define the study area for this screening assessment and the potential impacts on designated sites are defined as:

- Areas where there is physical disturbance to designated sites and/or their designated interest features;
- Areas where there will be land take and habitat removal for the works;
- Areas where there is risk of altering the hydrodynamic regime;
- Areas where there is risk of an increase in noise, air and light pollution;
- Areas where there is a risk of reduction of water quality; and

- Areas where there is a risk of an increase in underwater noise.

The ZoI for the Proposed Development has been defined using guidance provided by Chartered Institute of Ecology and Environmental Management (CIEEM)[10] and has been informed using professional judgement. The ZoI used for this assessment and their justification are outlined in Table 4-1 and presented in Figure 4-1. It is worth noting that the ZoI for hydrologically connected sites is based on one tidal excursion due to the latest dispersion modelling demonstrating a smaller area of influence.

Table 4-1: Zone of Influence (ZoI) for the Proposed Development

ZoI	Type of site	Justification
2km	Designated sites	All designated sites for the effects of visual disturbance and noise (airborne).
10km	Hydrologically connected sites	Hydrological connection is considered within the aquatic areas below the MHWS with designated sites considered to be hydrologically connected within the likely tidal influence and the degree of marine interaction of the Proposed Development. The distance for this is based upon one tidal excursion[11] (considered to be the average of the two closest ellipses ID 29770 and ID 31633[12]) which is considered to be the approximate distance that natural exchange in water from tides and currents would occur from the site. As such, it is estimated that this distance covers the potential maximum dispersion in the event that any deleterious substances should enter the water.
15km	Underwater noise propagation (hydrologically connected)	Based on the use of a pin piling structure installation, this ZoI is the effective deterrence radius for cetaceans as suggested by the JNCC[13]. This is also being considered as a highly conservative proxy for diving birds as there is limited literature available on underwater noise impacts on these. Though noise from many of the sources will spread in all directions (omnidirectional), this can be affected by source frequency and seabed topography resulting in potential propagation over longer (or shorter) distances.

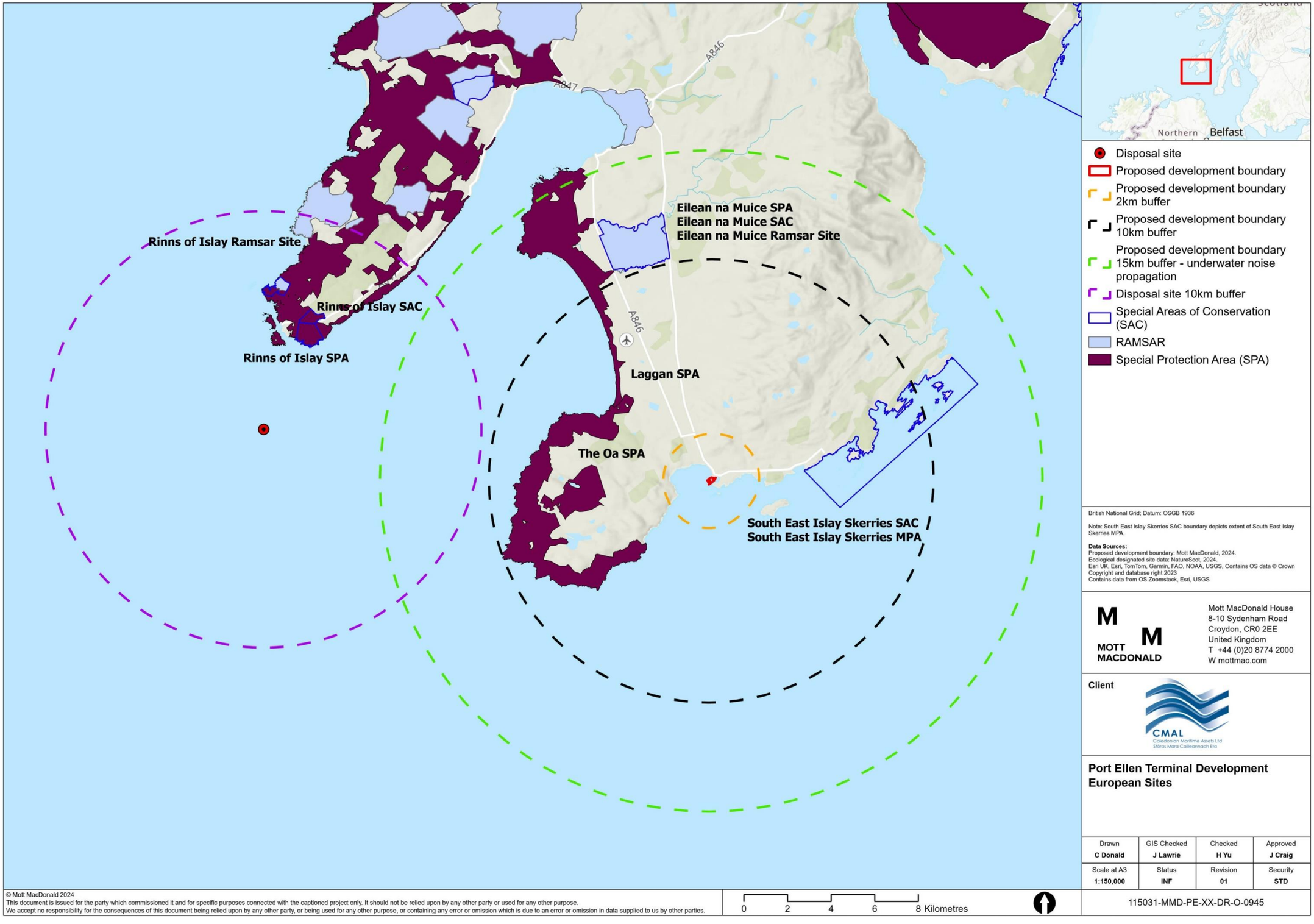
[10] CIEEM, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.2 – Updated April 2022. Winchester: Chartered Institute of Ecology and Environmental Management

[11] This is now based on one tidal excursion, whereas the previous New Islay Vessel Port Ellen HRA was based on two tidal excursions. This is due to the dispersion modelling now available demonstrating a smaller area of influence.

[12] Atlas of UK Marine Renewable Energy Resources. 2008. ABPmer. Accessed June 2023 UK Renewables Atlas - ABPmer (renewables-atlas.info)

[13] JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland)

Figure 4-1: Zone of Influence (ZoI) and European Sites



British National Grid; Datum: OSGB 1936

Note: South East Islay Skerries SAC boundary depicts extent of South East Islay Skerries MPA.

Data Sources:
Proposed development boundary: Mott MacDonald, 2024.
Ecological designated site data: NatureScot, 2024.
Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS, Contains OS data © Crown Copyright and database right 2023
Contains data from OS Zoomstack, Esri, USGS

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Port Ellen Terminal Development
European Sites

Drawn	GIS Checked	Checked	Approved
C Donald	J Lawrie	H Yu	J Craig
Scale at A3	Status	Revision	Security
1:150,000	INF	01	STD

115031-MMD-PE-XX-DR-O-0945

5 Stage 1: Screening

5.1 Designated sites

The designated sites identified as being within the ZoI (defined in Section 4.2) are included for Stage 1 screening. These sites are indicated in Figure 4-1 above and described in Table 5-1 below.

Eilean na Muice Duibhe SPA, Ramsar Site and SAC which are located 10.2km north-west of the Proposed Development are included in view of mobility of the qualifying bird species of these sites which is Greenland white-fronted goose (*Anser albifrons flavirostris*), despite being just outside the 10km ZoI for hydrological connection.

Table 5-1: Designated sites within the ZoI

Designated site	Approximate distance and direction from the Proposed Development and disposal site	Qualifying features and description
The Oa SPA [NatureScot site code: 9196, EU site code: UK9003058]	Approximately 4.1km south-west from the Proposed Development. Approximately 12.5km east from the proposed disposal site.	Qualifies under Article 4.1 for supporting the following Annex I species: ● Chough (*Pyrrhocorax pyrrhocorax*) supporting an average of 7.8 breeding pairs annually between 2001 and 2005, over 2.2% of GB.
South-East Islay Skerries SAC [NatureScot site code: 8381, EU site code: UK0030067]	Approximately 4.4km east/north-east from the Proposed Development. Approximately 24.5km east from the proposed disposal site.	Designated for Annex II species, that are a primary reason for selection of this site, Harbour seal (*Phoca vitulina*). The skerries, islands and rugged coastline of the Inner Hebridean island of Islay hold a nationally important population of the *Phoca vitulina*. The south-east coastline areas are extensively used as pupping, moulting and haul-out sites by the seals, which represent between 1.5% and 2% of the UK population (2005)[14]. Latest assessed condition of *Phoca vitulina*: Favourable Maintained (12 Aug 2009)[15].
Laggan, Islay SPA [NatureScot site code: 8521, EU site code: UK9003053]	Approximately 5.3km north-west from the Proposed Development. Approximately 15.8km north east from the proposed disposal site.	Qualifies under Article 4.1 for regularly supporting the following Annex I species over winter: ● Greenland barnacle goose (*Branta leucopsis*) – 6.7% of the GB population. ● Greenland white-fronted goose (*Anser albifrons flavirostris*) – 2.2% of the GB population.
Rinns of Islay SPA [NatureScot site code: 8570, EU site code: UK9003057]	Approximately 16km north-west from the Proposed Development. Approximately 4km north from the proposed disposal site.	Qualifies under Article 4.1 for supporting the following Annex I species: ● Hen harrier (*Circus cyaneus*) ● Corncrake (*Crex crex*)

[14] Joint Nature Conservation Committee (2015). Natura 2000 - Standard Data Form. South-East Islay Skerries SAC. Site code: UK0030067 https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030067.pdf and https://sac.jncc.gov.uk/site/UK0030067

[15] NatureScot. South-East Islay Skerries SAC. NatureScot site code: 8381. https://sitelink.nature.scot/site/8381

Designated site	Approximate distance and direction from the Proposed Development and disposal site	Qualifying features and description
		• Chough (*Phyrrhocorax phyrrhocorax*) • Whooper swan (*Cygnus cygnus*) • Greenland white-fronted goose (*Anser albifrons flavirostris*) • Also qualifies under Article 4.2 for supporting migratory common scoter (*Melanitta nigra*).
Rinns of Islay SAC [NatureScot site code: 8354, EU site code: UK0030247]	Approximately 16km north-west from the Proposed Development. Approximately 4km north from the proposed disposal site.	Designated for Annex II species, that are a primary reason for selection of this site, Marsh fritillary butterfly (*Euphydryas aurinia*)
Rinns of Islay Ramsar site [NatureScot site code: 8451, EU site code: UK13052]	Approximately 20km north-west from the Proposed Development. Approximately 6.5km north from the proposed disposal site.	This Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing: • Blanket bog of extreme oceanic character. • Numerous dystrophic lochs, lochans and pools, in intimate association with the peatlands. This site also qualifies under Ramsar Criterion 2 by supporting: • The nationally scarce irish lady's tresses orchid *Spiranthes romanzoffiana*. • The meadow thistle *Cirsium dissectum* which is a geographically restricted species, rare in Scotland. This site further qualifies under Ramsar Criterion 4 by supporting the following waterbirds species at a critical stage in their life cycle: • Common scoter *Melanitta nigra* (1986 and 1987, 15 pairs, 14% of the GB population) This site also qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds: • Whooper swan Cygnus cygnus (1986 and 1987, 140 individuals on passage, 1% of the Iceland/UK & Ireland biogeographic population) • Greenland white-fronted goose *Anser albifrons flavirostris* (1984/85, 1986/87 and 1987/88, average winter peak count of 1,820 individuals, 12% of the total biogeographic population). This Ramsar site is wholly contained within the Rinns of Islay SPA, which underpins all the bird features of the Ramsar site.
Eilean na Muice Duibhe SPA [NatureScot site code: 8494, EU site code: UK9003054]	Approximately 10.2km north-west from the Proposed Development Approximately 17.8km north east from the proposed disposal site.	Qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species: • Greenland white-fronted goose (*Anser albifrons flavirostris*) – over 4.4% of the GB population

Designated site	Approximate distance and direction from the Proposed Development and disposal site	Qualifying features and description
Eilean na Muice Duibhe SAC [NatureScot site code: 8250, EU site code: UK0019773]	Approximately 10.2km north-west from the Proposed Development Approximately 17.8km north east from the proposed disposal site.	Designated for Annex I habitat that are a primary reason for selection of this site: ● Blanket bogs Annex I habitat present as a qualifying feature: ● Depressions on peat substrates of the Rhynchosporion
Eilean na Muice Duibhe Ramsar site [NatureScot site code: 8422, EU site code: UK13014]	Approximately 10.2km north-west from the Proposed Development Approximately 17.8km north east from the proposed disposal site.	This Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing: ● A large area of patterned mire (peatland with extensive pool systems), at its south west extremity in Britain. This site also qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds: ● Greenland white-fronted goose *Anser albifrons flavirostris* (1988, over 600 wintering individuals, over 4% of the total biogeographic population). This Ramsar site is coincident with the Eilean na Muice Duibhe SPA which underpins the bird feature of the Ramsar site.

5.2 Conservation Objectives

The screening for LSE considers the implications of the Proposed Development in view of the Conservation Objectives for the four designated sites screened in. An overview of the objectives for each designated site is shown in Table 5-2 below.

Table 5-2: Conservation objectives for each designated site

Designated site	Qualifying species	Conservation objectives
The Oa SPA	● Chough	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: ● Population of the species as a viable component of the site; ● Distribution of the species within site; ● Distribution and extent of habitats supporting the species; ● Structure, function and supporting processes of habitats supporting the species; and ● No significant disturbance of the species.
Laggan, Islay SPA	● Barnacle goose ● Greenland white-fronted goose	
Rinns of Islay SPA	● Chough ● Common scoter ● Corncrake ● Greenland white-fronted goose ● Hen harrier ● Whooper swan	
Eilean na Muice Duibhe SPA	● Greenland white-fronted goose	
South-East Islay Skerries SAC	● Harbour seal	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

Designated site	Qualifying species	Conservation objectives
		To ensure for the qualifying species that the following are maintained in the long term: ● Population of the species as a viable component of the site; ● Distribution of the species within site; ● Distribution and extent of habitats supporting the species; ● Structure, function and supporting processes of habitats supporting the species; and ● No significant disturbance of the species.
Rinns of Islay SAC	● Marsh fritillary butterfly	To ensure that the qualifying feature of the Rinns of Islay SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status To ensure that the integrity of the Rinns of Islay SAC is maintained by meeting the following for the qualifying feature: ● Maintain the population of the marsh fritillary butterfly as a viable component of the site ● Maintain the distribution of the marsh fritillary butterfly throughout the site ● Maintain the habitats supporting the marsh fritillary butterfly within the site and availability of food
Eilean na Muice Duibhe SAC	● Blanket bog ● Depressions on peat substrates	To avoid deterioration of the qualifying habitats (listed below) thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and To ensure for the qualifying habitats that the following are maintained in the long term: ● Extent of the habitat on site ● Distribution of the habitat within site ● Structure and function of the habitat ● Processes supporting the habitat ● Distribution of typical species of the habitat ● Viability of typical species as components of the habitat ● No significant disturbance of typical species of the habitat

Links to the conservation objectives documents:-

The Oa SPA: https://apps.snh.gov.uk/sitelink-api/v1/sites/9196/documents/29
Laggan, Islay SPA: https://apps.snh.gov.uk/sitelink-api/v1/sites/8521/documents/29
Rinns of Islay SPA: https://apps.snh.gov.uk/sitelink-api/v1/sites/8570/documents/29
Rinns of Islay SAC: https://apps.snh.gov.uk/sitelink-api/v1/sites/8354/documents/66
South-East Islay Skerries SAC: https://apps.snh.gov.uk/sitelink-api/v1/sites/8381/documents/29
Eilean na Muice Duibhe SPA: https://apps.snh.gov.uk/sitelink-api/v1/sites/8494/documents/29
Eilean na Muice Duibhe SAC: https://apps.snh.gov.uk/sitelink-api/v1/sites/8250/documents/29

5.3 Identification of potential impacts/risk

The proposed works are not within any designated sites, therefore, direct habitat losses or displacement of qualifying features of the designated sites (such as waterfowl or marine mammal) are not anticipated. Indirect potential impacts/risks relevant to construction and operational works of the development have been considered. These may include:

Construction phase

- Underwater noise;
- Airborne noise and visual disturbance;
- Physical harm;
- Pollution events;
- Changes in water quality (increased turbidity);

- Release of contaminants;
- Generation of construction dust/reduced air quality;
- Temporary habitat loss; and
- Introduction and spread of invasive non-native species (INNS).

Operational phase

- Permanent habitat loss;
- Reduction in foraging habitat and prey availability; and
- Introduction and spread of invasive non-native species (INNS).

The potential impact pathways and sources of disturbance from the Proposed Development that could affect the designated sites are outlined in Table 5-3. Where there is no impact pathway, or sites are outwith the ZoI, they have not been included.

Table 5-3: Construction activities with the potential to impact designated sites

Potential impact/risk	Impact pathway	Sites potentially affected	Explanation
Construction			
Underwater noise	• Dredging (including vessel noise), piling and Cardox blasting	• South-East Islay Skerries SAC	Harbour seals are known to bask on the small rocky islands to the west of the existing ferry terminal and on the skerries to the south. Dredging, piling and Cardox blasting are proposed to take place. This would result in the generation of underwater noise and impact on designated features present. Underwater noise is known to potentially disturb marine mammals and their prey (i.e., fish specifically their eggs and juveniles) as noise levels increase the effect ranges from changes in behaviour, temporary threshold shift in hearing (TTS), permanent threshold shift in hearing (PTS), barotrauma injury and death can occur.
Airborne noise	• Movement of construction vessels • Piling • Construction traffic	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar • Rinns of Islay SPA and Ramsar	Engine noise of the construction vessels moving around the Proposed Development site will be in addition to that already experienced on site. The installation of piles will have an airborne component which could also travel and disturb features of designated sites. Construction traffic noise will be generated from increased HGV traffic on Pier Road due to deliveries of construction materials and removal of waste.
Physical harm	• Movement of construction vessels • Construction traffic	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar • Rinns of Islay SPA and Ramsar	Additional vessel traffic near to the designated sites and landside would increase the potential for collision with features of the sites, as such it is possible that physical harm could occur both in the marine works area and in the port area.
Pollution event	• Spills directly into the marine environment from use of vessels. • Spills at the quayside that may runoff into the marine environment.	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar • Rinns of Islay SPA and Ramsar	Pollution events (e.g., oil spill from vessel, runoff from machinery plant, use of concrete directly in the water) could enter surface water including water course and marine environment could indirectly affect the qualifying species of the hydrologically connected designated sites. Potential pathways could comprise the use of plant and machinery in and adjacent to the marine environment (oil, chemical and fuel spill) and spill of concrete or other hazardous substances.
Smothering (increased sedimentation)	• Dredging works – fallout of suspended sediment from dredge plume	• South-East Islay Skerries SAC	Following the generation of the dredge plume, suspended sediment will disperse out over time and settle to the seabed. This fallout can smother supporting habitats and species on which designated features rely. This could indirectly affect the availability of

Potential impact/risk	Impact pathway	Sites potentially affected	Explanation
			prey species in the area functionally linked to the SAC and may subsequently lead to redistribution of seals out of the area.
Changes to water quality (increased turbidity)	• Dredging works - increase in Total Suspended Solids (TSS) as a result of disturbance of sediment directly into the water column • Disposal of dredged materials – increase in suspended sediment when dumping into the water column	• South-East Islay Skerries SAC • Rinns of Islay SPA and Ramsar	Changes in water quality including turbidity as a result of increased suspended sediment concentration during dredging works and disposal of dredged materials could indirectly affect prey species within the area if considered functionally linked. The suspended solids in the water column can disperse across large areas with tidal movement and as a result this could affect several marine designated sites and have subsequent effects on non-marine designated features such as birds.
Release of contaminants	• Dredging works - directly released into water column during disturbance of existing sediment	• South-East Islay Skerries SAC	Historically, harbours have been sinks for contaminants from surrounding industry, comprising metals, tributylins (TBTs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and pesticides. Impacts resulting from exposure to contaminants due to their re-suspension from the dredging of sediments could be direct as a result of toxicity; or indirect resulting bioaccumulation from ingesting contaminated prey, or reduction in prey availability. Contaminants may be adhered to sediments and transported to coastal/estuarine environment, which can bioaccumulate in the prey of seabirds and shorebirds and also prey of Harbour seal.
Generation of dust/reduced air quality	• Disturbance of dust / release of particulate matter directly into the air from during construction activities.	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar •	Construction dust can smother terrestrial designated habitats, which may act as subsequent food sources for designated species (such as birds). Additionally, if produced in large enough volumes, this can settle on the surface of water bodies where following deposition, this can shade and smother marine designated habitats that marine designated features may also be reliant on for shelter or food sources.
Temporary habitat loss	• Direct loss of marine habitat features through anchor scour and anchor chain abrasion from construction vessels	• South-East Islay Skerries SAC	For the purposes of this HRA, temporary habitat loss is considered to be habitat loss due to temporary features of the site i.e. use of anchors on marine vessels for vessel downtime or required during the dredging process. As storage of plant and construction materials will be on land nearby or within the port boundaries no temporary loss of habitat is expected from that activity.
Introduction and spread of invasive and non-native species (INNS)	• Direct introduction through biofouling of vessel hulls • Direct introduction through site workers boots, site machinery and plant. • Direct spread through site workers boots, site machinery and plant.	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar	Marine vessels will be used to supply material to the works site and dispose of the dredge material. This can potentially lead to the spread of INNS into the marine environment and across the hydrologically connected designated sites, as INNS can be brought into site on the hull of the vessel, equipment or for example through ballast water transfer and workers. INNS have the potential to change the trophic structure locally and to outcompete native species resulting in a potential indirect effect on designated features through impacts to their prey and supporting habitats and reducing the prey availability and directly by passing over diseases.

Potential impact/risk	Impact pathway	Sites potentially affected	Explanation
		• Rinns of Islay SPA and Ramsar	
Operation			
Permanent habitat loss	• Changes to tidal propagation and range affecting the extent and duration of mudflat exposure • Land reclamation	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar	Changes to tidal propagation and range may occur due to the land reclamation works and new berths that may change the mudflat exposure and related extent. Mudflats are used by seals when on shore, and are used as pupping, moulting and haul-out sites by the seals, which represent between 1.5% and 2% of the UK population. Land formed after reclamation and new berths may cause changes to accretion and erosion processes at the designated site and changes to the functionality of the mudflats that may affect habitat usage by seals and lead to the seal population moving away from the area. It is also possible that intertidal areas around the proposed development boundary could be regularly used by bird features of the designated sites surrounding. Land reclamation will account for permanent loss of marine habitat including some intertidal areas which may act as a supportive habitat to SPA birds.
Reduction in foraging habitat and prey availability	• Changed wave regime; • Changes in the local pattern of currents, tidal energy and sediment dynamics	• South-East Islay Skerries SAC	Wave regime would likely be changed by the proposed development which may impact seals present on the Skerries to the south of the proposed development by affecting their acoustic detection for prey. Research has shown that waves at the water surface can significantly corrupt the quality of the echolocation to such an extent that they become unreliable for small target detection (Kozak & Salme, 2006)[16]. Changes in tidal energy, current patterns and sediment dynamics may occur after land reclamation and new berths formed that may impact the behaviours of seals, especially when hunting for food. These changes may also impact the behaviour of fish that may redistribute and move from the area, which may consequently impact seals that predate on the fish.
Introduction and spread of invasive and non-native species (INNS)	• Direct introduction through biofouling of vessel hulls	• The Oa SPA • South-East Islay Skerries SAC • Laggan, Islay SPA • Eilean na Muice Duibhe SPA and Ramsar • Rinns of Islay SPA and Ramsar	The site will be an active port with larger vessels arriving than current operations. This can potentially lead to the spread of INNS into the marine environment and across the hydrologically connected designated sites, as INNS can be brought into site on the hull of the vessel or through ballast water transfer and workers. INNS have the potential to change the trophic structure locally and to outcompete native species resulting in a potential indirect effect on designated features through impacts to their prey and supporting habitats and reducing the prey availability and directly by passing over diseases.
Decommissioning			
No decommissioning is planned for the Proposed Development.	N/A	N/A	

[16] Kozak, G., & Salme, N. H. (2006). Side scan sonar target comparative techniques for port security and MCM Q-Route requirements. Monterey, California, USA: Paper presented at the MINWARA Seventh International Symposium on Technology and Mine Problem, Naval Postgraduate School.

5.3.1 Summary of potential risks and impact pathways

The risks to features of each designated site identified in Table 5-1 are summarised below:

The Oa SPA

- Construction – airborne noise; physical harm; pollution event; generation of dust/reduced air quality; introduction and spread of INNS.
- Operation – Permanent habitat loss; introduction and spread of INNS.

South-East Islay Skerries SAC

- Construction – underwater noise; airborne noise; physical harm; pollution event; smothering (increased sedimentation); changes to water quality (increased turbidity); release of contaminants; generation of dust/reduced air quality; temporary habitat loss; introduction and spread of INNS.
- Operation – Permanent habitat loss; reduction in foraging habitat and prey availability; introduction and spread of INNS.

Laggan, Islay SPA

- Construction – airborne noise; physical harm; pollution event; generation of dust/reduced air quality; introduction and spread of INNS.
- Operation – Permanent habitat loss; introduction and spread of INNS.

Rinns of Islay SPA and Ramsar

- Construction disposal activities only – airborne noise; physical harm; pollution event; changes to water quality (increased turbidity); introduction and spread of INNS.
- Operation – introduction and spread of INNS.

Rinns of Islay SAC

There are no pathways of effect for any of the identified risks on the feature of this designated site. Therefore, this SAC is not considered further in this assessment.

Eilean na Muice Duibhe SPA and Ramsar

- Construction – airborne noise; physical harm; pollution event; generation of dust/reduced air quality; introduction and spread of INNS.
- Operation – Permanent habitat loss; introduction and spread of INNS.

Eilean na Muice Duibhe SAC

There are no pathways of effect for any of the identified risks on the features of this designated site. Therefore, this SAC is not considered further in this assessment.

5.4 Screening for Likely Significant Effects - Construction

An assessment of LSE from the impacts outlined above in Table 5-3 is presented below for each of the designated sites.

As outlined above, the construction phase and only the long-term effects within the operation phase are considered in this screening for LSE as no new activities are planned in the operational phase, while no decommissioning phase will take place. Any impacts that are identified as having potential LSE on designated features have been taken through to the Stage 2 Appropriate Assessment to establish whether the impacts will affect the integrity of the designated sites.

This HRA has been produced in conjunction with an Environmental Impact Assessment Report, in which is supported by studies including:

- Breeding bird and winter bird surveys (see EIA Report, Volume 3, Appendix D.6 and D.7).
- Underwater noise modelling to assess underwater noise generated during construction (see EIA Report, Volume 3, Appendix D.9).
- Dredging and sediment dispersion modelling to assess the effects from dredging and disposal of dredge material (see EIA Report, Volume 3, Appendix E.1. Results are also summarised in **Appendix A** of this report).
- Outline Construction Environmental Management Plan setting out standard practice and best practice measures (see EIA Report, Volume 3, Appendix A.5).

As discussed in Section 3.2.1 during Stage 1 Screening, unless for measures that can reasonably be regarded as 'standard practice' or 'best practice' for projects of that type[8], mitigation measures are not taken into consideration when assessing if the Proposed Development will have LSE. Best practice and standard practice measures which would be essential components of the Proposed Development are set out in **Appendix B**, and have been taken into consideration during Stage 1 Screening.

5.4.1 The Oa SPA

5.4.1.1 Airborne noise

The site is outwith the 2km ZoI for effects of airborne noise. The risk of effect on chough (qualifying species of this SPA) near Port Ellen is unlikely as the most recent breeding bird survey in 2023 (see Appendix D.6 in the Volume 3 of the EIA Report) and wintering bird survey in 2022/23 (see Appendix D.7 in the Volume 3 of the EIA Report) suggested no presence of this species at rocky shore, coastal grassland, coastal heathland, intertidal or open water around Port Ellen. With construction best practice including a noise management plan as part of the CEMP in place it is determined that **no LSE are identified**.

5.4.1.2 Physical harm

The chough breed mostly in caves on the coastal cliffs and feed largely on invertebrates found on the coastal and grassland habitats. They were not found utilising the habitats around Port Ellen in the recent bird surveys and given their high mobility, they are unlikely affected by increased potential for collision with vessels or construction traffic, therefore **no LSE are identified**.

5.4.1.3 Pollution event

Although this designated site was considered within the ZoI for hydrological connection, chough was not found present near Port Ellen in the recent bird surveys and the marine habitat within the Proposed Development is unlikely suitable for chough. With the construction best practice including pollution prevention in the CEMP in place it is determined that **no LSE are identified**.

5.4.1.4 Generation of dust/reduced air quality

Given the absence of chough in various habitats around Port Ellen from recent bird surveys (as mentioned above), through good practice construction management measures incorporated into the CEMP to control air emissions, it is determined that **no LSE are identified**.

5.4.1.5 Introduction and spread of INNS

A Biosecurity Management Plan will be developed in which the marine biosecurity planning guidance will be followed, and certain biosecurity protocols will be adhered to as part of the CEMP. The impact of introduction or spread of INNS will therefore be negligible. As such, there are **no LSE identified**.

5.4.2 South-East Islay Skerries SAC

5.4.2.1 Underwater noise

Harbour seals use and hunt in marine habitat generally within 40-50km of their haul-out site and they have been regularly spotted at skerries to the south of Loch Leòdamais. Dredging, piling and Cardox blasting works for the proposed development will generate underwater noise impact on seals in the sea, therefore, there is a possibility of disturbance to seals in the area. This disturbance could lead to behavioural changes and problems with hunting as their acoustic detection could be interrupted while fish may move away from the construction works area reducing the prey availability for seals. As a result, **LSE are identified** possible for underwater noise on harbour seal.

5.4.2.2 Airborne noise

Acoustic impact of engine noise from movements of construction vessels (such as tug boats or barges) on Harbour seal is unlikely to be significant given that engine noise from construction vessel being continuous noise at low frequency has no significant different to those existing ferries and other vessels at Port Ellen, while some materials will be delivered by road via Port Askaig (where the vessels will go on a route far from Harbour seals) further reducing construction vessel movements around Port Ellen. With construction best practice including a noise management plan, **no LSE are identified** from airborne noise on the designated site or harbour seals.

5.4.2.3 Physical harm

It is not expected for the seals to be affected by the landside work or by the land reclamation as surveys have shown they do not use those areas of the proposed development. Additional vessels will be present for construction works which are expected to travel at low speeds within the Proposed Development area with the construction best practice including vessel navigation guidance and vessel management plan in place. Although this presents an increased risk of vessel collision with a seal, the seal is considered highly mobile and able to move away from vessels to avoid being struck by the keel and/or the propeller, thus it is considered that vessel strike with seals causing direct injury or mortality would be unlikely. As a result, **no LSE are identified** in relation to vessel strike.

5.4.2.4 Pollution event

If the pollution or spill is large in scale and/or not confined, there is the potential for far-reaching impacts if this occurs in the marine environment. In the event of more severe spills, there is the potential for direct toxicity to directly harm Harbour seals via physical contact or indirectly by affecting their foraging ability via degradation of intertidal and benthic habitat quality and contamination of their food source. Nevertheless, as part of construction best practice, the proposed development CEMP will include pollution prevention measures to confine any pollution or spill. With the best practice in place it is unlikely that any pollution, spill or run-off of materials associated with these works would impact Harbour seals or the wider SAC. Therefore, **no LSE are identified**.

5.4.2.5 Smothering (increased sedimentation)

Sediment accretion arising from dredging works is predicted to be around 10mm within the dredge area (refer to the modelled sedimentation presented in Figure A.4 in Appendix A). Within Loch Leòdamais and the beach to the northwest, accretion is predicted to be less than 0.5mm. In the broader region, accretion is predicted to be less than 0.05mm. The extent of increased sedimentation due to dredging works is localised and confined to the dredge area, therefore it is not expected to affect availability of prey species in the area functionally linked to the SAC or

cause any indirect impact to harbour seals that are regularly spotted on skerries to the south of Loch Leòdamais (where smothering is small as indicated from modelled sedimentation at ≤0.5mm). As such, **no LSE are identified** on the SAC or harbour seals.

5.4.2.6 Changes to water quality (increased turbidity)

Increases in turbidity during dredging works can lead to changes in the behaviour of harbour seal and could also impact indirectly on their habitat and prey. Harbour seals are dependent upon their eyesight during hunting and their vision is strongly affected by increases in turbidity. From the modelled maximum suspended sediment (see Figure A.1 in Appendix A) in the worst-case scenario for dredging works, the increased suspended solids levels at skerries to the south of Loch Leòdamais are predicted to be small (≤10mg/l) and unlikely to cause any adverse impact on water quality that may indirectly affecting the seals or their prey. As such, **no LSE are identified**.

5.4.2.7 Release of contaminants

During dredging, indirect impact could be caused by resuspension and transport of contaminants on water and prey quality, reducing food availability and suitability of habitat. Also, bioaccumulation from ingestion of contaminated prey could result in health issues for seals. Results of Marine Directorate pre-disposal testing of seabed samples[17] indicate that exceedances of Action Level 1 (AL1)[18] were detected for chromium, nickel, zinc and PAHs. However, the predicted sediment dispersion from dredging and the associated potential resuspension of contaminants will be limited to a small area and settled in a short time (see Figures A.1 and A.3 in Appendix A). It is also noted that a full closure bucket will be attached to the backhoe dredger to minimise spillage (refer to the proposed development's outline CEMP). With this best practice in place to minimise release/ risk of mobilisation of contaminants in dredged materials, it is considered that potential release of contaminants would be restricted as the site benefits from limited dispersion and would only affects seal's prey within a limited area, if at all given the likely concentrations once dilution is accounted for. Therefore, this indirect impact on harbour seal is expected to be low and **no LSE are identified**.

5.4.2.8 Generation of dust/reduced air quality

Through good practice construction management measures incorporated into the CEMP to control dust and air emissions, it is determined that **no LSE are identified**.

5.4.2.9 Temporary habitat loss

As the site compounds for plant and materials storage will be on land, or within the port itself, where seals are not present there is no risk of habitat loss from this storage activity. Direct loss of habitat through anchor scour and anchor chain abrasion due to temporary mooring and presence of jack up barge during construction are small in scale and not expected to cause a detrimental effect on benthic habitat quality in the region, thus it is not expected to cause an indirect impact on harbour seal or its prey. As such, there are **no LSE identified**.

5.4.2.10 Introduction and spread of INNS

A Biosecurity Management Plan will be developed in which the marine biosecurity planning guidance will be followed, and certain biosecurity protocols will be adhered to as part of the

[17] See "Port Ellen Terminal Development: Best Practicable Environmental Options Assessment Report (August 2024)" by Mott MacDonald (Document reference: 115031-MMD-PE-XX-RP-G-0003)

[18] See Table 2 in Marine Scotland Pre-disposal Sampling Guidance Version 2 – November 2017. [online] Available at: Pre-disposal+sampling+guidance.pdf (www.gov.scot)

CEMP. The impact of introduction or spread of INNS will therefore be negligible. As such, there are **no LSE identified**.

5.4.3 Laggan, Islay SPA

5.4.3.1 Airborne noise

No direct effects on the site are considered possible from airborne noise during construction as the Proposed Development is more than 2km away and construction noise is not expected to travel that far. The risk of effect on overwintering Greenland barnacle goose and Greenland white-fronted goose (qualifying species of this SPA) near Port Ellen is unlikely as the 2022/23 wintering bird survey (see Appendix D.7 in the Volume 3 of the EIA Report) suggested no presence of these two qualifying species at within 500m from the Proposed Development. Numbers of up to 6500 Greenland barnacle geese and 60 Greenland white-fronted geese were recorded at Kilnaughton Bay reported by the Argyll Bird Club to have been present in February 2020, however the data provided did not provide geographical context. It is unlikely that due to existing airborne noise/disturbance associated with operations of the ferry terminal the geese, if present are unlikely to habitually frequent the waters around Proposed Development. With construction best practice including a noise management plan as part of the Construction Environment Management Plan (CEMP) in place it is determined that **no LSE are identified**.

5.4.3.2 Physical harm

Greenland barnacle geese roost on tidal mudflats and forage on grasslands grazed by farm animals or on stubbles, whilst Greenland white-fronted geese forage in traditional peatland, grasslands, arable fields and wetlands[19]. They were not found utilising the habitats around Port Ellen in the recent wintering bird survey and given their high mobility, they are unlikely affected by increased potential for collision with vessels or construction traffic, therefore **no LSE are identified**.

5.4.3.3 Pollution event

Although the proposed development area could be functional linked habitat for Greenland barnacle goose and Greenland white-fronted goose, they were not found present near Port Ellen in the recent wintering bird survey. With the construction best practice including pollution prevention in the CEMP in place it is determined that any pollutants if entered the water would not be dispersed to impact these species or the SPA, therefore **no LSE are identified**.

5.4.3.4 Generation of dust/reduced air quality

Through good practice construction management measures incorporated into the CEMP to control air emissions, in view of absence of Greenland barnacle goose and Greenland white-fronted goose at intertidal or open water around Port Ellen from recent wintering bird survey, it is determined that **no LSE are identified**.

5.4.3.5 Introduction and spread of INNS

A Biosecurity Management Plan will be developed in which the marine biosecurity planning guidance will be followed, and certain biosecurity protocols will be adhered to as part of the CEMP. The impact of introduction or spread of INNS will therefore be negligible. As such, there are **no LSE identified**.

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

5.4.4 Rinns of Islay SPA and Ramsar

5.4.4.1 Airborne noise

As the disposal site is 4km south of the SPA, and is offshore, it is unlikely that the sound of a single additional vessel in waters which already have several vessels present, will cause alarm to the designated bird features of the sites. Additionally, there would be little reason for the bird species to be 4km offshore at the disposal site, it would not be expected that engine noise from the vessel could travel to shore. Therefore, **no LSE are identified.**

5.4.4.2 Physical harm

As the disposal site is 4km offshore to the south of the SPA, the vessel would not be moving at speed due to the nature of its activity, and there would be little reason for the bird species to be at the disposal site, no physical harm from construction is expected. Therefore, **no LSE are identified.**

5.4.4.3 Pollution event

Pollution events are related to the potential for spill of fuels and other chemicals from the dredging vessel during disposal operations. With the construction best practice including pollution prevention in the CEMP in place it is determined that if any pollutants entered the water, this would not be in large enough amounts to affect the designated site or its features. Therefore, **no LSE are identified**.

5.4.4.4 Changes to water quality (increased turbidity)

At the proposed disposal site (see Figure A.2 in Appendix A), although the suspended sediment plume would be spread over a greater distance than at the proposed development area (a sheltered area) as the relatively strong tidal currents and wind disperse the plume, the predicted maximum SSC within the disposal area is around 10mg/l only. From the SCC time series plot at the proposed disposal ground (see Figure A.3 in Appendix A) peaks in SSC coincide with disposal persist for around 10 minutes only. The SSC concentration beyond the disposal area is 1-3mg/l within 1-3km from the proposed disposal ground and reduces to <1mg/l beyond 3km. This shows that the elevation of suspended sediment level at the SPA which is 4km from the disposal site is negligible.

Although one of the designated features of the site, common scoter is a diving seaduck which could be affected by changes to turbidity, given this small and short-lived change to suspended sediment level this species would unlikely be affected. It would not be expected for the other qualifying bird species to be offshore on the sea surface. Therefore, **no LSE are identified**.

5.4.4.5 Introduction and spread of INNS

A Biosecurity Management Plan will be developed in which the marine biosecurity planning guidance will be followed, and certain biosecurity protocols will be adhered to as part of the CEMP. The impact of introduction or spread of INNS will therefore be negligible. As such, there are **no LSE identified**.

5.4.5 Eilean na Muice Duibhe SPA and Ramsar

5.4.5.1 Airborne noise

The risk of effect on overwintering Greenland white-fronted goose (qualifying species of these designated sites) near Port Ellen is unlikely as the 2022/23 wintering bird survey (see Appendix D.7 in the Volume 3 of the EIA Report) suggested no presence of this species at intertidal or open water around Port Ellen, though peak count of 60 Greenland white-fronted geese was

recorded at Kilnaughton Bay by the Argyll Bird Club in February 2020. With construction best practice including a noise management plan as part of the Construction Environment Management Plan (CEMP) in place it is determined that **no LSE are identified**.

5.4.5.2 Physical harm

Greenland white-fronted goose forages in traditional peatland, grasslands, arable fields and wetlands[19]. It was not found utilising the habitats around Port Ellen in the recent wintering bird survey and given its high mobility, it is unlikely affected by increased potential for collision with vessels or construction traffic, therefore **no LSE are identified**.

5.4.5.3 Pollution event

Although the proposed development area could be functional linked habitat for Greenland white-fronted goose, it does not forage in the habitats around Port Ellen and was not found present in the recent wintering bird survey. With the construction best practice including pollution prevention in the CEMP in place it is determined that any pollutants if entered the water would not be dispersed to impact this species or the designated sites, therefore **no LSE are identified**.

5.4.5.4 Generation of dust/reduced air quality

Through good practice construction management measures incorporated into the CEMP to control air emissions, in view of absence of Greenland white-fronted goose at intertidal or open water around Port Ellen from recent wintering bird survey, it is determined that **no LSE are identified**.

5.4.5.5 Introduction and spread of INNS

A Biosecurity Management Plan will be developed in which the marine biosecurity planning guidance will be followed, and certain biosecurity protocols will be adhered to as part of the CEMP. The impact of introduction or spread of INNS will therefore be negligible. As such, there are **no LSE identified**.

5.5 Screening for Likely Significant Effects - Operation

5.5.1 The Oa SPA

5.5.1.1 Permanent habitat loss

As chough was not found present near Port Ellen and the marine habitat within the Proposed Development is unlikely suitable for chough, effect of permanent loss of marine habitat from land reclamation or change to mudflat exposure will be negligible for this species. As such, **no LSE are identified**.

5.5.1.2 Introduction and spread of INNS

Taking the standard practice measures including biosecurity protocols and compliance with ballast water management requirements into account, it is unlikely that INNS would impact the designated site or qualifying species and thus it is determined that **no LSE are identified**.

5.5.2 South-East Islay Skerries SAC

5.5.2.1 Permanent habitat loss

Harbour seals are not expected to be directly impacted by permanent loss of habitat due to the land reclamation as they do not use those areas of the proposed development.

The potential for reduced mudflat exposure from changes in flow characteristics and current speeds of the tides and surrounding area were investigated as part of the sediment dispersion modelling. The changes in flow characteristics and current speeds for flood and ebb flows during the simulation of the spring tide with wind were compared (see Figures A.5 to A.8 in Appendix A). These plots show a localised small increase (0.05m/s) in current speed on the northern side of the proposed development, and a reduction to the south of the proposed development by approximately 0.1 m/s and almost 0.2 m/s reduction at the new pier location. The changes in current speed towards Loch Leòdamais are generally similar within and without the proposed development. Over a wide area, the changes in current speed attributable to the proposed development are small and the simulation results indicate that the proposed development is not likely to cause adverse effect on the extent of mudflat exposure. Therefore **no LSE are identified**.

5.5.2.2 Reduction in foraging habitat and prey availability

From the wave modelling result comparing the changes in wave conditions attributable to the proposed development, it is predicted that the wave conditions to the south of the development where seals are present at the Skerries would remain generally unchanged. The simulation results indicate that the proposed development is not likely to cause adverse changes to wave regimes or local pattern of currents, tidal energy or sediment dynamics. Therefore **no LSE are identified**.

5.5.2.3 Introduction and spread of INNS

Taking the standard practice measures including biosecurity protocols and compliance with ballast water management requirements into account, it is unlikely that INNS would impact the designated site or qualifying species and thus it is determined that **no LSE are identified**.

5.5.3 Laggan, Islay SPA

5.5.3.1 Permanent habitat loss

Whilst the Greenland barnacle goose and Greenland white-fronted goose, the two bird features of Laggan, Islay SPA, may be found in intertidal areas there is no evidence of their presence in the within the Proposed Development area. As such it is unlikely that they utilise the area of land reclamation for foraging and **no LSE are identified**.

5.5.3.2 Introduction and spread of INNS

Taking the standard practice measures including biosecurity protocols and compliance with ballast water management requirements into account, it is unlikely that INNS would impact the designated site or qualifying species and thus it is determined that **no LSE are identified**.

5.5.4 Rinns of Islay SPA and Ramsar

5.5.4.1 Introduction and spread of INNS

Taking the standard practice measures including biosecurity protocols and compliance with ballast water management requirements into account, it is unlikely that INNS would impact the designated site or qualifying species and thus it is determined that **no LSE are identified**.

5.5.5 Eilean na Muice Duibhe SPA and Ramsar

5.5.5.1 Permanent habitat loss

Whilst the Greenland white-fronted goose, one of the named features of the SPA and Ramsar, may be found in intertidal areas there is no evidence of their presence in the within the

Proposed Development area. As such it is unlikely that they utilise the area of land reclamation for foraging and **no LSE are identified**.

5.5.5.2 Introduction and spread of INNS

Taking the standard practice measures including biosecurity protocols and compliance with ballast water management requirements into account, it is unlikely that INNS would impact the designated site or qualifying species and thus it is determined that **no LSE are identified**.

5.6 Summary of Stage 1 Screening

Further to screening undertaken in Sections 5.4 and 5.5, potential LSE were identified during the construction phase only, for the following sites and potential risks:

- South-East Islay Skerries SAC
  - Underwater noise

Despite being able to mitigate for these potential effects, it is a requirement of the HRA process for mitigation to not be taken into consideration during a Stage 1 Screening. Therefore, a Stage 2 Appropriate Assessment has been undertaken to outline what mitigation will be adhered to in order to avoid affecting the integrity of the designated site.

6 Stage 2: Appropriate Assessment

This section sets out the potential effects of the construction phase of the Proposed Development. Considerations are made in terms of potential effects of the Proposed Development alone and also in-combination with other plans and projects in the area. The potential effects are limited to those European sites and receptors identified as having potential LSE above in Section 5.3.1. Appropriate mitigation measures and any specific mitigation plans that will be implemented to avoid or minimise impacts are detailed within the section below and assessed when determining whether the Proposed Development has an adverse effect on site integrity. These have been incorporated into an overarching Outline CEMP for the Proposed Development.

6.1 South-East Islay Skerries SAC

The following potential impacts have been identified as resulting in potential LSE on Harbour seal, the qualifying species of the SAC:

- Construction phase:
  - Underwater noise from construction works

6.1.1 Underwater noise

Likely significant effects of underwater noise are identified from marine construction works including dredging, piling and Cardox blasting activities. The Proposed Development is located 4.4 km east/north-east of the South-East Islay Skerries SAC, meaning it may affect the harbour seals that the SAC is designated for.

Disturbance can affect seals directly through behavioural changes such as flight/flee response and displacement from foraging grounds. Displacement could lead to less favourable habitats and foraging grounds being utilised which could lead to further travel required between foraging and haul-out sites, potentially affecting survival rates due to either less food availability, greater energy use between hunting and resting area, and overall population numbers.

Underwater noise modelling has been undertaken within the EIA (Appendix D.9 of the EIA Report) for the Proposed Development as the marine construction works will generate continuous and impulsive underwater noise (see Table 6-1).

Table 6-1: Assessed marine construction works and their type of underwater noise

Type of noise	Piling			Pre-dredging		Dredging	
	Vibropiling	Rock socket pile	Impact piling	Rock breaking	Cardox blasting	Backhoe	Trailer suction hopper dredger
Continuous noise	✓	✓	X	X	X	✓	✓
Impulsive noise	X	X	✓	✓	✓	X	X

Harbour seals are classified within the Phocid carnivores in water (PCW) hearing group. The underwater noise modelling has been carried out assuming both static and fleeing seals for each of the activities in the table above (Table 6-1) and has determined a distance at which Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) would occur for the

seals (Table 6-2). For the continuous noise activities the distances are shown as cumulative sound levels over a 24-hour period, for the impulsive noise activities the sounds are cumulative over the predicted period of working.

Table 6-2: PTS and TTS distances (m) for continuous noise sources and static receptors for PCW hearing group (SEL_{24hrs})

	PTS		TTS	
	avg.	max.	avg.	max.
Vibropiling sheet pile [700mm]	40	40	120	280
Vibropiling tubular (900mm dia)	---	--	40	70
Vibropiling tubular (1200mm dia)	10	20	110	160
Rock socket pile	---	--	30	40
Dredging with TSHD	<10	<10	70	100
Dredging with backhoe	---		40	40
Cumulative*	10	20	150	260

* Vibro piling, dredging with TSHD and dredging with backhoe

For continuous noise sources the maximum distance at which PTS is predicted to occur for the seals would be 40m, and maximum distance for TTS from a single activity is predicted to be 280m.

Table 6-3: PTS and TTS distances (m) for impulsive noise sources and static receptors for PCW hearing group

		PTS		TTS	
		avg.	max.	avg.	max.
Impact Piling (700mm)	**SEL_{cum}**	160	430	790	1700
	L_{Peak}	<10	<10	20	30
Impact Piling (1200mm)	**SEL_{cum}**	320	1300	580	1900
	L_{Peak}	-	-	<10	<10
Cardox blasting	**SEL_{cum}**	130	260	400	1100
	L_{Peak}	20	30	50	960
Rock breaking / Rock Wheeling	**SEL_{cum}**	220	580	550	1900
	L_{Peak}	-	-	-	-

For impulsive noise sources and the maximum predicted distance for PTS is 1.3km, and for TTS is 1.9km (Table 6-3). For Cardox blasting only a disturbance distance was predicted to be a maximum of 1.6km, with TTS and PTS a maximum of 1.1km and 0.26km respectively.

When considering individuals fleeing from the noise source Table 6-4, the maximum SEL_{cum} distance would be from Cardox blasting and the resulting maximum PTS and TTS distances reduced to 180m and 780m respectively.

Table 6-4: PTS and TTS SEL_{cum} distances (m) for impulsive noise sources and fleeing receptors for PCW hearing group

Impact Piling (700mm)		Impact Piling (1200mm dia)		Cardox blasting		Rock breaking / Rock Wheeling	
PTS	TTS	PTS	TTS	PTS	TTS	PTS	TTS
<10	50	20	120	180	780	<10	30

In reality the marine fauna receptor to the underwater noise is likely to behave to a degree somewhere between both remaining static or fleeing directly away from the noise source. It is expected that healthy marine animals are likely to swim away from the noise source, hence decreasing the possibilities of sustaining injuries. The underwater noise model only takes into account any harm that could occur to marine fauna as a result of the marine construction works and does not include disturbance (such as a reduction in foraging), which is likely to occur over a much wider area.

As a result of the risk of disturbance or potentially harm on harbour seals in close proximity (within 1km) of the marine construction works, the following site-specific mitigation measures will be implemented. These measures have been incorporated into flow charts for ease of use (see **Appendix C**).

Mitigation measures related to impact piling, rock breaking/rock wheeling, vibropiling, rock socket piling and dredging

- A mitigation zone no less than 500m in radius will be established[20]. Either Marine Mammal Observer (MMO) or Passive Acoustic Monitoring (PAM) will be present on site before and during the works to monitor the presence of likely marine mammals (in line with Chapter 7: Ecology). It is anticipated that harbour seals may be in the waters close to the construction location. Thus additional consideration has been given to ensure sufficient protection of harbour seals and the practicality of the mitigation measures for the proposed development.
- Prior to starting any noise-generating activities, a pre-construction activity search will be made to detect the presence of any marine mammals within the mitigation zone. Visual observation will be undertaken for 30 minutes in daylight conditions (Beaufort sea state 4 or less) by suitably trained (JNCC methods) and dedicated observers.
  - Where conditions are unsuitable for visual observations (darkness, fog reducing visibility to <500m, or sea states above Beaufort sea state 4) PAM will be utilised by a trained PAM operator to monitor mitigation zone for a minimum of 30 minutes[21];
  - Should marine mammals be detected visually or acoustically, the start of operations will be delayed until 20 minutes after the last sighting of a marine mammal within the mitigation zone.
  - Should harbour seals in water remain in the mitigation zone for 20 minutes after initial detection (20 minutes after first delay), construction activity may commence through the implementation of the soft start procedure.
- A soft start is a gradual ramp up in power of equipment to avoid sudden increase of noise levels. During the soft start process, the mitigation zone will be monitored visually and/or acoustically to detect marine mammal behaviours.

[20] See Section 1.5 of JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise. Available at: JNCC Resource Hub

[21] See section 2.1 of JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise. Available at: JNCC Resource Hub

  - The soft start duration will be a minimum of 20 minutes. Should marine mammals be detected visually and/or acoustically within the mitigation zone, the construction activity will not further increase the power of the equipment until marine mammals are no longer detected within the mitigation zone.
  - Should harbour seals in water remain within the mitigation zone after 40 minutes since soft-start has commenced, it is inferred that the harbour seals are not adversely affected by the noise produced. Hence, the construction activity can be increased to full power.
  - If any marine mammal enters the mitigation zone when the construction activity is in full power, the construction activity may continue in full power as it is deemed that the marine mammal entered the mitigation zone "voluntarily".
- If there is a pause in construction activity for more than 10 minutes, the above process will be repeated (pre-construction activity search and soft start procedures).
  - [Deleted].
  - [Deleted][22].
- No piling or rock breaking work will commence during periods of darkness or in poor visibility. However, a distinction is made for piling that commences during times of good visibility that continues into a period of poor visibility/darkness. Assuming the works are continuous, no additional mitigation is required. In the case of construction works commencing during darkness or poor visibility, the works would need to be demonstrated as essential for commercial viability and enhanced detection of marine mammals would be required (e.g. increased number of PAM systems and PAM operatives for the commencement of works during darkness or poor weather conditions)[23].

Mitigation measures related to Cardox blasting

- Due to Cardox being classed as an explosive, the use of Cardox and the mitigation measures implemented are considered separately. JNCC (2010) specified a 1km in radius for the mitigation zone of explosives. However, it is also stated that the radius of the mitigation zone may be reduced, or increased, if there is evidence to support this change[24]. As Cardox detonations produce lower noise levels compared to conventional explosives, the mitigation zone is reduced to 800m and is considered conservative and appropriate for the proposed development.
- Prior to starting Cardox detonations, a pre-detonation search is required to detect the presence of any marine mammals within the mitigation zone. Visual observation will be undertaken for 60 minutes in daylight conditions (Beaufort sea state 4 or less) by suitably trained (JNCC methods) and dedicated observers.
  - Where conditions are unsuitable for visual observations (darkness, fog reducing visibility to <800m, or sea states above Beaufort sea state 4) PAM will be utilised by a trained PAM operator to monitor mitigation zone for a minimum of 60 minutes[25];
  - Should marine mammals be detected visually or acoustically, the start of detonation will be delayed until 20 minutes after the last sighting of a marine mammal
  - [Deleted].

[22] See section 2.6 of JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise. Available at: JNCC Resource Hub

[23] See section 4 of JNCC (2010). Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise. Available at: JNCC Resource Hub

[24] See Section 2.1 of JNCC (2010). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. Available at: JNCC Resource Hub.

[25] See Section 2.3 of JNCC (2010). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. Available at: JNCC Resource Hub.

- The detonation of multiple Cardox charges will be done sequentially to reduce the cumulative effect of the charges and lessening the adverse noise impacts.
- A post-detonation search will be done within the mitigation zone for a minimum of 15 minutes after the last detonation to look for any evidence of injury to marine life, with any unusual observations noted in the report.

Other general mitigation measures:

- During construction, the contractor should record daily log of seal, cetacean, and basking shark sightings and report them.
- Maintaining records of plant in operation and their locations;
- Providing tool-box talks to workers for recognising designated feature (Harbour seal) and reporting environmental incidents.

Additionally, if adherence to the above mitigation measures is ensured, it is not considered that any adverse effects on the integrity of the SAC will occur.

6.2 Summary of Stage 2 Appropriate Assessment

It is anticipated that with the implementation of the mitigation measures described above, there will not be any adverse effects on the integrity of South-East Islay Skerries SAC and its associated features.

6.3 In-combination Assessment

Under the Habitats Regulations, it is a requirement to consider any other projects or plans that could present a significant effect on a designated site or feature when considered alone or in-combination with the Proposed Development. Whilst there is no legal definition of what constitutes a plan or project for the purposes of the Habitats Regulations, Projects on the National Infrastructure's (PINS) Advice Note 10[26] advises that the following plans/projects should be taken into account:

- Projects under consultation;
- Permitted application(s) not yet implemented;
- Submitted application(s) not yet determined; and
- PINS programme of projects.

Following a search of the Marine Directorate planning portal using the above criteria[27], two projects were identified for consideration of in-combination effects in this HRA:

- Pontoon – Lagavulin Bay, Isle of Islay (00009185)
- West Islay Tidal Energy Park

These projects are screened for potential in-combination effects in Table 6-5 below.

[26] Advice Note 10; Habitats Regulations Assessment relevant to nationally significant infrastructure projects. [Online} Available at: Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects | National Infrastructure Planning (planninginspectorate.gov.uk) [Accessed April 2024]

[27] Searches for in-combination projects were made during the week commencing 22nd April 2024

Table 6-5: Projects screened in for in-combination effects

Plan or Project	Approximate distance from the Proposed Development area	Application Reference	Description	Screened in (✓ or X)	Justification for screening decision
Pontoon – Lagavulin Bay, Isle of Islay	3.4km	00009185	A marine licence application to put in place 6 anchor moorings (steel) and a floating pontoon.	X	The licence has been granted from 2022 – 2047 and is at the licence stage. Therefore, there is a chance of the programme overlapping with the Proposed Development. Due to the close proximity, it is possible that the Project could impact the same receptors as the Proposed Development. During construction and operation, mitigation outlined in Section 6.1.1 and Appendix B will be adhered to for the Proposed Development, which avoids the occurrence of any adverse effect on the integrity of the designated sites and associated interest features. It is considered that this mitigation is sufficient to rule out any potential in-combination effect from both projects.
West Islay Tidal Energy Park	3.7km	04966	This application is for the construction and operation of a tidal generating station, consisting of tidal energy convertors and associated cabling along the seabed, landing at Kintra on Islay. The foundation for each energy convertor will be (pin) piled to the seabed.	X	The licence has been granted from 2018 – 2037 and is at the post-consent stage. Therefore, there is a chance of the programme overlapping with the Proposed Development. Due to the close proximity, it is possible that the Project could impact the same receptors as the Proposed Development. During construction and operation, mitigation outlined in Sections 6.1.1 and Appendix B will be adhered to for the Proposed Development, which avoids the occurrence of any adverse effect on the integrity of the designated sites and associated interest features. It is considered that this mitigation is sufficient to rule out any potential in-combination effect from both projects.

As a result of the above screening exercise, no other projects have been identified as having the potential for in-combination effects when considered in line with the Proposed Development. As a result, no further assessment has been made.

7 Summary and Conclusion

Following this HRA, it is considered that the proposed development will not have any adverse effects on the overall integrity of the European sites and their features either alone, or in-combination. This is due to the nature of the works and also the mitigation measures outlined above in Section 6.

It should be noted that this HRA has been produced based on project information available at the time of writing (September 2024). Therefore, should any aspects of the project change (including construction methodology and programme), this HRA should be revisited to re-assess potential effects.

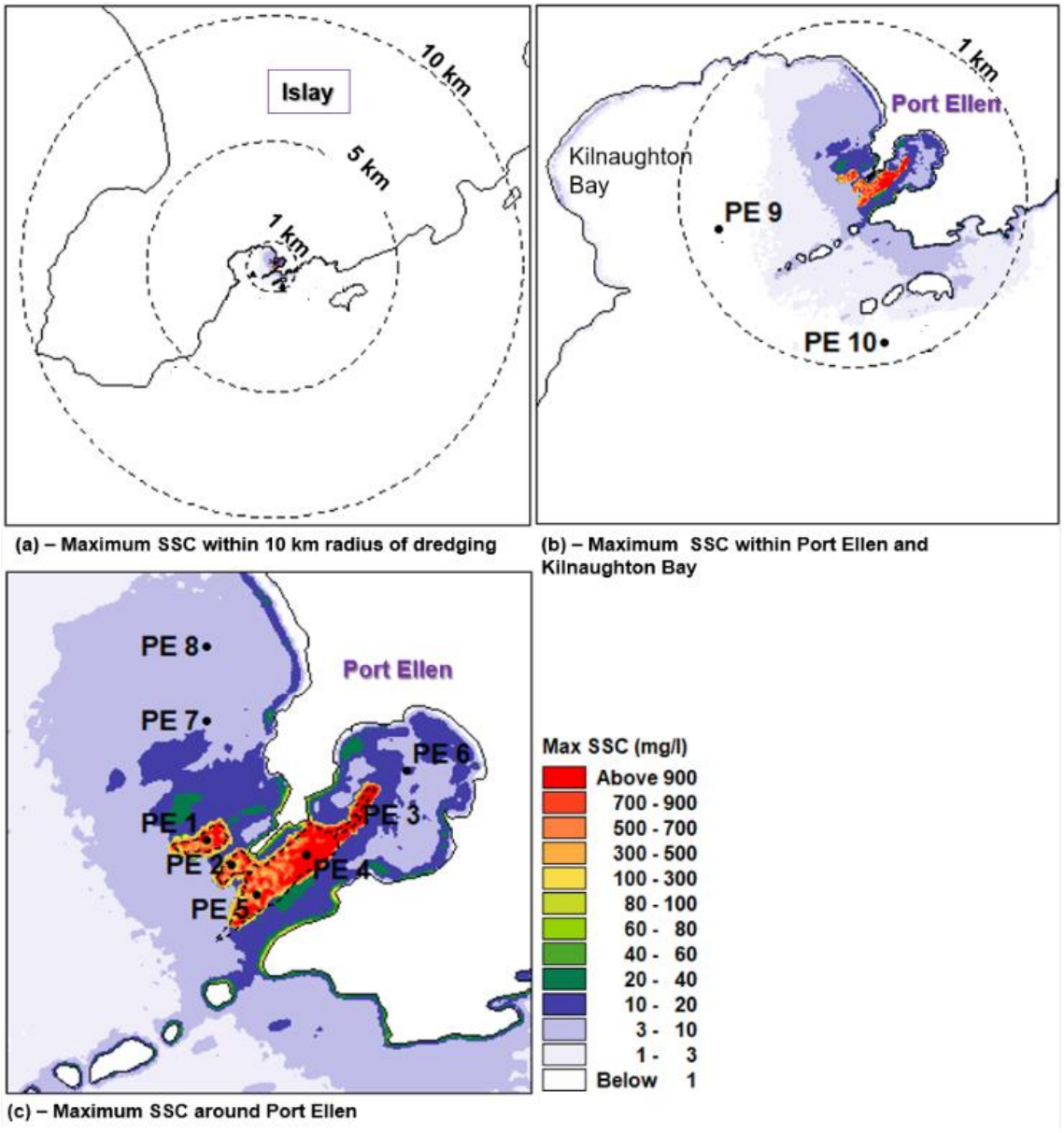
A. Sediment dispersion modelling result

This appendix presents the relevant sediment dispersion modelling under worst-case scenario and hydrodynamic modelling results extracted from the Appendix E.1 in Volume 3 of the EIA Report which originated from “Dredging and Sediment Dispersion Modelling V6” report (Mott MacDonald, 2024) (Document reference: 115031-MMD-PE-ZZ-RP-W-0001).

A.1 Sediment dispersion

A.1.1 Proposed development area

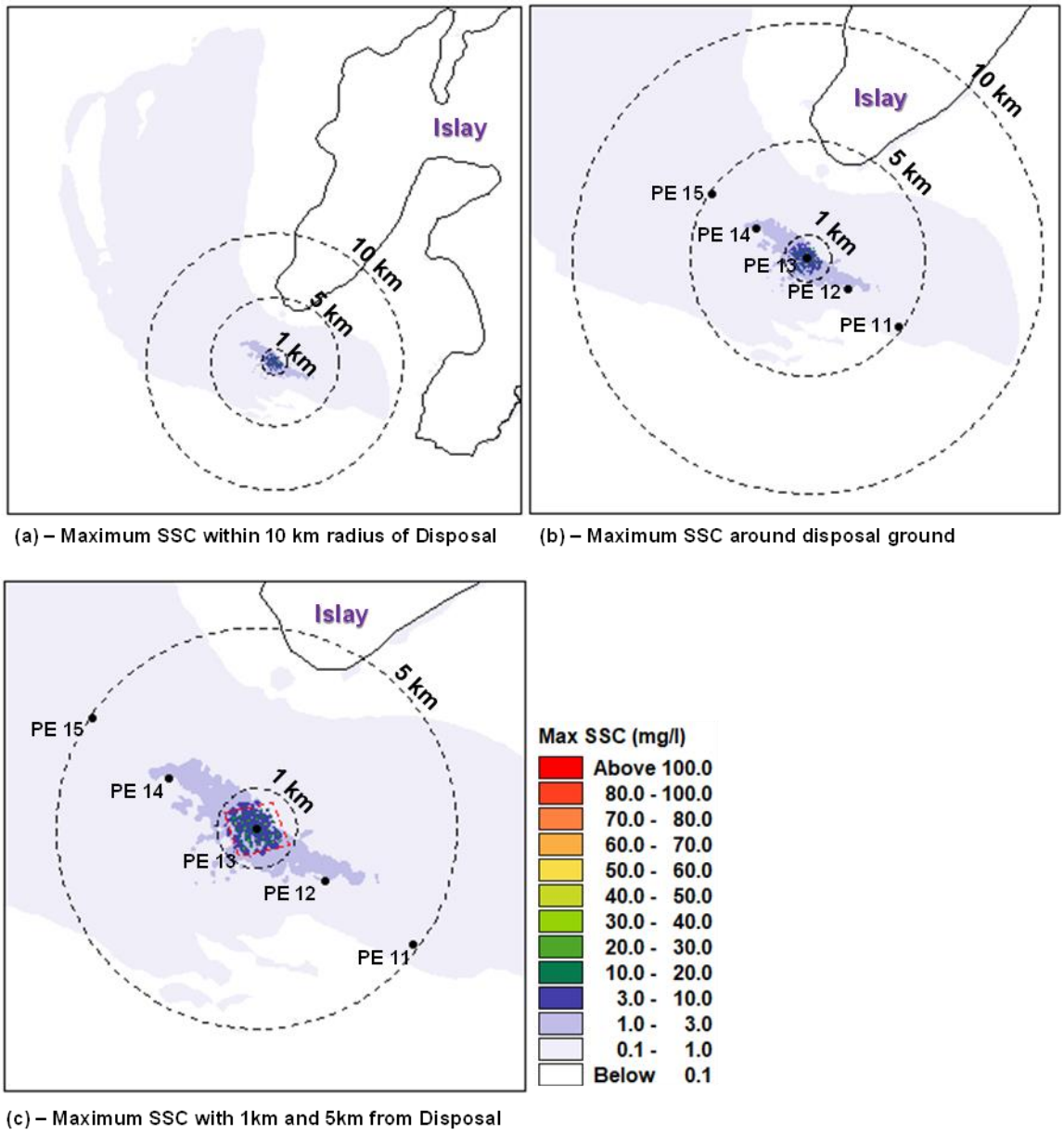
Figure A.1: Proposed development area - modelled maximum SSC for 70% fines with wind



Source: Mott MacDonald, 2024

A.1.2 Proposed disposal site

Figure A.2: Proposed disposal site - modelled maximum SSC for 70% fines with wind



(a) – Maximum SSC within 10 km radius of Disposal

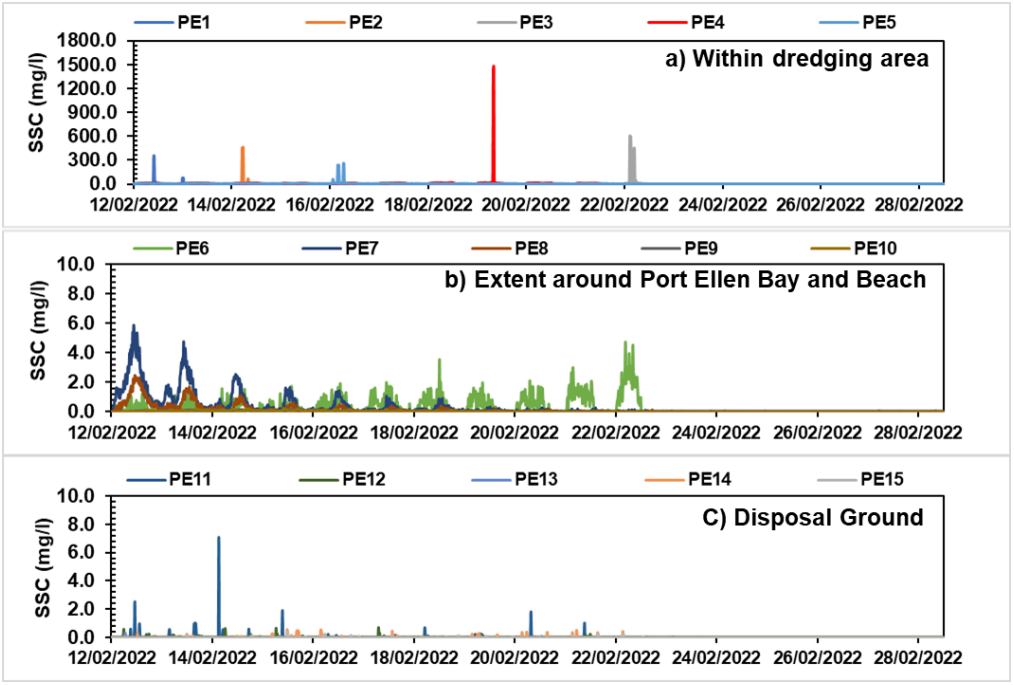
(b) – Maximum SSC around disposal ground

(c) – Maximum SSC with 1km and 5km from Disposal

Source: Mott MacDonald, 2024

A.1.3 Time series plot

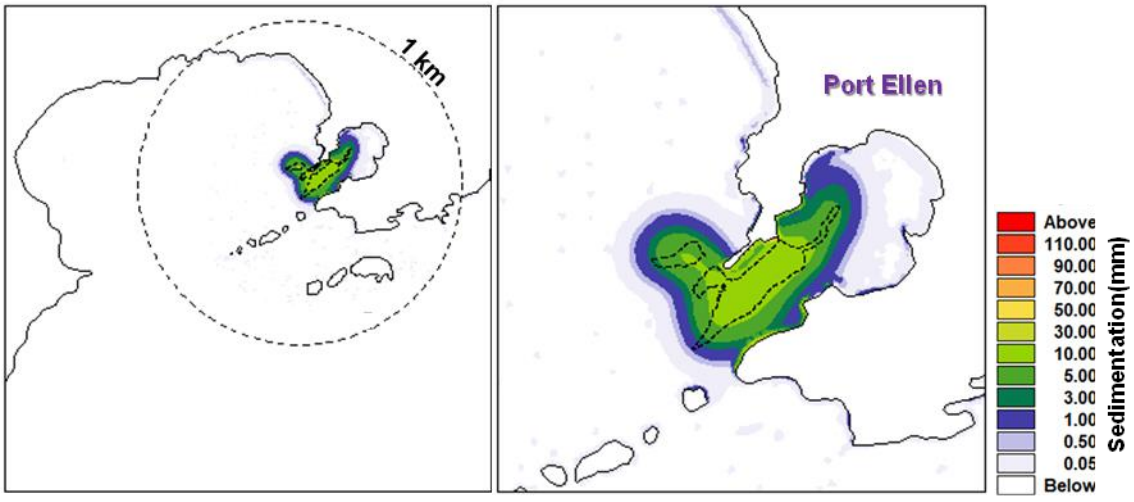
Figure A.3: Modelled SSC during dredging and disposal operations at the selected locations within (a) the dredged area, (b) around Loch Leòdamais (Port Ellen Bay) and (c) at the disposal ground for 70% fine fraction for tide-plus strong wind



Source: Mott MacDonald, 2024

A.2 Sedimentation modelling results

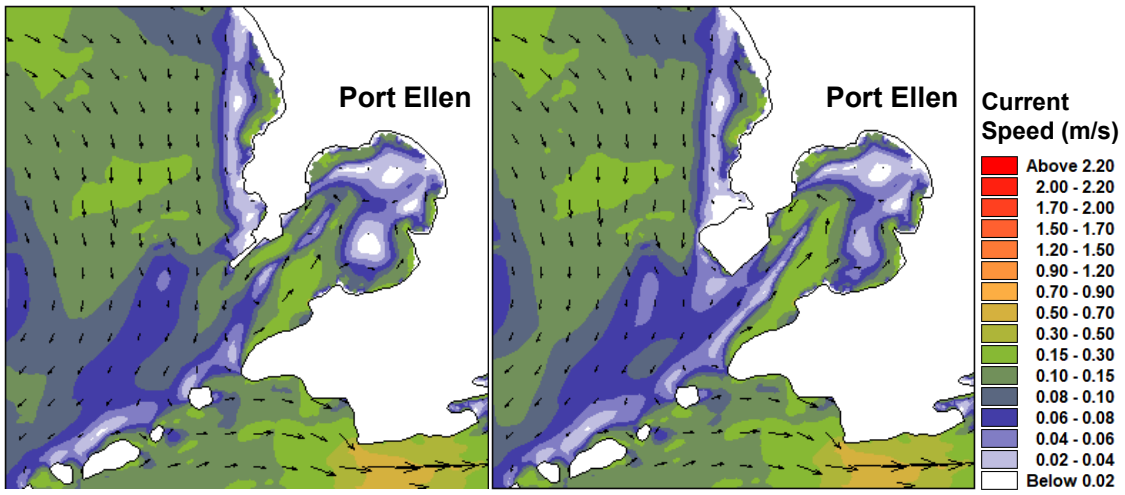
Figure A.4: Modelled sedimentation at the end of dredging for 70% fine fraction and with wind



Source: Mott MacDonald, 2024

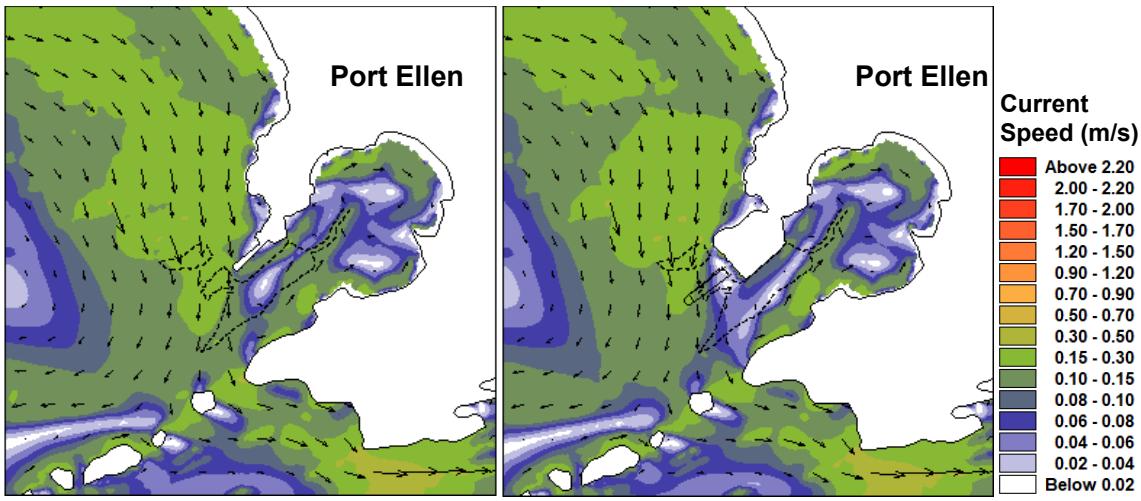
A.3 Hydrodynamics modelling results

Figure A.5: Tide and wind-driven spring tide currents around Port Ellen for baseline (left) and proposed development (right): flood tide



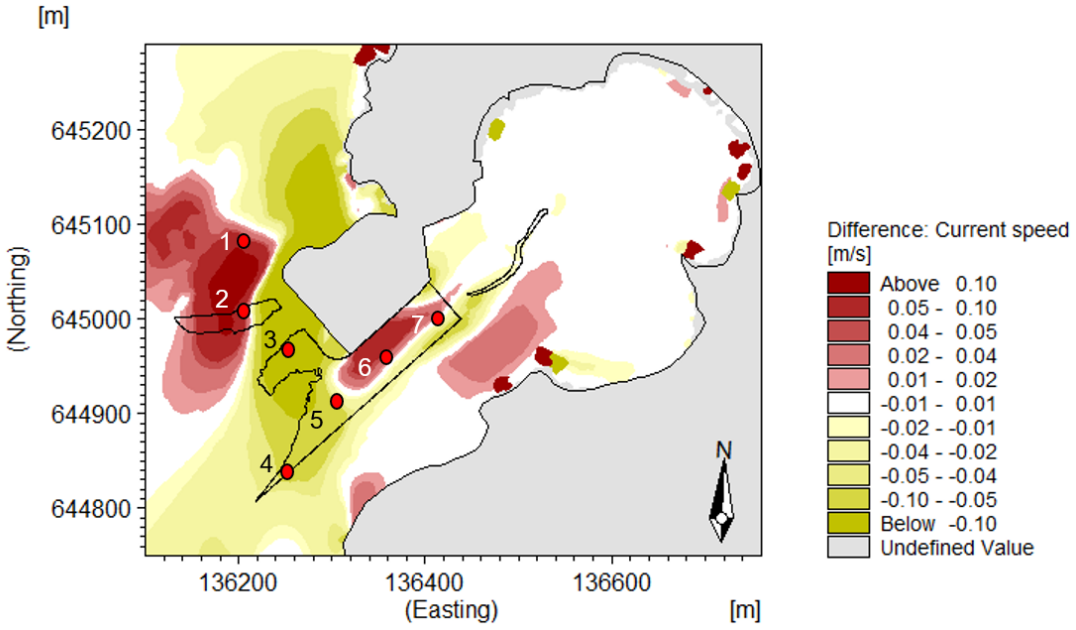
Source: Mott MacDonald, 2024

Figure A.6: Tide and wind-driven spring tide currents around Port Ellen for baseline (left) and proposed development (right): ebb tide



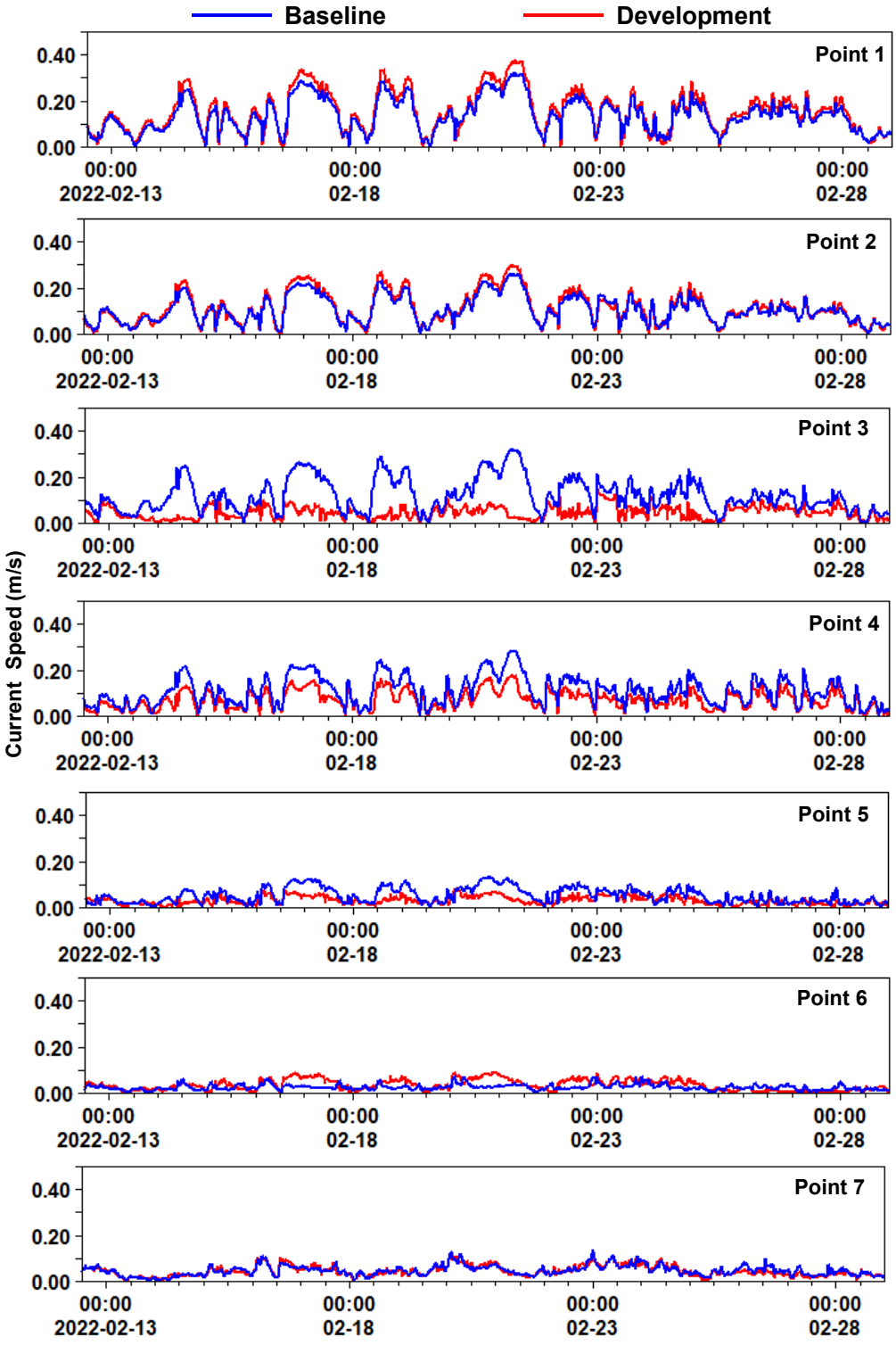
Source: Mott MacDonald, 2024

Figure A.7: Selected locations for extraction of current speed for baseline and with development



Source: Mott MacDonald, 2024

Figure A.8: Comparison of current speed between Baseline and Port Ellen Development at the seven locations around the development (refer to Figure A.7)



Source: Mott MacDonald, 2024

B. Best practice and standard practice measures

This appendix presents the relevant best practice and standard practice measures which would be essential components of the Proposed Development that are set out in the Outline Construction Environment Management Plan (see EIA report, Volume 3, Appendix A.5), and have been taken into consideration during Stage 1 Screening of this HRA.

B.1 Pollution Prevention Control

Good practice guidance[28] (e.g. CIRIA guidance C584 - Coastal and Marine Environmental Site Guide) will be followed to ensure controls are in place to avoid adverse effects.

B.1.1 Potential Pollution Sources, Release Scenarios and Preventative Measures

Prevention measures have been developed based on a review of the construction activities an assessment of potential pollutant sources and release scenarios. These are set out in Table.

Table B.1: Potential Pollution Sources, Release Scenarios and Preventative measures

Potential Pollutant Source	Pollution Release Scenario	Prevention Measure
Dredging	● Release of / risk of mobilisation of contaminants in dredged materials	Dredged material obtained and removed would be tested and disposed of appropriately under a marine licence for dredging and disposal. A full closure bucket will be attached to the backhoe dredger to minimise spillage. Additionally, further discussion with Marine Directorate on additional measures and conditions required will be undertaken a part of the dredge licensing.
Concrete	● Release of contaminated concrete to the environment	The following measures will be required to prevent discharges of cementitious materials and alkaline wastewaters to the surface water drainage system, subsoil and groundwater or directly to local watercourses and the marine environment: ● Risk assessments for wet concreting will be completed by the Principal Contractor prior to works being carried out; ● Concrete washout will not drain to any waterbody, drainage channel or marine environment. Impermeable areas will be designated for concrete handling/mixing and for washing and cleaning, at least 10m from surface drainage systems, local waterbodies and marine environment; ● There will be a designated area for the washout of concrete wagons, shoots and mortar bins at the site. This will be either a lined skip or a pit lined with an impervious membrane to prevent the escape of the alkaline and silty waters entering the groundwater, surface water or marine environment; and ● Excess concrete remaining in the delivery wagon at the end of a pour will be returned to a designated collection area. Once work sites are completed any solid concrete in the washout area will be broken out and used either as suitable fill or disposed of to a licensed waste facility.

[28] Engineering in the Water Environment, Good Practice Guide – Temporary Construction Methods" by SEPA

Potential Pollutant Source	Pollution Release Scenario	Prevention Measure
Welfare facilities	● Release of untreated waste to the environment	Effluent from the site compound will be collected in an effluent holding tank and removed from site as controlled waste. The foul effluent can only be removed from site by licensed waste disposal companies and the effluent must be taken to a fully recognised and licensed sewerage treatment works.
Fuel, Oil and Chemicals	● Failure of fuel, oil and chemical storage facilities; ● Theft & Vandalism; ● Leaks and spills from construction vehicles	The following pollution prevention measures will be required: ● Adherence to all Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs); ● Good housekeeping during construction including the use of drip trays underneath plant and pumps, and the inspection of all plant for fuel and oil leaks before being accepted for delivery into the construction site; ● Re-fuelling points will be located away from water bodies (>10m), in line with SEPA guidelines; ● All fuel tanks and oil drums will be bunded with imperious material. Where more than one container is stored, the bund will be capable of storing 110% of the largest tank or 25% of the total storage capacity, whichever is the greater. Bunds will be constructed in accordance with PPG 2. Any valve, filter, sight gauge, vent pipe or other ancillary equipment must be kept within the bund when not in use. No drainage valve may be fitted to the bund for the purpose of draining out rainwater; ● All tanks and containers will be kept in a secure compound and be protected from vandalism and will be clearly marked with their contents. Stores shall be located at least 10m from any waterbody; ● A designated COSHH (Control of Substances Harmful to Health) store will be installed on site. This will be suitably ventilated and bunded according to Health Safety and Environment (HSE) guidance and positioned at least 10m from any watercourse or surface water drain. ● All mobile plant will be refuelled in a designated area on a temporary bunded impermeable surface and away from drains. In case of any spillages there will be a spill response kit available at each refuelling point and within each machine working within the site. Where it is impractical to refuel within a bunded area, a drip tray will be available to catch any spills caused by over fuelling; ● Oil absorbers and grab packs will be available on all vehicles and further materials, including booms; ● An Environmental Emergency Response Plan will be prepared by the Principal Contractor prior to construction. This will be issued as a tool box talk and kept in site offices for consultation. All site personnel will be trained in the process for dealing with spills on site. ● An emergency response contractor will be identified and on standby during the works in the event of any spill/incident in coastal waters. ● The storage of materials in the construction compound and work sites will be controlled in a such a manner to ensure that materials are not damaged prior to use either through vehicle or people movements or through exposure to the elements. ● The storage and activities involving the use of materials, chemicals and oils shall also be inspected daily to ensure all relevant controls are in place and effective in preventing pollution of the water environment.

Potential Pollutant Source	Pollution Release Scenario	Prevention Measure
		● All fuel, oil and chemical deliveries will be supervised by a refuelling marshal who will be trained to deal with any spillage to prevent a pollution problem occurring.
Materials stored on site being blown/washes away	● Materials blown /washes away pollutes air, land, and water environment.	● All building, and construction materials will be stored at designated locations within the site compound, this will be marked up on a site environmental plan that will be posted on the site office wall. All storage will be established, implemented and maintained according to best practice as set out in current GPPs/PPGs with regard to containment at source. Spill kits will be located within the site compound and be clearly signed. ● Stockpiles of materials will be positioned at least 10m away from sensitive receptors where possible and suitable measures implemented to prevent runoff and dispersion if left for any length of time. Any powders will be stored in sealed bags or silos prior to use. Dust suppression measures to be used where required.
Movement of vehicles, plant and machinery	● Debris/mud/dust from construction site entering surrounding water environment	● Site accesses and local roads will be monitored daily for dust/mud as a result of plant movement, and any debris present will be cleaned up immediately. ● Water from wheel washes/washdown areas will not be permitted to enter the local water environment untreated, nor will it be permitted to enter surface water drainage.

B.1.2 General Pollution Prevention Measures

There are some general pollution prevention measures which will be implemented:

- A Surface Water Management Plan in accordance with good practice guidance and SEPA General Binding Rules will be required for the construction phase and will be developed by the Principal Contractor.
- All staff will undergo toolbox talks regarding pollution prevention.
- The Principal Contractor will set-up a monitoring and response programme to determine the effectiveness of measures applied to control water movement in and around the site. This shall include undertaking and recording visual inspections of waterbodies, any steps taken to control surface water, any scientific analysis of water samples and any communications with regulatory authorities.
- The Principal Contractor's Site Agent shall undertake a site walkover on a daily basis and make notes on anything affecting the water environment. These inspections will be recorded in the site-specific environmental diary.
- Daily and weekly operators check/inspections will be undertaken by the Principal Contractor's Environmental Manager.
- All site personnel shall be encouraged to identify potential pollution or hydrological problems or concerns and report them to the Principal Contractor's Environmental Manager. The cause of any pollution incident will be investigated, and measures or corrective actions put in place in order to prevent its reoccurrence.
- The Principal Contractor will monitor licence/consent requirements for compliance, i.e. implement regular inspections of controls to monitor for colour changes, oil, and suspended solid load. This will be recorded at least twice daily on either a site-specific inspection sheet or the site diary. If a breach of consent is identified, work will be stopped immediately.

B.1.3 Waste management

As a standard practice within construction industry, a Site Waste Management Plan will be prepared to ensure that waste is managed in a structured and auditable manner to minimise the generation of waste and maximise the reuse of materials. In addition, it ensures that the waste produced during the construction phase is dealt with in accordance with the relevant requirements of Scottish legislation, as well as any other requirements specified by the relevant regulatory authorities. This would prevent further contamination of the habitats surrounding the site from any hazardous waste arising from construction.

B.2 Ecology best practice measures

Good practice measures relevant to general ecology include:

- Prior to construction, an appropriate level of pre-works ecological checking surveys will be undertaken, which should be timed accordingly based on phases of the construction works. Given the level of mobility of some species such as otters, there is always potential for new places of shelter to be established within the ZoI of the planned works. Equally, if there is a significant delay to the commencement of works and/or sequence of works, an update to the ecological baseline may be required.
- Standard mitigation for protected species (e.g otter) will be implemented including covering excavations, cavities or pipes, and or installing a ‘mammal ladder’ where appropriate to allow trapped animals to escape.
- Toolbox talks should be completed for all site staff to highlight awareness and mitigation with regard to protected species.
- Sensitive artificial lighting techniques, such as directional and hooded lighting, will be adopted to reduce any disturbance to bats, birds, marine mammals and fish during hours of darkness. Especially if illumination is required on the foreshore, light spilling into the wider water and any identified bat roosts will be minimised/reduced.
- If construction works are planned to be start during the bird breeding season (1 April–31 July inclusive), a checking survey will be conducted within the works corridor and 10 m buffer for active bird nests prior to commencement of works for protection of bird nests in compliance with the Wildlife and Countryside Act 1981 (as amended). Where nests are found a minimum 10m radius demarcation zone will be implemented while the nest is active.
- Toolbox talks on potential risks of contamination – All site staff will receive toolbox talks on the potential risks of contamination and the potential threats this can pose to the environment including designated features and supporting habitats. All staff will be required to report any observations of deceased or visibly affected marine life (including designated species and their prey sources) to the site manager. Should any instance of this occur it will be communicated with the environmental lead for the scheme who can investigate. If it is deemed that the release of contamination is having adverse effects on the environment, then dredging works will need to be paused whilst a solution is determined.

B.3 Noise Control

Good industry practice such as the noise control measures set out in BS 5228:2009+A1:2014 Part 1 and 2, Sections 8 will be implemented. Best Practicable Means that will be adopted to ensure airborne noise and vibration is kept to a minimum that will also contribute to minimise underwater noise include (but are not limited to):

- control of working hours;
- employing only modern, quiet and well-maintained equipment (all equipment will comply with *EC Directive 2000/14/EC, UK Statutory Instrument 2001/1701 and BS 5228)*; any plant,

equipment, or items fitted with noise control equipment found to be defective will not be operated until repaired;

- where reasonably practicable, fixed items of construction plant will be electrically powered from the mains supply in preference to being diesel or petrol driven;
- avoidance of unnecessary noise (such as engines idling between operations, excessive revving of engines, dropping items when handling materials, constant banging when erecting or striking scaffolds) by effective site management;
- indirect method of controlling noise: application of quieter alternative construction methodology to achieve the objective (e.g. vibratory piling techniques or hydro-demolition as opposed to more conventional but noisier techniques) and selection of quieter tools/machines;
- best practice will be applied to all construction works and will follow the general guidance contained within BS 5228, which will be set out in the Construction Environmental Management Plan. Best practice will be reviewed and updated throughout the works, also in response to control of noise via contract specification of limits, monitoring results and any complaints received.

The following guidelines and protocols will be followed for marine construction:

- All piling works will adhere to 'The Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise' to minimise the potential impacts to marine mammals, including otters.
- All Cardox blasting works will adhere to 'JNCC guidelines for minimising the risk of injury to marine mammals from using explosives' to minimise the potential impacts to marine mammals.

B.4 Vessel management

The proposed development of Port Ellen will be undertaken in full compliance with the Port Marine Safety Code. A vessel management plan is included in the Outline CEMP that set out measures to management navigational risks and manage vessels during construction of the works.

Standard practice measures and best practice include:

- All vessels will ensure compliance with standard marine vessel policies, such as:
  - Convention for the Prevention of Collisions at Sea (COLREGs) (International Maritime Organisation (IMO), 1972) – this would prevent construction vessels from travelling at high speed and reduce risk of vessel strike;
  - International Convention for the Prevention of Pollution from Ships (MARPOL)(IMO, 1997), and the Convention of the Prevention of Marine Pollution by Dumping of Wastes and other matter (IMO, 1996) – these would prevent pollution events arising from construction and operational vessels.
- Vessels in transit and manoeuvring in coastal waters during construction will be within speeds outlined by Maritime and Coastguard Agency's (MCAs) legislation and guidance[29].

[29] Maritime and Coastguard Agency, May 2014. Active marine guidance notes (MGNs) [Online] Available at: Active marine guidance notes (MGNs) - GOV.UK (www.gov.uk)

- The Scottish Marine Wildlife Watching Code[30] and the Guide to Best Practice for Watching Marine Wildlife[31] will be adhered to during any vessel-based operations. Relevant measures include:
  - All vessel engines and propellers will be kept well maintained to minimise noise.
  - Should a marine mammal be encountered whilst underway outside of noise emitting operations, the vessel shall avoid sudden unpredictable changes in speed, direction and engine noise.
  - Vessels should not cut off an animal or group of animals by moving across their path.
  - Vessel movements should give seal haul-out sites a wide a berth.
  - Vessel routes should avoid entering the sea adjacent to designated seal haul-out sites.
  - Where birds are observed to be rafting the vessel shall avoid driving through the aggregated birds and maintain a 50m separation where practicable and safe to do so.
  - Where there are birds situated on the water, the vessel shall maintain a speed below 6 knots where safe to do so.
- The use of a suitable Code of Conduct, such as the WiSe Scheme[32], primarily for wildlife watching however, outlines measures for vessel operation around marine wildlife and will be use as avoidance measure for any collision risk posed to marine mammals during construction works and transit.

B.5 Biosecurity Management

A Biosecurity Management Plan will be developed and certain biosecurity protocols will be adhered to. These include the following:

- Pre-construction walkover surveys will be undertaken to search for the presence of INNS across accessible areas of the proposed development prior to any works taking place. If INNS are identified, these will be cordoned off and avoided / dealt with appropriately.
- Toolbox talks will be held with site workers to raise the awareness of how to avoid, deal with and identify INNS (if present).
- If INNS are spotted on site, work will be stopped, and the site manager will be contacted immediately with advice sought from environmental specialists.
- Management measures such as the use of Virkon (a disinfectant), and deep cleaning of plant and machinery before arriving at the site and changing sites, along with adhering to a Clean-Check-Dry procedure will be implemented.
- A stringent system of vehicle maintenance and cleanliness will be implemented during construction works, including frequent vehicle washing between road and beach access. Where it is necessary to move anything on or off site and where plant machinery is to be moved from one part of the site to another, biosecurity measures will be applied in line with ‘Check-Clean-Dry’ recommendations from the Non-Native Species Secretariat (NNSS). This would involve washing down, visual inspection, disinfection and / or thorough drying.
- Boot washing as well as equipment cleaning facilities (with a biocide such as Virkon) will be provided and carried out when entering and exiting site.

[30] NatureScot, 2016 [Online] Available at: The Scottish Marine Wildlife Watching Code SMWWC | NatureScot

[31] NatureScot, 2017. [Online] Available at: A Guide to Best Practice for Watching Marine Wildlife SMWWC | NatureScot

[32] See Home | The WiSe Scheme

- Production of a Marine Biosecurity Plan according to guidance[33] which will include measures to reduce/eliminate the risk of introducing or spreading INNS on site. The Contractor's Biosecurity Manager or Environmental Clerk of Works (ECoW) will update and maintain a site-specific marine biosecurity plan. Measures include the following:
  - Sections of the plant that would come into direct contact with the intertidal area (track/wheels), if any, will be thoroughly cleaned before and after use to avoid the spread of any INNS (e.g. wheel washing facilities should be provided).
  - Where possible, existing material will be reclaimed, therefore lowering the risk of the introduction of invasive species. Any imported material will be bespoke. If this is not possible, it will be ensured that imported material has not been utilised in the marine environment previously. Again, if this is not possible, imported material will be screened for INNS ahead of its use on site.
  - Vessels will comply with relevant ballast water management requirements including where travelling to the site from outwith UK waters the IMO Ballast Water Management (BWM) Convention 2004, which establishes standards and procedures for the management and control of ships' ballast water and sediments. Measures within the ballast water management plan will include detail of vessel specific measures, require vessels to complete a ballast water record book, conduct regular inspection, and where necessary hold an international ballast water management certificate.
- All vessels will also comply with the Merchant Shipping (Anti-fouling Systems) Regulations 2009, which prohibit the use of harmful organotin compounds in anti-fouling paints used on ships and establish a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems and places into UK law Regulation (EC) 782/2003 on the prohibition or organotin compounds on ships – this would prevent marine water pollution arising from the use of construction vessels.

B.6 Air quality

Air Quality Management Plan is included in the Outline CEMP that sets out measures to control dust emissions that may affect local air quality. Construction works have the potential to affect local air quality through emissions from plant and vehicle operations and to generate dust, particularly during dry weather and strong winds. Good site management is essential to control emissions and respond to weather conditions.

The following measures will be implemented during construction to manage the generation of dust:

- Dust generating activities will be located away from sensitive receptors (human and ecological receptors);
- Adequate supplies of water, sourced by the Principal Contractor, will be available at all times for the dust suppression units that will be operated at times of dust nuisance;
- Stockpiles of dust prone materials will be sprayed in periods of dry weather;
- Hand operated or vehicle mounted spray equipment will be used to spray stockpiles of materials, overburden, access tracks and other sources of dust as required;
- Dust suppression techniques will be used expediently, a fine spray will be used to avoid runoff and over-spraying will be avoided;

[33] Payne, R.D., Cook, E.J. and Macleod, A. (2014). Marine Biosecurity Planning – Guidance for producing site and operation-based plans for preventing the introduction of non-native species. Report by SRSL Ltd. in conjunction with Robin Payne to the Firth of Clyde Forum and Scottish Natural Heritage 39 pp. [Online] Available at: Guidance-Biosecurity-Planning.pdf (clydemarineplan.scot)

- Spraying units will be available and in good working order at all times;
- Standby bowsers will be available to be used should the main units be out of service, and as supplementary units in periods of dry weather;
- A 10mph site speed restriction will be observed at all times;
- Material drop heights will be minimised;
- Wheel wash facilities will be located on site, within the construction compound, to be utilised;
- Dust monitoring will be undertaken by the Principal Contractor's Environmental Manager to evaluate the effectiveness of dust suppression measures and to aid the improvement of dust management on site; and
- Should dust suppression measures prove inadequate, operations will cease until additional mitigation measures are taken or conditions improve.
- Adequate supplies of water will be made available at all times for the dust suppression units.

All personnel on site will be aware of the need to control dust emissions and be pro-active in the prevention of airborne dust. During periods of dry weather or extensive dust generating activities the Principal Contractor's Environmental Manager will deliver a toolbox talk to all site personnel.

C. Underwater noise mitigation zone

This appendix presents a set of flow charts for the proposed mitigation zone and the associated use of Marine Mammal Observer and Passive Acoustic Monitoring as part of the site-specific measures for mitigating underwater noise.

- A mitigation zone no less than **500m** in radius will be established for impact piling, rock breaking/rock wheeling, vibro-piling, rock socket piling and dredging.
- A mitigation zone of **800m** will be established for Cardox blasting.
- For marine mammal detection, a marine mammal observer will complete a 30-minute visual pre-watch of the mitigation zone.
- Prior to starting any noise-generating activities visual observation shall be undertaken for 30 minutes in daylight conditions (Beaufort sea state 4 or less) by suitably trained (JNCC methods) and dedicated observers.
- Where conditions are unsuitable for visual observations (darkness, fog reducing visibility to <800m for Cardox blasting and <500m for all other construction works, or above Beaufort sea state 4) passive acoustic monitoring will be utilised by a trained PAM operator to monitor mitigation zone for a minimum of 30 minutes.
- No piling or rock breaking work should commence during periods of darkness or in poor visibility. However, a distinction should be made for piling that commences during times of good visibility that continues into a period of poor visibility/darkness. Assuming the works are continuous, no additional mitigation would be required. In the case of construction works commencing during darkness or poor visibility, the works need to be demonstrated as essential for commercial viability and enhanced detection of marine mammals is required (e.g. increased number of PAM systems and PAM operatives for the commencement of works during darkness or poor weather conditions).
- [Deleted].

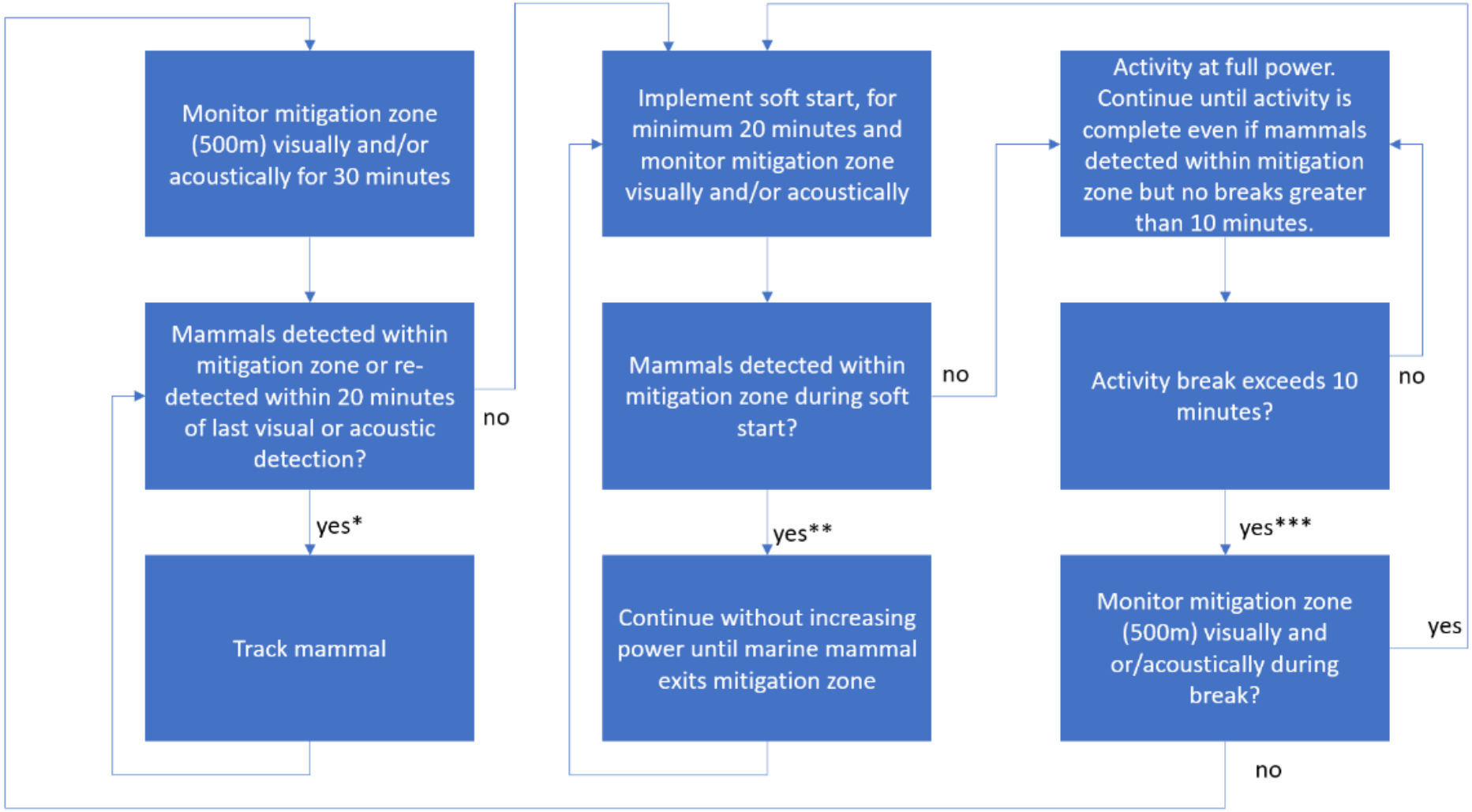
C.1 Impact piling, rock breaking, vibro-piling, rock socket piling and dredging

Note the following asterisks are not define by JNCC guidelines but have been set out with cognisant to seals which use the area frequently and practicalities of construction on site:

* In the case of seals in the water if they do not move out of the mitigation zone after 20 minutes then proceed as if 'no'

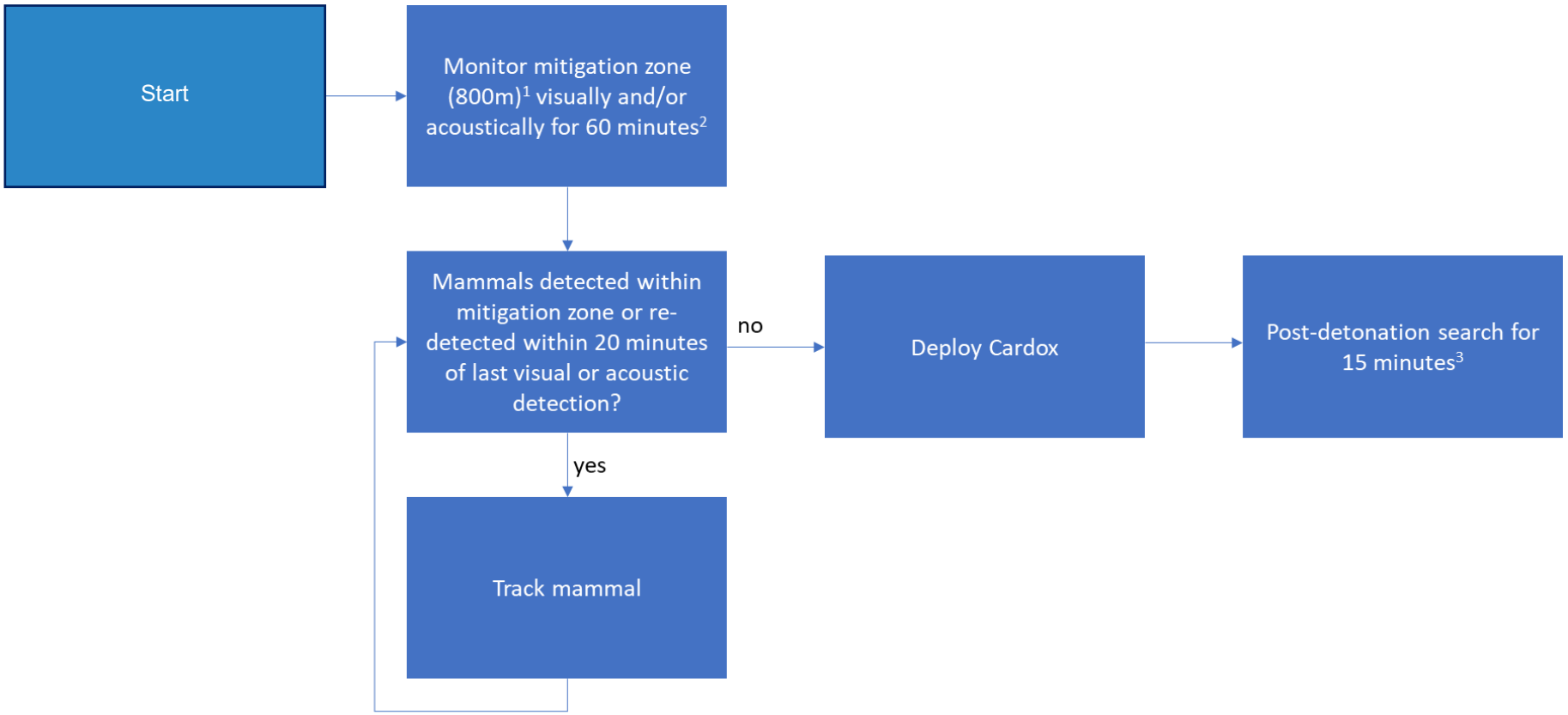
** In the case of seals in the water if they do not move out of the mitigation zone after a further 20 minutes (40 minutes total) then proceed as if 'no'

*** [Deleted].



C.2 Cardox blasting

* [Deleted]



[1] See Section 2.1 of JNCC (2010). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. Available at: JNCC Resource Hub. The default mitigation zone of 1 km has been reduced to 800m as cardox detonations produce lower noise levels than conventional explosives.

[2] See Section 2.3 of JNCC (2010). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. Available at: JNCC Resource Hub.

[3] See Section 2.7 of JNCC (2010). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. Available at: JNCC Resource Hub.