

Lochmaddy Ferry Terminal Upgrade Environmental Impact Assessment Report

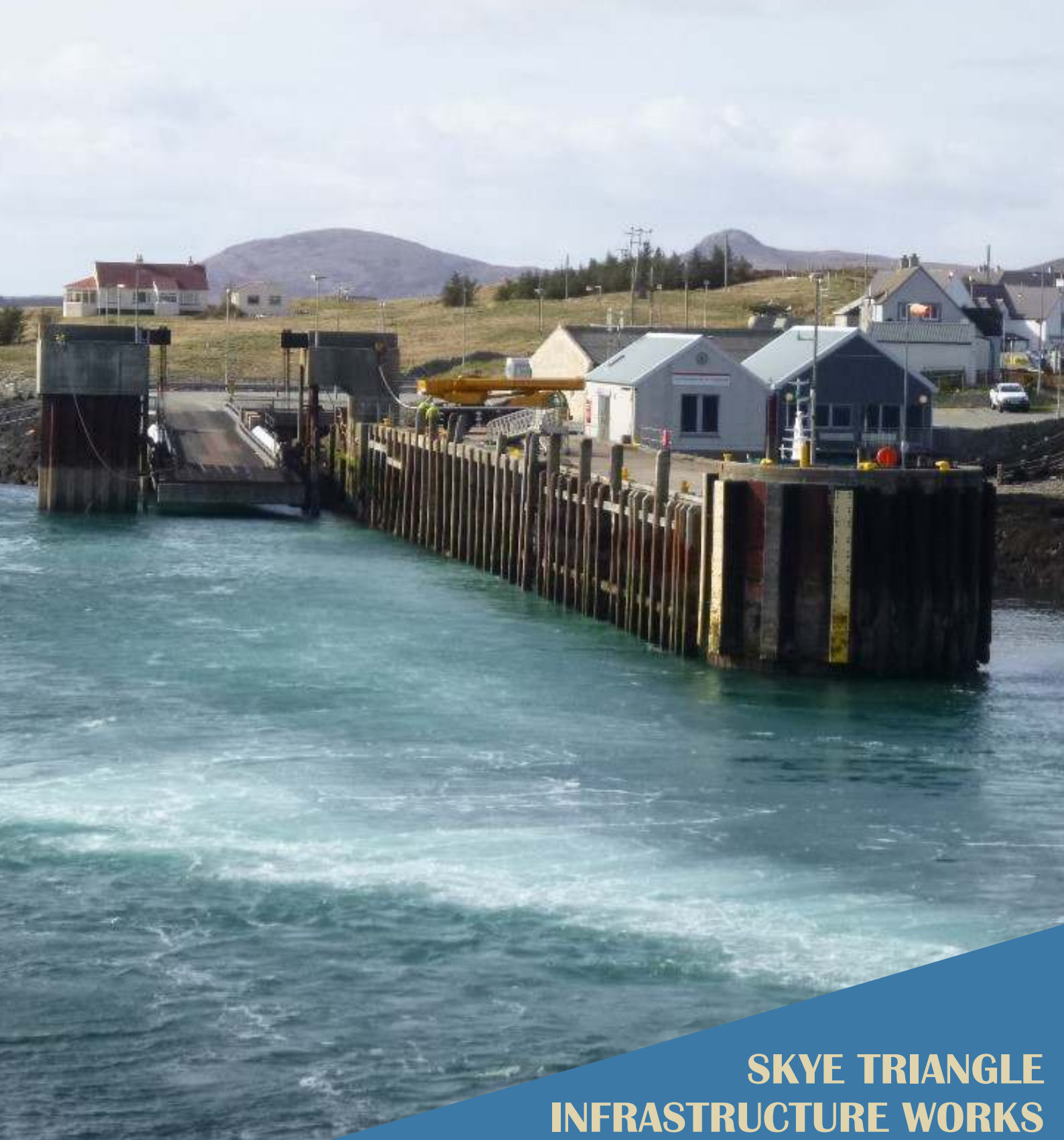


COMHAIRLE NAN EILEAN SIAR

Volume 1

Non-Technical Summary

April 2019



**SKYE TRIANGLE
INFRASTRUCTURE WORKS**

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1 Introduction

A new ferry is being constructed for use on the Skye Triangle (Lochmaddy – Uig and Uig-Tarbert routes). The ferry is larger and can carry more passengers and vehicles than the existing vessel. Comhairle nan Eilean Siar (CnES) are therefore proposing upgrades to the Lochmaddy ferry terminal to allow the safe berthing of the larger vessel and to provide shoreside facilities for additional passengers and vehicles. The upgrade works are being managed on their behalf by Caledonian Maritime Assets Ltd (CMAL) who have commissioned Affric Limited to produce this EIAR on their behalf.

Marine licences for the construction of Lochmaddy ferry terminal upgrade works located below mean high water springs (MHWS) and associated capital dredging and disposal are required from Marine Scotland.

Planning permission is being sought from the CnES for developments works above mean low water springs not currently within the harbour area. Works in the existing harbour area, will be completed under the permitted development rights afforded by CnES's harbours order.

Due to the scale of the development and its potential to have a significant effect on the environment, an Environmental Impact Assessment Report (EIAR) is required to support the marine licence and planning consent processes.

This Non-Technical Summary summarises the main findings of the Environmental Impact Assessment Report (EIAR). This EIAR is made up of 4 Volumes:

- Volume 1: Non-Technical Summary
- Volume 2: Main Assessment
- Volume 3: Appendices
- Volume 4: Drawings

Copies of the full EIAR are available to view in the Ferry Terminal, Lochmaddy, North Uist, HS6 5AD. The Ferry Terminal building opening hours area as follows:

- Monday, Wednesday, Friday 9:00 a.m. - 5:00 p.m.
- Tuesday, Thursday 6:30 a.m. - 5:00 p.m.
- Saturday 6:30 a.m. - 4:45 p.m.
- Sunday 9:30 a.m. - 12:00 p.m. / 3:00 p.m. - 5:00 p.m.

Electronic copies of the documents submitted to support the marine licence and planning consent applications can be downloaded from the CMAL website: www.cmassets.co.uk/project/skye-triangle-infrastructure-works/. A CD containing all the application documents can be obtained by asking at the Lochmaddy Ferry Terminal Building; or by contacting Fiona Henderson on 07773353399 or by emailing fiona.henderson@affriclimited.co.uk. Hardcopies of the EIAR can also be obtained by contacting Fiona at a cost of £100 plus postage.

If you would like to provide feedback with regard to the marine licence or the planning application, then this should be given directly to Marine Scotland or CnES as per the advertised routes.

2 Project Description

2.1 Project Need

The Skye Triangle (Lochmaddy – Uig and Uig- Tarbert) ferry route, is currently primarily serviced by the MV Hebrides. The vessel was built in the year 2000 and utilises marine gas oil. The popularity of the Skye triangle ferry route continues to grow, with high passenger numbers particularly in the summer months due to a booming tourist trade on the islands. This is leading to capacity issues with both the MV Hebrides and associated harbour facilities.

There are numerous policies and requirements associated with air emissions from vessels coming into force in the next few years. These are aimed at reducing greenhouse gas emissions. In line with this, Scottish Government Third report on Policies and Proposals for climate change states in Policy Outcomes 5 and 6 are:

5-“By 2032, low emission solutions [will] have been widely adopted at Scottish ports and airports”

6 -“Proportion of ferries in Scottish Government ownership which are low emission has [will have] increased to 30% by 2032”.

To address the increasing ferry demand and the need to reduce greenhouse gas emissions, Transport Scotland have ordered a new larger vessel to replace the MV Hebrides. This vessel will be dual fuelled by marine gas oil and liquid natural gas, the latter of which gives rise to lower greenhouse gas emissions. In addition, an onshore power supply will be installed. This will allow the new vessel to plug in (cold iron) overnight, avoiding the need to run engines while alongside at night, significantly reducing emissions to air and noise levels.

The new vessel is the main driver to the project need; however, it is recognised that existing ferry pier is aging and some of facilities are already experiencing capacity issues.

2.2 Consideration of Alternatives

The consideration of alternatives has been an iterative process completed as part of the design development. Consideration of alternatives took into account the following factors as appropriate:

- Constructability;
- Operability;
- Public safety;
- Physical constraints/ restrictions;
- Cost;
- Eliminate / minimise disruption to the ferry service; and
- Environmental effects.

2.3 Location

To provide the required facilities for the new vessel, it was identified that the most economic and environmentally sound option is to upgrade the existing facilities in Lochmaddy. Lochmaddy is located on the east coast of North Uist. Lochmaddy is the largest settlement on the island. The ferries that utilise this terminal provide the shortest link between the Uists and

Scotland's mainland road network, via Uig and the road links on Skye. The harbour is situated to the south east of the main village, within the shelter of the Loch Nam Madadh (Loch Maddy) sea loch. Lochmaddy falls within the administrative area of the CnES. The ferry terminal has a grid reference centre point of NF 920 680.

2.4 Project Components

The Lochmaddy ferry terminal upgrades include the following components:

- Dredging to allow the larger ferry to berth and manoeuvre safely;
- Land reclamation to increase the marshalling area;
- Temporary works allowing the ferry service to operate throughout construction works;
- Demolition of the top of the existing pier roundhead to reduce its level to match the adjacent pier deck;
- Pier extension utilising a concrete caisson;
- Concrete repairs and strengthening to the existing concrete pier deck slab, cross beams and columns;
- Fender upgrade to the new and existing pier structure;
- Road lay-out upgrade to improve access to the ferry terminal;
- Carpark extension to increase exiting provision; and
- Upgrade of services to facilitate the new terminal layout, and to provide potable water bunkering and cold ironing of the new vessel.

2.5 Construction

Generally, construction works will be conducted between 7am to 8pm Monday to Saturday, with Saturday work generally finishing earlier. No Sunday working is anticipated to occur. However, work out with these hours may be required on an infrequent basis to suit tides and ferry movements. Approval will be sought from the relevant authority prior to this occurring.

To provide additional space to expand the marshalling area and to provide hardstanding for trailer parking land will be won to the north east and north west of the existing marshalling area. To the north east a section of land currently part of a residential garden, will be excavated down to the level of the marshalling area and a retaining wall installed. To the northwest the existing hillside will be reduced in height, the material won will be utilised to reclaim land from the sea. The reclamation area is adjacent to the existing marshalling area under the pontoon access bridge. Surface water drains will be installed including a silt/oil interceptor, the existing marshalling area drains will also be rerouted through the interceptor. The existing marshalling area will be asphalted, and the new hardstanding area will be concreted, and seven trailer parking spaces provided. Services will be installed and upgraded as necessary including a new substation to facilitate cold ironing, a water tank for water bunkering of vessels and marshalling area lighting.

The marina facilities will be relocated adjacent to a new access to the pontoons and will be fenced off from the rest of the ferry terminal. Dedicated parking will be provided.

The existing car park to the north of the terminal building will be extended to the east, with a total of 21 new spaces being formed. During construction this area will be utilised as the construction compound.

Dredging to -5m chart datum is required to facilitate access by the new deeper drafted ferry. In addition, an area will be dredged to allow a foundation to be casted at the end of the pier to allow the caisson which will be utilised to extend the pier to be installed.

The existing ferry pier was built at three separate times, utilising different construction techniques. All three sections require some degree of repair, strengthening or upgrade. To allow this work to be carried out, temporary fenders will be put in place to move the berthing line for the ferry further out from the pier. Scaffolding will be installed under the pier to provide access for repair works, which will include repairs to the concrete, spraying concrete sections with a concrete coating, wrapping metalwork in protective sheeting and installing strengthening braces.

The existing round head shall be cut down to the level of the rest of the pier to facilitate tie in with the pier extension. New fenders will be installed, this includes the need to drive six piles adjacent to the existing pier to connect some of the fenders into place.

The pier will be extended utilising concrete caisson, which will be cast offsite and floated to Loch Maddy, where it will have fenders and fittings attached prior to being sunk onto a pre-formed foundation. The caisson will be initially sunk with water, but the water will be replaced by rock infill to ensure its longevity. A concrete linking section will then be installed between the caisson and the existing round head.

Once the pier works construction works are complete the services will be installed, allowing water bunkering and cold ironing to be carried out. The temporary fenders will be removed to allow the upgraded pier to become fully operational.

2.6 Operations

Once the upgrade works are complete, the new ferry will be able to utilise the facility. It will operate to a similar timetable to the current one. The installation of an onshore power supply will allow the ferry to cold iron when alongside overnight. The larger ferry marshalling area, new roundabout, improved turning area and additional car and trailer parking will facilitate the management of increased ferry passengers and vehicles.

3 Methodology

3.1 Assessment Methodology

One of the main purposes of the Environmental Impact Assessment (EIA) process is to influence and improve design through iteration. Environmental impacts have been considered throughout the project, from the development of the option stage through design stages of the project. Where possible, environmental considerations have been incorporated into the design. The siting and design of the upgrade has been influenced by aspects identified through the EIA process, including stakeholder input, possible visual and noise impacts, and the potential for disturbance of the local fauna associated with the development.

An environmental specialist has been involved throughout the design process and, where necessary, appropriate topic experts have been consulted to inform the design. The project design therefore has avoided and minimised impacts wherever possible and, as such, there are embedded 'primary mitigation measures' to avoid or reduce negative effects. These have been incorporated within the assessment of effects.

A methodical and robust assessment of environmental impacts has been used across all chapters of the EIAR, with topic-specific variations incorporated as required. The methodology considers a receptor's value or sensitivities, the magnitude and likelihood of the impact, and through a matrix-based approach, whether or not the impact is significant. If the impact is above a defined threshold, then it is deemed to be significant and additional mitigation procedures are put in place where possible to reduce the potential impact.

3.2 Consultation

Early in the EIA process a scoping process was undertaken with Marine Scotland and CnES and their statutory consultees including: Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA). The scoping process allows the content of the EIAR to be agreed, such that effort can be focused on areas where significant environmental effects could occur.

Consultation has been a key part of the design development and EIA process. There has been dialogue with the local community through public exhibitions as part of the Pre-application Consultation process. Full details are provided in the Pre-Application Consultation Report.

3.3 Cumulative Impacts

A review of planned onshore and offshore developments was conducted in order to identify projects where there are potential cumulative impacts, and which environmental topic areas they should be considered for. The following three projects were taken forward for cumulative assessment as they all involve dredge disposal to the Stornoway spoil disposal site and hence there could be cumulative impacts on marine mammals, fish and water quality.

- CMAL - Tarbert Ferry Terminal Upgrade (part of the Skye Triangle ferry upgrades);
- Stornoway Port Authority – Newton Marina; and
- Stornoway Port Authority – Deep Water Port, Arnish.

In addition, the Uig ferry terminal upgrade, also part of the Skye Triangle ferry upgrades was considered, as it will affect ferry sailings and as such will have knock on effects for Lochmaddy. This was considered in Traffic, Access and Navigation.

4 Statutory Context & Policy

There are a number of statutory requirements for the proposed Lochmaddy ferry terminal upgrade, as well as national, regional, and local planning policies that may apply to the determination of the Marine Licence application.

4.1 Legislative Framework

Marine licences for the construction of Lochmaddy Pier Development works located below mean high water springs and associated capital dredging and disposal will be sought under the Marine (Scotland) Act 2010. Due to the scale of the development and its potential to have a significant effect on the environment, an Environmental Impact Assessment Report (EIAR) is required to support the Marine Licence application, under the Marine Works (Environmental Impact Assessment (EIA) (Scotland) Regulations 2017.

Under the Town and Country Planning (Scotland) Act 1997, any type of development, i.e. carrying out of building, engineering, mining or other operation in, on, over or under land, or the making of any material change in the use of any building or other land over the mean low water springs will require planning consent. The exception to this is developments falling under the permitted development rights of the harbour under the Harbours Act 1964.

The Comhairle nan Eilean Siar (Various Harbours) Harbour Revision Order 2002 gives the authority the power to provide various facilities within the harbour area, which includes all areas which were utilised as harbour facilities in 2002. As such onshore works within the Harbour Area will be completed under the Harbour Order. Planning consent is being sought from CnES for works above mean low water springs out with the Harbour Area.

The Marine Licensing (Pre-application Consultation (PAC)) (Scotland) Regulations 2013 prescribe the marine licensable activities that are subject to pre-application consultation and, in combination with the Marine (Scotland) Act 2010, set out the nature of the pre-application process. The Lochmaddy ferry terminal upgrade falls within these regulations as it covers an area larger than one hectare.

Due to the area that the planning consent is being sought for being too small, the equivalent terrestrial legislation is not applicable. However, the PAC process completed and reported in the Lochmaddy Ferry Terminal Upgrade - Pre-Application Consultation Report (Affric Limited, 2019) ensured compliance with both the terrestrial and marine legislation.

In addition to the above Regulations, if it is determined that the development of construction activities will likely affect European Protected Species listed under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended); which includes whales, dolphins and porpoises; an European Protected Species Licence will be required. A Habitats Regulations Appraisal is also required when a project potentially affects a European Natura site (i.e. a Special Protection Area or a Special Area of Conservation). As the Lochmaddy ferry terminal upgrade is near to

Natura Sites, a Habitats Regulation Appraisal will need to be carried out by the competent authority. Information to support the assessment has been included within the EIAR.

4.2 Policy Context

As the project is partly below the mean high water spring and within 12 nautical miles of the Scottish Coastline it falls within the remit of the Marine (Scotland) Act 2010. The 2015 Scottish National Marine Plan (NMP) covering inshore waters is a requirement of the Act. The NMP lays out the Scottish Ministers' policies for the sustainable development of Scotland's seas and provides General Planning Principles (GENs), most of which apply to the proposed Lochmaddy ferry terminal upgrade works. In addition, the NMP lays out sector specific objectives and policies for shipping, ports, harbours and ferries. The relevant policies have been reviewed and it has been identified that the Lochmaddy ferry terminal upgrade meets GEN requirements and contributes towards the achieving relevant sector specific policies and objectives.

The onshore development planning system in Scotland which provides the framework for considering planning applications is made up of four main documents:

- The National Planning Framework (NPF);
- Scottish Planning Policy;
- Strategic Development Plans (SDPs) produced for the Scotland's four largest cities; and
- Local Development Plans (LDPs) produced for each council area.

The Scottish Government provides advice and technical planning information in the form of Planning Advice Notes (PANs), to support the implementation of the policy.

The NPF is a requirement of the Planning (Scotland) Act 2006 and sets out the strategy for long-term development within Scotland. The third NPF (NPF3), was published in 2014 and sets out the strategy for development for the next 20 to 30 years (Scottish Government, 2014). Within Section 5: A Connected Place it states that:

'We will reduce the disadvantage of distance for our coastal and island communities'

It is specifically recognised in Section 5.36 that:

'Air and ferry services will continue to play an essential role – as a lifeline service but also supporting economic activity and the delivery of public services.'

SPP identified policy principles that the planning system should support patterns of development which:

- Optimise the use of existing infrastructure;
- Reduce the need to travel;
- Provide safe and convenient opportunities for walking and cycling for both active travel and recreation, and facilitate travel by public transport;
- Enable the integration of transport modes; and
- Facilitate freight movement by rail or water.

The proposed upgrade works enhances the existing infrastructure. As the ferry terminal is in the village of Lochmaddy the need for people in the village to travel is minimised, and onward

travel is facilitated by the public transport network provided to the village. The ability for larger vessels to berth will facilitate additional freight movements by ferry. As such the project is in alignment with the SPP, connected place policies.

Relevant PANs for the Lochmaddy ferry terminal upgrade which were used to support the EIAR production.

The Outer Hebrides Local Development Plan Policies have been reviewed in detail to ensure that the project aligns with all relevant policies, which it does.

5 Marine Mammals

The Lochmaddy ferry terminal upgrade is situated on the North Uist, on the western site of the Minch, an area renowned for its importance to marine mammals. Protected areas identified as being relevant to the Lochmaddy ferry terminal upgrade include the Inner Hebrides & the Minches candidate Special Area of Conservation, and the Ascrib, Isay, & Dunvegan Special Area of Conservation, designated for Harbour Porpoises and common seals respectively.

A comprehensive desktop study of the current scientific literature was conducted in order to identify which marine mammal receptors may be affected by the Lochmaddy ferry terminal upgrade. It was established that six marine mammal species are considered to be resident in the western reaches of the Minch, including harbour porpoises, white beaked dolphins, Risso's dolphins, killer whales, minke whales and common seals. When considered at a finer scale, the proposed development is located in the southwestern reaches of Loch Maddy. These waters, in the immediate vicinity (within 1km) of the development, are rather confined, generally shallow, and offer little in the way of valuable marine mammal habitat. It is therefore unlikely that marine mammals will be frequent visitors to the waters adjacent to the development area, despite their prevalence in the neighbouring Minch. Reference was also made to the underwater noise model (discussed in Section 10), to predict the potential impacts on marine mammals resulting from underwater noise emissions.

During construction there is the potential for the marine mammal species identified above to be impacted through disturbance due to increased underwater noise emissions, foraging impairment due to increased water column sediment loading during dredging and infilling operations, and injury and displacement due to potential spills of hazardous substances. When the water quality and spill prevention mitigation identified in the Water Quality and Coastal Processes section of the EIAR are considered, the effects of sediment loading, and releases of hazardous substances are assessed as minor and non-significant. Only two effects resulting from the construction phase were assessed as having the potential to result in moderate significant effects, in the absence of specific marine mammal mitigation: injury and disturbance due to underwater piling noise, and injury resulting from interaction with dredged spoil disposal operations at the Stornoway spoil ground.

To mitigate these potential impacts on marine mammals resulting from underwater piling noise and dredged spoil disposals, marine mammal monitoring and passive acoustic monitoring protocols will be employed to ensure marine mammals are not in the zone where injury is likely to occur, prior to the operation commencing. The marine mammal mitigation

protocols are detailed in the Construction Environmental Management Document. After the implementation of the identified mitigation, the residual impacts on marine mammals associated with the Lochmaddy ferry terminal upgrade are assessed as minor, non-significant.

6 Benthic Ecology

In order to appropriately assess the potential effects on organisms on the seafloor (benthic ecology) from the Lochmaddy ferry terminal upgrade, the baseline condition had to be understood. This was achieved through an extensive literature review and field surveys. The survey operation consisted of video transects and grab sampling. The benthic survey identified multiple biotopes in the proposed dredging areas. None of the recorded species or biotopes found during the benthic surveys are of conservation concern.

The literature review identified multiple sites specifically designated for benthic features near the proposed development. These are the Loch am Madadh special area of conservation (SAC) and Site of Special Scientific Interest (SSSI), Loch an Duin SSSI, Loch an Duin Ramsar site and Tong Saltings SSSI. While the development site lies within the Loch am Madadh SAC and the Loch mam Madadh SSSI, none of the benthic qualifying features of these sites are found within the project footprint or immediate vicinity. Therefore, the Loch am Madadh SAC and SSSI were not taken forward for assessment. The remaining sites were not considered by the assessment due to the lack of potential ecological connectivity between them and the proposed development.

The construction stage of the Lochmaddy ferry terminal upgrade may impact the benthic ecology of the site through; habitat loss, physical disturbance during dredging and dredge disposal operations, increased sediment loading in the water column, accidental spillage of hazardous substances, and introduction of non-native marine species.

There will be a permanent loss of intertidal benthic flora, fauna, and habitat within the footprint of the land reclamation required to extend the marshalling area. However, no high value habitats or species will be affected, and it is not expected that this will have population-level effects on the wider Loch Maddy benthic communities, as the habitat loss is relatively small in relation to the overall area. Due to its location in an isolated bay, the reclamation is not expected to result in any habitat fragmentation. There will also be a temporary loss of benthic flora, fauna, and habitat within the dredge pockets required to accommodate the new larger ferry. Again, no habitats or species of specific conservation value will be affected, and the area lost is relatively small in comparison to the wider available habitat, and as such no population level effects are expected.

With regard to increased sediment loading and spills of hazardous substances; these aspects may lead to increased smothering, burial, and environmental toxicity. However, when the water quality and spill prevention mitigation identified by the Water Quality and Coastal Processes assessment are considered, the effects of sediment loading and releases of hazardous substances are identified as being very unlikely and minimal, hence were assessed as minor and non-significant.

The impacts resulting from potential introduction of non-native marine species were assessed with respect to three vectors; use of equipment and vessels, the import of the prefabricated concrete caisson, and export of dredged spoil. The assessment concluded that the risk of a marine non-native species being introduced due to the proposed works was very low. As such the impacts associated with this aspect were found to be non-significant.

Potential cumulative impacts may arise from other developments using the Stornoway spoil ground. However, this site is a designated spoil ground, and previous disposal operations will have degraded the benthic environment. As such, the value of the benthic environment in this area is likely to be low, hence, the potential cumulative impacts are assessed as minor, non-significant.

7 Fish Ecology

A literature review identified basking sharks and three diadromous fish species: Atlantic salmon, sea trout, and European eel, as being potentially present in the marine environment near the proposed ferry terminal upgrade. The Sea of Hebrides potential Marine Protection Area, designated for basking sharks, was included in the assessment, but no designated sites for diadromous fish were considered, due to the lack of ecological connectivity to any of these areas.

The literature review identified migration times and habitat preferences for diadromous fish. This found that Atlantic salmon, sea trout, and European eel are only likely to be present in coastal areas close to where their respective riverine habitats meet the marine environment. The proposed development is situated in the South Basin, in the southwestern extent of Loch Maddy, on the east coast of North Uist. In the vicinity of the proposed works lie two freshwater systems that sustain populations of Atlantic salmon, sea trout and European eel. Loch Struth Mhoir is connected to the sea via Loch Houram which in turn enters the sea 1.5km north of the ferry terminal. Loch Sgealtair is connected to the sea via Loch na Ciste, which enters the sea 1.1km west of the terminal. Fish migrating to Loch Sgealtair will transit past the works, however, there is a causeway between Loch na Ciste and Sgealtair, so this is unlikely to be a major migration route. No notable freshwater habitats supporting diadromous fish species were identified as meeting the marine environment in the vicinity of the Stornoway spoil ground.

There is some evidence to suggest that relatively high summer densities of basking sharks are found in the waters to the west of the Outer Hebrides, although the sparse availability of data casts some doubt over this finding. Basking shark are not expected to be present in high densities within the Minch, to the east of the Outer Hebrides, although some sightings have been recorded. The shallow enclosed waters of Loch Maddy are not anticipated to provide valuable habitat for basking sharks. As such it is considered unlikely that this species will be present in the immediate vicinity of the ferry terminal. This is also true of the Stornoway spoil ground.

The potential effects on diadromous fish and basking shark due to the development were identified as being through increased sediment loading from dredging and dredge disposal, underwater noise from construction, and accidental release of hazardous substances.

However, all potential impacts are predicted to result in negligible to minor, non-significant impacts on diadromous fish and basking sharks. No significant cumulative impacts were identified. This is due to the location of the project in an area of low value to fish receptors, together with the implementation of standard industry good practice to minimise deterioration in water quality.

As such, no specific mitigation measures are required. However, while impacts on basking sharks resulting from piling and spoil disposal operations were assessed as being non-significant, as a matter of best practice, marine mammal protocols for piling and spoil disposal operations will also apply to basking sharks.

8 Otters

The proposed Lochmaddy ferry terminal upgrade is located within Loch Maddy, which is known to support a key dense otter population due to the ample availability of food and shelter resources for the species. The development site is immediately adjacent to the Loch nam Madadh Special Area of Conservation (SAC), designated in part for the conservation of otters, with the marine elements of the development falling within the boundary of the SAC. The Loch an Duin SSSI lies 1.3km northeast from the development, and is also designated in part for otters. The SSSI was not specifically assessed to avoid duplication, due to the fact that it overlaps considerably with the SAC, it is further from the development than the SAC, and its receptor value is less than the SAC. As such impacts on the SSSI were assumed to be less than those resulting on the SAC, and any otter mitigation identified to preserve the conservation objectives of the SAC will be equally effective for the SSSI.

A baseline otter survey was conducted in order to ascertain whether otters are present within the development footprint and immediate vicinity, and to determine the nature of any otter utilisation of the area. The survey found that otters are utilising the shoreline to the east and north of the proposed development, as well as the islands to the west. However, it was noted that due to the lack of fresh water bodies available to otters in the immediate vicinity of the development, it is very unlikely that holts will be present.

A review of the likely construction activities required for the proposed development revealed that adverse impacts on otters may result from disturbance, habitat loss, increased sediment loading, accidental releases of hazardous substances, injury, entrapment and barrier effects. Three significant impacts on the local otter population were identified as potentially resulting from the construction of the proposed development, in the absence of mitigation. Significant impacts included; disturbance from general site works, injury and entrapment through interactions with site equipment and structures, and barrier effects from site fencing. Due to the localised nature of these impacts, no discernible population levels for otters in Loch Maddy were identified, hence they were not found to be significant with regard to the Loch nam Madadh SAC.

Habitat loss resulting from the increased marshalling area and parking facilities was not expected to lead to significant impacts due to the very small area affected, the low value of the habitat to otters, and the availability of similar habitat locally. Impacts resulting from increased sediment loading during dredging and infilling were also non-significant, as the area

affected will be minimal, and otters are known to be relatively tolerant of turbid waters. Finally, the risk of a spill of hazardous substances occurring and adversely affecting otters was considered to be minimal, due to the mitigation identified by the Water Quality and Coastal Processes assessment, hence this impact is non-significant.

To mitigate the potential impacts on otter resulting from the construction of the Lochmaddy ferry terminal development, and Otter Protection Plan (OPP) will be implemented. The OPP includes the provision of preconstruction surveys, stopping works if otters are in close proximity to the site, conducting otter checks of equipment and materials prior to works, installation of escape ramps in excavations, and ensuring site fencing allows otters to pass beneath. The OPP is included in the Construction Environmental Management Document. After the implementation of the OPP, the residual impacts on otters associated with the Lochmaddy ferry terminal upgrade are assessed as minor, non-significant.

9 Noise and Vibration (In-Air)

The Lochmaddy ferry terminal is at the end of the village of Lochmaddy, there are two residential properties immediately adjacent to the marshalling area and the Lochmaddy Hotel is situated to the west of the development area. As such construction noise and changes in operational noise could have an effect on these sensitive receptors and the wider village of Lochmaddy.

A detailed assessment of the construction activities was carried out, to identify the potential sources of noise and their locations in relation to noise sensitive properties. The noise sources were then modelled to provide noise contour maps such as the one shown in Figure 9.1.

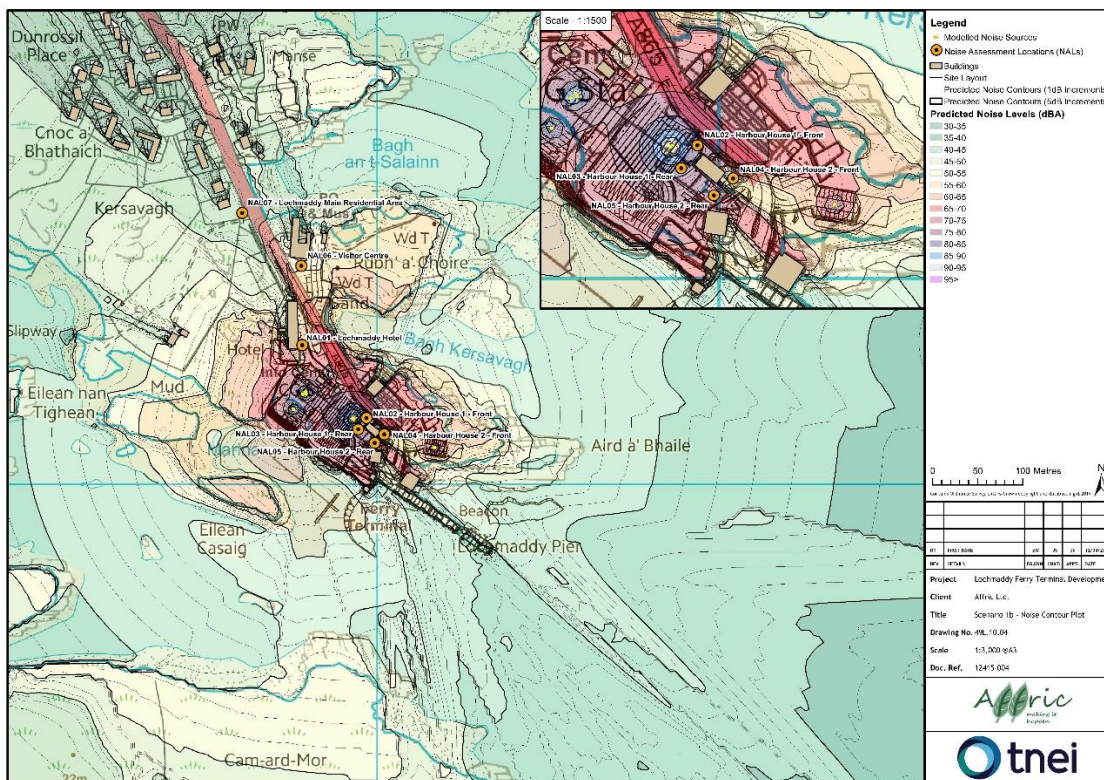


Figure 9.1: Example Noise Contour Map

Noise levels at the closest receptors vary considerably depending on the construction works being carried out. Primarily due to the location in relation to the receptors. For example, works to the northwest of the existing marshalling area have the highest effect on the Lochmaddy Hotel. The only significant noise effect was associated with works to extend the marshalling area to the north east on the two residential properties, these works are predicted to last up to 4 weeks. The developer and their construction contractor will work with the residents to identify specific mitigation measures to meet their needs to minimise the effects. This may include the installation of noise barriers.

It is recognised that noise can cause nuisance and as such additional mitigation has been identified, in line with best practice, to minimise noise levels and to keep local residents aware of the proposed work schedule and when abnormally noisy activities may occur.

During the operational phase the night-time noise levels are expected to reduce from those currently arising when the ferry is alongside overnight. This is due to the introduction of cold ironing, meaning that the ferry will not have to run its engines to power itself while in port, this was identified to be a significant benefit to local residents. The number of additional vehicle movements facilitated by the increased vessel capacity are not sufficient to have anything more than a negligible effect on traffic noise levels in the village of Lochmaddy.

10 Noise and Vibration (Underwater)

During the proposed Lochmaddy ferry terminal upgrade works, both vibro and impact piling will be required for the installation of piles which will be installed to support new fenders. The marine piling operations will result in elevated levels of underwater noise. Other construction activities including dredging will also be utilised during the construction works, and these too will contribute to underwater noise emissions. Marine impact piling is the activity which will result in the greatest underwater noise levels, and hence was the focus of the underwater noise assessment. Underwater noise has the potential to disturb and possibly injure marine organisms, particularly marine mammals and fish.

No data is available for marine baseline noise levels within Loch Maddy, and no baseline noise monitoring was conducted. The current source of underwater noise would be limited to vessel traffic, particularly the arrival and departure of the ferry using the existing ferry terminal infrastructure, together with smaller vessels using the pontoon, pier and mooring facilities. Acoustic deterrent devices may also be installed at the adjacent fish farms, which are located approximately 3km northeast from the terminal. As such Loch Maddy is subject to regular underwater noise emissions caused by human activity.

Underwater noise modelling was utilised to estimate the potential acoustic impact ranges for marine mammals and fish. Underwater source noise levels were predicted based on the equipment and techniques expected to be used during the construction operations, in conjunction with data collected for similar activities during other developments. The propagation of noise from the works was then modelled using a combination of the predicted source noise level and transmission losses to water, together with interactions with the adjacent water depths and sediment types. This enabled noise levels at differing ranges from

the construction works to be estimated which were then compared to published acoustic impact criteria for marine mammals and fish.

The impact ranges resulting from the modelled construction activities varied significantly, depending in the predicted source level. There were also considerable differences between the fish and marine mammal receptors, depending on the species (functional hearing group) and the applicable criteria taken from appropriate literature. The greatest acoustic injury range identified of 280m was for high frequency cetaceans (harbour porpoises) resulting from impact piling. Detailed acoustic impact assessments for marine mammals and fish were completed in the topic specific chapters of the EIAR, and appropriate mitigation identified to prevent harm (see Sections 5 and 7).

11 Traffic, Access and Navigation

Lochmaddy ferry terminal is part of a working harbour, the ferry itself is a lifeline service as such the effects construction and operation have on terrestrial and marine traffic and access were assessed. The understanding of baseline conditions, included understanding the current travel services available in terms of ferry and bus connections, marshalling and parking facilities and the berthing facilities.

As discussed in Section 2, the design and construction works have been planned in such a way as to ensure that the ferry service can continue to operate throughout the works. The pontoons are immediately adjacent to the berth dredge area and the marina facilities are in the middle of the proposed north west extension area. Hence, they also needed to be considered within the design and construction planning.

In addition to the ferry continuing to utilise the ferry pier throughout the construction works, steps have been taken to ensure essential deliveries can be made and local vessels can continue to utilise the pier during the construction phase.

The berth dredge requires the easterly pontoon anchors to be temporarily relocated, and as dredging will be close to the pontoons, the berths at the east end of the pontoons may need to be temporarily taken out of service. The dredge works will be carried out through the winter months, when there are fewer visiting vessels and hence there should be enough berths for the local vessels on the pontoon. The pontoon access bridge will be removed as part of the construction works; however, this will not happen until an alternative access is made available. Hence with appropriate programming and communications the effect is non-significant.

The marina facilities will need to be relocated to facilitate construction; this may include them being temporarily unavailable. Once the land reclamation is complete the marina facilities will be relocated close to the pontoons within a secured area, with additional parking being provided. Hence once operational the marina facilities will have been significantly improved.

The winning of material from the levelling of the hill, for use in the land reclamation minimises the material requiring delivery by road. The infilling of the caisson requires the largest volumes of materials to be delivered. Infilling will be carried out over 4 weeks and will required 20 deliveries (40 heavy goods vehicle movements) a day. The increase in vehicle movements will

be spread throughout the day and as such will not lead to a significant detrimental effect, on the currently underutilised road network.

Once operational there will be an additional 21 car park spaces and 7 heavy goods vehicles /trailer spaces, increased marshalling space, cycle storage, a mini roundabout to improve access to the marshalling area, footpaths and a wider turning area in front of the terminal building, leading to improved road safety, local amenity and facilities for sustainable transport.

The significant improvements to the ferry pier will ensure the lifeline service can operate with the large vessel while benefiting other users of the pier.

12 Water Quality and Coastal Processes

The EIAR assessed potential impacts on marine water quality and coastal processes which may result from the construction and operational phases of the upgrade works.

Baseline data collection involved the undertaking of ground investigation to inform the condition of the marine sediment across the dredge areas, by taking vibrocore samples for chemical analysis. In addition, a literature review of reports and research articles was undertaken to identify baseline conditions present in the vicinity of the development and the proposed dredge disposal grounds.

The assessment identified potential environmental impacts on marine water quality, including:

- Increased water column sediment loading from dredging, dredge disposal and land reclamation works;
- Release of hazardous substances;
- Introduction of non-native marine species;
- Creation of marine litter; and
- Alteration of coastal process and flooding vulnerability.

Increases in sediments in the water column can have negative effects on ecological receptors. In the case of dredging and dredge disposal sediments are in the water column primarily because they have been 'dropped' into it. As such the solids tend to pass through the water column quickly settling out on the seabed. Hence the effects were deemed to be short-term minor: non-significant. The land reclamation will use material low in fines and geotextiles which prevent the escape of solids as such no change in water quality was predicted.

Construction works will require the use of potentially polluting substances, such as fuel oil/diesel, hydraulic fluids and oils associated with construction plant. However, the volumes involved are relatively small and as such no impacts were identified as being significant. Industry best practice regarding storage and handling of potentially polluting substances will be implemented to ensure that the chance of a loss of containment is minimised. Appropriate spill management and recovery plans will be in place in the unlikely event of a loss of containment.

The introduction of a non-native marine species into the marine environment can cause devastation to the local habitat. However, the chance of introduction of non-native marine species during the construction and operational phases is very unlikely. This is due to only a

handful of vessels being involved in the construction works and the implementation of the Ballast Water Management Convention.

Marine litter, especially plastics, have been highlighted as a significant environmental issue in recent years. During construction works, waste will be appropriately segregated and stored to avoid it becoming marine litter. The terminal facilities will provide appropriate waste receptacles to ensure that the public have access to bins and hence are less likely to drop litter.

Flood and coastal processes were considered through the design process and no change to coastal processes or flood risk to the ferry terminal was identified.

The installation of a new drainage system with silt and oil interceptors for the marshalling area, was identified to result in a beneficial effect of moderate significance by minorly improving diffuse pollution levels compared to the current system.

The assessment of potential cumulative effects on water quality from three other projects associated with the shared use of the dredge disposal site at Stornoway was assessed as minor non-significant, as effects on the sediment loading in the water column will be short lived and reversible in all cases. It is unlikely that projects will be disposing of dredge materials at the same time.

A Water Framework Directive assessment was also completed and found that there is no predicted reduction in the water quality status of Loch Maddy due to the development.

13 Schedule of Mitigation

All of the mitigation identified through the development of the EIAR has been collated in a Schedule of Mitigation. The Schedule of Mitigation has in turn been utilised to produce the Construction Environmental Management Document which provides additional detail on how the mitigation will be implemented.

The Construction Environmental Management Document will be a working document utilised by the construction contractor during the construction planning and construction activities. It shall also inform the production of the construction contractors' Risk Assessment Method Statements for the works.

14 Conclusion

A detailed assessment of effects associated with the construction and operations of the Lochmaddy ferry terminal upgrade has been completed. It has identified that with the implementation of appropriate mitigation all, but one adverse effect can be reduced to non-significant levels. The adverse significant effect remaining post mitigation is associated with construction noise on two houses for up one specific construction task lasting up to four weeks. Specific mitigation to minimise the disturbance caused will be developed with the residents, to meet their needs.

The upgrade works give rise to a number of beneficial significant effects associated with the operational phase. The introduction of cold ironing will reduce night-time noise levels when the ferry is overnighing in Lochmaddy, this will benefit multiple receptors.

Increased trailer and car parking improves local amenity and reduces potential for vehicles to be parked on the public road. The relocated marina facilities will benefit from improved parking and security arrangements.

The ferry pier upgrade not only ensures that the new larger ferry can berth in all conditions, it also facilitates improved access for essential deliveries and local vessels. Upgrades to the drainage system to include oil/silt interceptors, will benefit marine waste quality.

The inconvenience and low environmental impact associated with the construction works is far outweighed by the long-term benefit of the upgrade works.

Table 14.1: Summary of Significant Effects Considering Mitigation

Receptor	Nature of Impact	Receptor Sensitivity/ Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Houses immediately north of the Ferry Terminal	Noise from construction activities in the immediate vicinity of the properties (Task 6).	High	N/A	Significant	Bespoke mitigation required to be determined through dialogue with residents.	Significant Adverse Very Short-Term	Significant
Lochmaddy Hotel	Cold ironing of vessel overnight.	Medium (daytime) High (evening & night-time)	Major Beneficial Permanent	Major: Significant	None required.	Major Beneficial Permanent	Major: Significant
Houses immediately north of the Ferry Terminal	Cold ironing of vessel overnight.	High	Major Beneficial Permanent	Major: Significant	None required.	Major Beneficial Permanent	Major: Significant
Closest Lochmaddy Residential Area	Cold ironing of vessel overnight.	High	Moderate Beneficial Permanent	Moderate: Significant	None required.	Moderate Beneficial Permanent	Moderate: Significant
Local Amenity	Increased car, HGV and trailer parking. Greater capacity on the lifeline ferry service.	High	Moderate Beneficial Permanent	Moderate: Significant	None required.	Moderate Beneficial Permanent	Moderate: Significant
Local Vessels	Facilities closer to pontoons, with fencing improving safety and security. Provision of parking adjacent to the facilities.	Medium	Moderate Beneficial Permanent	Moderate: Significant	None required.	Moderate Beneficial Permanent	Moderate: Significant

Receptor	Nature of Impact	Receptor Sensitivity/ Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Local Vessels	Additional berthing available on the northside of the ferry pier. Longer berthing face available on the ferry berth.		Moderate Beneficial Permanent	Moderate: Significant	None required.	Moderate Beneficial Permanent	Moderate: Significant
Essential Deliveries		High	Moderate Beneficial Permanent	Moderate: Significant	None required.	Moderate Beneficial Permanent	Moderate: Significant
Marine Water Quality	New Surface Water Drainage System Resulting in Changes to Water Quality.	Certain	Medium Beneficial Long-term	Moderate: Significant	Appropriate maintenance of oil/silt interceptor.	Beneficial Long-term	Moderate: Significant