Tarbert Ferry Terminal Upgrade
Environmental Impact Assessment Report

Volume 1

Non-Technical Summary

January 2019

CMAL
Caledonian Maritime Assets Ltd
S òras Mara Cailleannach Eta

SKYE TRIANGLE
INFRASTRUCTURE WORKS

Contents

1 Introduction

A new ferry is being constructed for use on the Skye Triangle (Tarbert – Uig and Uig-Lochmaddy routes). The ferry is larger and can carry more passengers and vehicles than the existing vessel. Caledonian Marine Assets Ltd (CMAL) are proposing upgrades to the Tarbert ferry terminal to allow the safe berthing of the larger vessel and to provide shoreside facilities for additional passengers and vehicles.

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

A Harbour Revision Order (HRO) is being sought from Transport Scotland to extend the area covered by the existing Harbour. This will include an additional area of land to allow the proposed shoreside upgrades to be completed, the head of East Loch Tarbert and an area to the east to include the approaches to East Loch Tarbert. This will provide a single point of authority to ensure navigational safety of all vessels.

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 HRO applications.

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 Tarbert Ferry Terminal Building, Pier, Tarbert, HS3 3DG. The ferry terminal building is open between the following hours:

- Monday, Wednesday, Friday - 6:00 a.m. - 5:30 p.m.
- Tuesday, Saturday - 9:00 a.m. - 8:00 p.m.
- Thursday - 9:00 a.m. - 5:00 p.m.
- Sunday - 8:00 a.m. - 10:00 a.m. and 5.30 p.m. - 6.30 p.m.

Electronic copies of the full marine licence and HRO application documents can be downloaded from the CMAL website http://www.cmassets.co.uk/project/skye-triangle-infrastructure-works/.

A CD containing the full marine licence and HRO consent application documents can be obtained 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 required.

If you would like to provide feedback with regard to the marine licence or HRO applications, then this should be given directly to Marine Scotland and Transport Scotland as per the advertised routes.

2 Project Description

2.1 Project Need

The Skye Triangle (Tarbert – Uig and Uig- Lochmaddy) 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 terminal facilities are aging and 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 East Loch Tarbert. Tarbert is located on the south-east coast of the Isle of Harris, the upgrade works grid reference centre point is NG 157 999. Tarbert is the main community on the Isle of Harris. The ferries that utilise this terminal provide the shortest link between Harris and Uig on Skye, which has road links to the Scottish Mainland. The harbour is situated to the south of the main village. Tarbert falls within the administrative area of the Comhairle nan Eilean Siar (CnES).

2.4 Harbour Revision Order (HRO)

CMAL are applying for a HRO to extend the existing harbour limits from the current area of 46.22 hectares (ha) (45.7ha marine and 0.52ha terrestrial) to include an additional 152.92ha (152.8ha within the marine element and 0.12ha within the terrestrial environment). Figures 2.1 and 2.2 show the proposed harbour area.

The extended harbour area will incorporate the pontoons and two anchorages into the Harbour Authorities jurisdiction. CMAL, the Harbour Authority, will be responsible for ensuring marine safety in the harbour area.

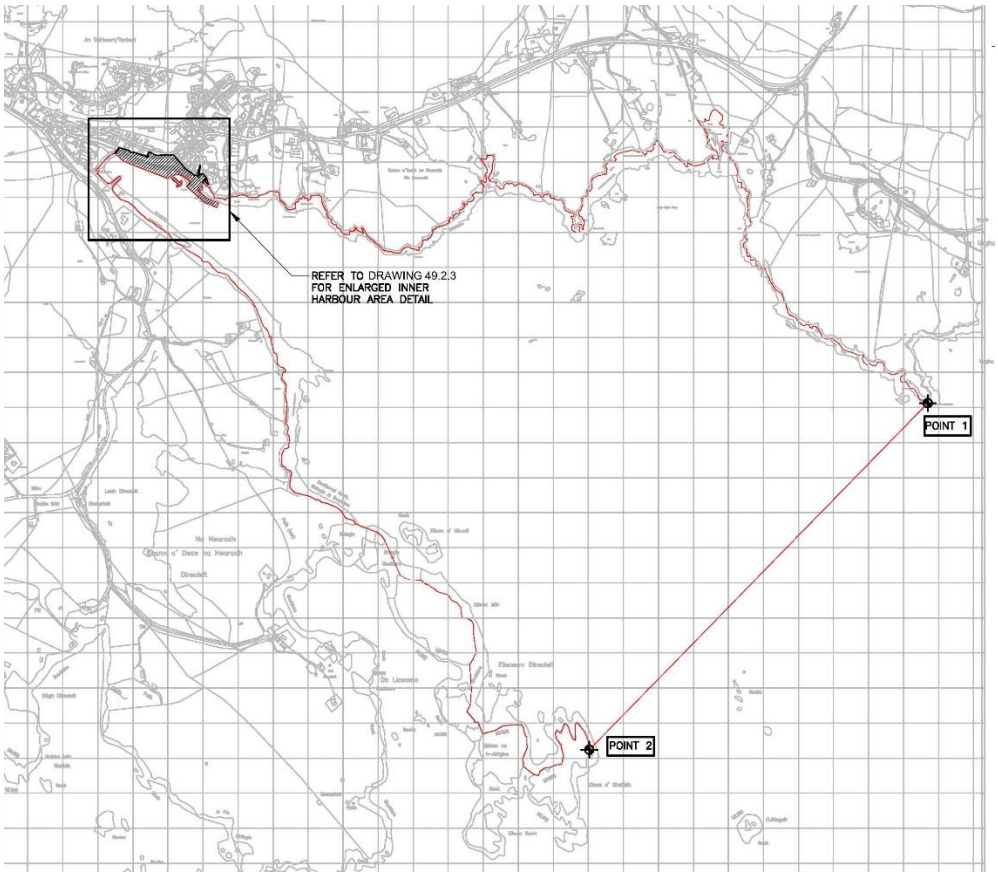

Figure 2.1: Proposed Harbour Area

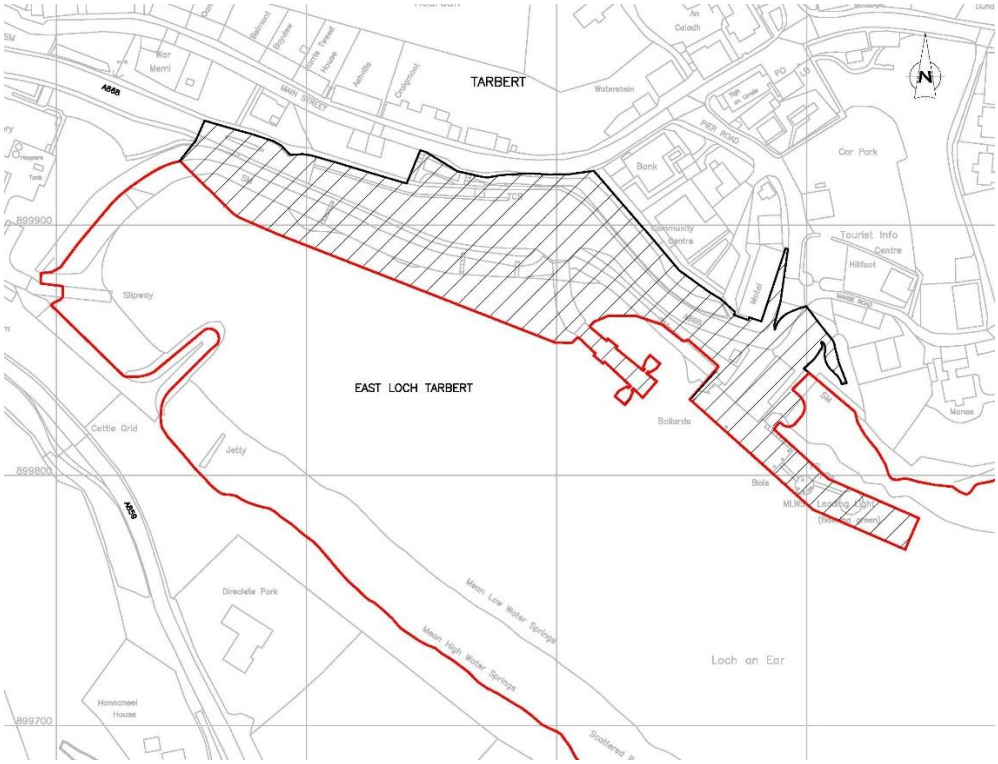

Figure 2.2: West Section of the Proposed Harbour Area

2.5 Project Components

The Tarbert ferry terminal upgrades include the following components:

- Pier demolition, reconstruction, extension, fender and furniture installation;
- Demolition of the existing terminal building;
- Construction of new terminal building;
- Dredging works within East Loch Tarbert to facilitate construction works and vessel manoeuvres;
- Extension of marshalling and carpark area through land reclamation; and
- Temporary construction arrangements including a temporary terminal building and berthing arrangements.

The land reclamation and marshalling area includes the installation of a new roundabout to improve access to the marshalling area. The exit lane from the ferry will run along the seaward edge of the reclamation area, while the feeder lane which allows vehicles to enter the appropriate waiting lane runs around the landward edge of the marshalling area. There will be two check in kiosks of a similar design to those currently in place but white in colour. These will be located partway down the marshalling area.

A raised footpath will be located along the northern edge of the marshalling area between the feeder lane and the public road (A868). The pedestrian footway continues eastward around the ferry terminal, towards the ferry terminal building and along the northwest side of the terminal building. A guardrail separates the path from the public road, protecting the public

from road traffic. Drop kerbs with tactile paving are provided where the pavement meets the road at crossing points.

Two electric vehicle charging spaces, and six parking spaces, will be provided with easy access from the A868. To the east of the parking places is a drop-off/pick up area with spaces for a bus or four cars. At the rear of the new ferry terminal building, there will be two disabled parking spaces and at least three staff parking spaces.

A covered bicycle storage area will also be provided along with a new storage building, once the temporary terminal building is removed from the site.

The new ferry terminal will be larger than the existing terminal. A comparison between the existing building and planned building is provided in Table 2.1.

Table 2.1: Terminal Building Comparison

Requirement	Existing Building	Proposed Building	Commentary
Seating capacity	50 seats	100 seats	Capacity for 95% of sailing, based on 20-year projected figures.
Overall capacity	100 people total (72m^2)	150 people total (105m^2)	Capacity for 100% of sailings based on 20-year projected figures and regulation capacity for concourse/queuing area (0.7m^2 per passenger)
Offices	4.2m long ticket/reservations counter (2 high counters and 1 accessible position) 31m^2 admin office 1 manager office (11.7m^2)	5m long ticket/reservations counter (3 high counters and 1 accessible position) 52m^2 admin office 2 manager offices (11.4m^2 each)	Increase in counter and admin office size due to increased staff & passenger numbers. 2 offices to be shared by 3 local managers plus visiting staff.
'Changing places' unit	None	Included	Transport Scotland, CMAL and CalMac policy.
Public toilets	Male (1 cubicle, 2 urinals, 2 basins and baby change) Female (3 cubicles, 3 basins and baby change) 1 accessible convenience.	Male (2 cubicles, 3 urinals, 3 basins and baby change) Female (5 cubicles, 5 basins and baby change) 1 accessible convenience.	Increased capacity to accommodate increased passenger numbers.
Mess facilities	13m^2	25m^2	Increase due to increased staff numbers.
Drying room	None	Included	Supplied in line with The Workplace (Health, Safety and Welfare) Regulations 1992 and Welfare at Work Guidance
Changing room/shower	None	Included	
Staff toilets	1 unisex	1 Male & 1 Female	

Requirement	Existing Building	Proposed Building	Commentary
			(Health and Safety Executive, 2007).
Store rooms	1 Janitorial/ cleaning products store 1 (35m^2) store for brochures, stationery	1 Janitorial/cleaning products store 1 (19m^2) store for brochures, stationery 1 Comms room	Additional store for appropriate housing for communication equipment currently in the administration office. Note that an external store is planned which will reduce overall storage needs in the building (see 2.1.6)
Plant room	Electrics and heating	Electrics and heating	No change

2.6 Construction

Initial land reclamation work will be completed in the area of the linkspan to provide an area for the temporary ferry terminal to be located. Once the temporary facility is in place, it will be possible to take down the existing terminal building to give access for the pier demolition, reconstruction and extension works.

The main land reclamation is adjacent to the existing marshalling area. The sediments in this area are too soft to build on top of, hence they will need to be dredged out prior to reclamation commencing. To facilitate access by the dredger the pontoons will be taken out of service and moved out of the way. The dredger will dredge the access area (in the vicinity of the normal pontoon location) and the area to be reclaimed. Once dredging is complete the pontoons will be reinstated. This work is planned for the winter months to minimise disturbance of the pontoon users. An area next to the ferry berth needs to be dredged to provide the appropriate water depths for the new vessel. This operational dredge will be carried out around the ferry timetable to avoid interference with ferry services. Dredged material is not suitable for reuse and as such it will be disposed of to the spoil disposal ground near Stornoway.

The land reclamation will involve the removal of some of the existing rock armour. This, along with rock brought to site will be utilised to build a new revetment south of the existing marshalling area. The land reclamation will include the import of material by road to infill the area, the installation of services and drainage system including oil/silt interceptors and surfacing.

To ensure that the lifeline ferry service can remain operational throughout the construction period, a temporary fendering system will be installed adjacent to the existing pier.

The existing pier will be removed to make way for a new extended pier.

Once the pier has been completed the new terminal building will be constructed in the location of the previous existing building. The temporary terminal building will be removed to make way for a new storage facility.

Services and furnishings will be installed at various stages during the construction works to ensure the ferry terminal can continue to operate throughout the works.

2.7 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 terminal, marshalling area and new roundabout will facilitate the management of increased ferry passengers and vehicles without interfering with the local road network.

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 Transport Scotland, and their statutory consultees including: Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and CnES. 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.

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

The extension to the Isle of Harris Distillery was considered as the construction works could overlap which could give rise to cumulative effects associated with dust, noise and traffic.

The Uig ferry terminal upgrade, also part of the Skye Triangle ferry upgrades, will affect ferry sailings and as such will have knock on effects for Tarbert. These were considered in Traffic, Access and Navigation.

4 Statutory Context & Policy

There are a number of statutory requirements for the proposed Tarbert 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 Tarbert Pier Development works located below mean high water springs (MHWS) 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.

A Harbour Revision Order (HRO) is being applied for from Transport Scotland, in line with the Harbours Act 1964 (as amended), to extend the harbour limits defined in the Lochmaddy and East Loch Tarbert (Improvement of Piers &c.) Confirmation Act 1984 ('1984 Order'). Works above the Mean Low Water Spring (MLWS) will be consented via existing powers under the East Loch Tarbert Pier Order 1873 ('1873 Order'), the 1984 Order and through the HRO application process. The Harbours Act 1964 (as amended) requires the HRO submission to be supported by an EIAR.

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 Tarbert ferry terminal upgrade falls within these regulations as it covers an area larger than one hectare.

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

Area (SPA) or a Special Area of Conservation (SAC)). As the Tarbert ferry terminal upgrade is near to Natura Sites, an HRA 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 MHWS and within 12 nautical miles (nm) 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 Tarbert 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 Tarbert ferry terminal upgrade meets GEN requirements and contributes towards the achieving relevant sector specific policies and objectives.

Although the proposed development does not require planning consent, due to the close proximity to land it is deemed appropriate to set out the planning policy context.

The development plan system in Scotland which provides the framework for considering planning applications is made up of 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 Tarbert 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. Cycling facilities are being provided along with safe footpaths. The ability for larger vessels to berth will facilitate addition freight movements by ferry. As such the project is in alignment with the SPP, connected place policies.

Relevant PANs for the Tarbert 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 Air Quality

The focus of the air quality assessment was on the fugitive dust emissions associated with the construction of the Tarbert ferry terminal upgrade and the greenhouse gas (GHG) emissions associated with the construction and operational phases.

Sensitive receptors identified for the dust assessment were: Hotel Hebrides, Marshalling area, Port workers, residential properties and non-residential properties. Sources of dust associated with the terminal upgrade are:

- Demolition works required to remove the existing terminal building to accommodate the reconstruction of a new terminal building;
- Construction works to erect the new terminal building;
- Earthworks required to facilitate the infilling works including the temporary storing of infill materials; and
- Track out associated with the Heavy Goods Vehicles (HGVs) delivering primarily materials to the site.

Dust impacts due to earthworks and track out for Hotel Hebrides, Marshalling area, Port workers, residential properties and non-residential properties were assessed as having a moderate to major significant effect in the absence of mitigation. All other assessments related to dust were non-significant.

Appropriate mitigation has been identified for the management of dust, taking into account the Institute of Air Quality Management and Pollution Prevention Guidelines. A Dust Management Plan has been developed and included within the Construction Environmental Management Document. Mitigation reduces the previously assessed significant effects to non-significant levels.

The carbon cost with regards to materials usage and delivery was calculated. A total of 4778 tonnes of carbon dioxide equivalent (CO_2e) is estimated to be produced as a result of the construction of the Tarbert ferry terminal upgrade, equivalent to the annual carbon footprint of 1017 people or 0.012% of the annual CO_2e for the whole of Scotland in 2016.

The operation of the Tarbert ferry terminal Upgrade will still use electricity which indirectly results in greenhouse gas emissions, although the changes in electricity usage are anticipated to be negligible. Upgrading of the facility, however, does facilitate the reduction of GHG emissions by providing infrastructure to deploy a new ferry with dual fuel engines and cold ironing capabilities, reducing overall GHG emissions from ferry operation.

Cold ironing will save 142 tonnes of CO_2e a year, giving rise to a 47.5% reduction in emissions. This is equivalent to discharges for 30 people per year. Thirty-three years of cold ironing use will be required to balance out the construction CO_2e cost. With appropriate maintenance the ferry terminal upgrade including the associated cold ironing facilities will operate for more than 33 years. It can therefore be argued that over the lifetime of the project it is carbon neutral. However, this doesn't take account of the benefits associated with facilitating the use of the new dual fuel vessel, which will also reduce overall carbon emissions. Hence on balance the project is deemed to be minor: non-significant beneficial from a greenhouse gas perspective.

Mitigation to reduce greenhouse gas emissions associated with construction include the optimisation of material usage through the design process, and local sourcing of materials where practicable; helping to avoid unnecessary CO_2e.

6 Marine Mammals

The Tarbert ferry terminal upgrade is situated on the Isle of Harris, on the western side of the Minch, an area renowned for its importance to marine mammals. Protected areas identified as being relevant to the Tarbert 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 Tarbert 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 at the head of East Loch Tarbert. These waters, in the immediate vicinity (within 1km) of the development, are rather confined, generally shallow, being less than 25m in depth, 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 Tarbert ferry terminal upgrade are assessed as minor, non-significant.

7 Benthic Ecology

In order to appropriately assess the potential effects on organisms on the seafloor (benthic ecology) from the Tarbert ferry terminal upgrade, the baseline condition had to be understood. This was achieved through an extensive literature review and field surveys. The survey operations consisted of two separate benthic surveys campaigns, during which video transects and grab samples were taken. The benthic surveys identified multiple biotope in the proposed infilling and dredging areas. None of the recorded species or biotopes during the benthic surveys are of conservation concern.

The literature review identified two sites specifically designated for benthic features near the proposed development. These are the Luskentyre Banks and Saltings Site of Special Scientific Interest (SSSI) and Tong Saltings SSSI, however, these sites are located approximately 6km and 27km by sea from the proposed development site respectively. The large distance between the development and the SSSIs mean no benthic habitat connectivity is likely to exist and as such they were not assessed further.

The construction stage of the Tarbert ferry terminal Upgrade is likely to 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 benthic flora, fauna, and habitat in the extended marshalling area footprint. 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 East Loch Tarbert benthic communities, as the habitat loss is relatively small in relation to the overall area. The location of the works at the end of the Loch is such that it will not result in habitat fragmentation. There will also be a temporary loss of benthic flora, fauna, and habitat within the dredge pocket, but 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.

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.

8 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 pMPA 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 designated sites.

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 proximal to where their respective riverine habitats meet the marine environment. The Tarbert ferry terminal upgrade is located at the head of East Loch Tarbert. Since no notable watercourses discharge to this area, it is considered unlikely that migrating diadromous fish will transit through, and hence be present in the waters in the vicinity of the proposed construction works. This is also true of the Stornoway spoil ground, since no rivers discharge to the sea in the vicinity of this site.

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 East Loch Tarbert are not anticipated to provide valuable habitat for basking sharks, and there have been no recorded sightings within the Loch. As such it is considered unlikely that this species will be present in the immediate vicinity of the ferry erminal. This is also true of the Stornoway spoil ground.

The potential effects on diadromous fish and basking shark due to the development was 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.

9 Noise and Vibration (In-air)

The Tarbert ferry terminal is located in the centre of the village of Tarbert, and as such there are multiple noise sensitive properties in the immediate vicinity of the development. Baseline noise measurements were taken to understand the current noise levels in the vicinity of the ferry terminal at various times of the day and night.

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.

The initial modelling showed that the noise levels at some properties associated with the works on the terminal building and piling of the pier were not acceptable. Barriers were therefore specified around part of the works to provide noise screening. With these in place the noise levels for all the construction activities were 70 decibels or lower at all receptors. As the works will be carried out between 7am and 7pm Monday to Saturday the assessment concluded that the construction noise effects are non-significant.

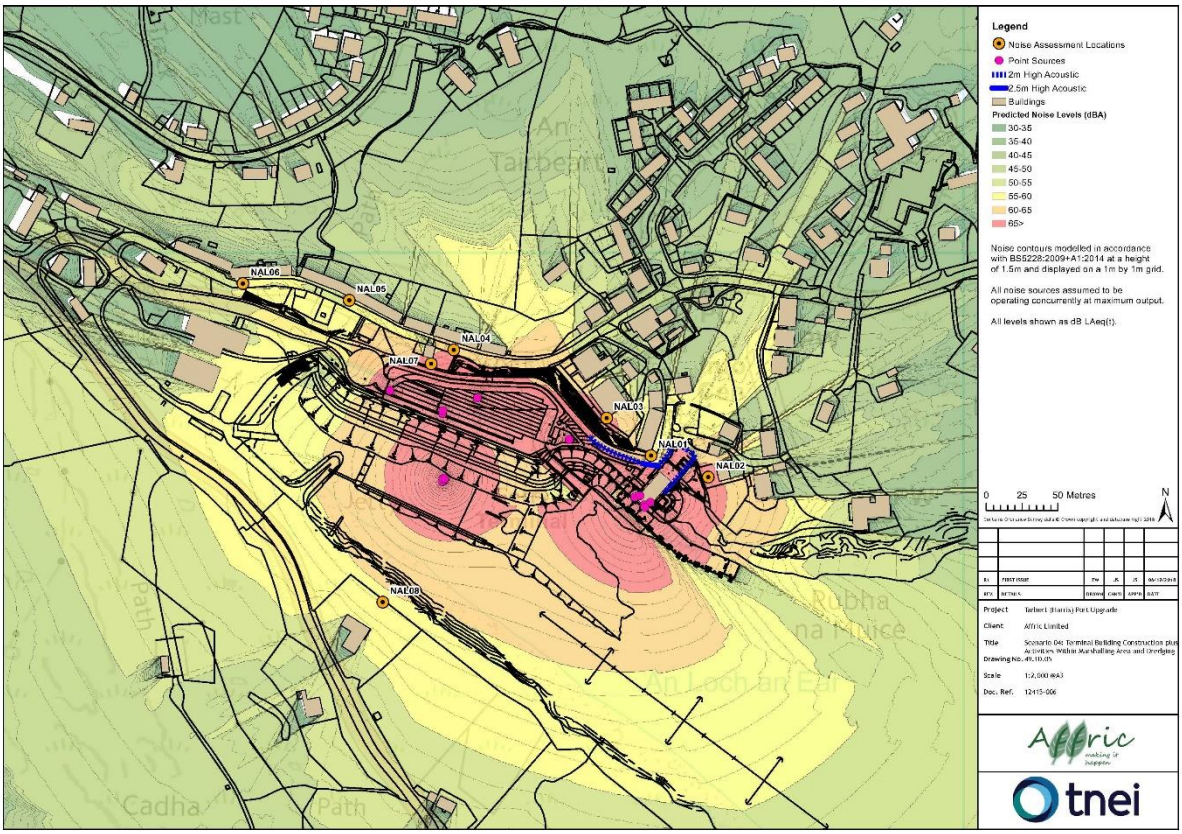

Figure 9.1: Example Noise Contour Map

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 Tarbert.

10 Noise and Vibration (Underwater)

During the proposed Tarbert ferry terminal upgrade works, both vibro and impact piling will be required for the installation of both permanent and temporary works piles which will be installed to construct the new pier structure. The marine piling operations will result in elevated levels of underwater noise. Other construction activities including dredging and rock breaking 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 East Loch Tarbert, 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 facilities. Acoustic deterrent devices may also be installed at the adjacent fish farms, which are located approximately 4km from the proposed development site. As such East Loch Tarbert 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 250m 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 6 and 8).

The bathymetry and geography of East Loch Tarbert is such that most of the underwater noise energy generated by piling operations will be contained within the Loch itself. As such, no cumulative effects with other projects were predicted.

11 Traffic, Access and Navigation

During the construction works there will be a requirement to deliver a large volume of material by road for the land reclamation works. Once operational there is a potential increase in traffic numbers associated with the new ferry, and the marshalling area will be accessed utilising a new roundabout in place of the existing arrangement. A detailed transport assessment was therefore completed to understand the effects of the project on traffic and access in Tarbert, and to aid the roundabout design. The Traffic Assessment has been submitted as a standalone report to support the Marine Licence and HRO applications although the main traffic effects were assessed in the EIAR and are summarised here.

Traffic counts were carried out to understand the existing road usage on the linking roads, namely the A859, Main Street and Pier Road. The designed hourly capacity of each of the roads is 1500 movements. The surveyed maximum flow was on the A859, where 220 vehicles were counted in an hour. Comparing the predicted flows with the calculated design capacity for each link indicates that there is sufficient reserve capacity. It is forecast that the delivery of material for the land reclamation will generate approximately 168 goods vehicle deliveries per week over a 24-week period. Typical two-way hourly flows are estimated at 8 movements throughout the working week or 56 daily movements. In addition, construction staff are estimated to typically give rise to 36 two-way vehicle movements a day. Construction vehicles movements will be planned to avoid ferry arrival times when vehicles are disembarking from the ferry.

The construction traffic assessment identified negligible: non-significant effects on road users and public transport, with minor: non-significant effects on pedestrians, cyclists and local amenity. With regard to road safety, it was identified that the HGV movements could give rise to increased severance and intimidation, especially outside the Sir E. Scott School. Without additional mitigation it was identified to be a moderate: significant effect. The overall effect was reduced to minor: non-significant when mitigation, including liaison with the school, was considered.

Navigational effects of the project were considered in the EIAR. Navigational risk due to the construction works are minor: non-significant as there will not be excessive numbers of vessels involved with the construction works. Prior to and during construction, CMAL will review the risk assessments and marine activity operating procedures in place. Engagement through the Harbour User Group Forum will be increased, to ensure good dialogue with other users.

The effects on ferry sailings associated with the construction works are minimised by the inclusion of a temporary fendering solution which will allow the ferry to berth throughout the works. However, it will not be possible for foot passengers to access the ferry from the pier at times, foot access will be via the linkspan instead. This was assessed as a minor; non-significant

effect but it was acknowledged that there is a need for good communications with passengers regarding this issue.

To facilitate the dredge work, the pontoons will need to be taken out of service for up to 14 weeks. This is planned through the winter months to minimise disturbance, particularly to visiting boats. However, it could have a moderate: significant effect on local vessel owners. Good communications with the pontoon operator and local vessel owners, to allow them to plan ahead, is key to reducing the impact to non-significant levels. It is however noted that the access dredge, once complete, will enhance the facilities available at the pontoon by providing deeper water depths.

Once operational, the increased vehicle and passenger numbers are not expected to cause any noticeable effects. The inclusion of safe pedestrian walkways with tactile drop kerbs give rise to a beneficial minor: non-significant effect on local amenity. The roundabout will improve access to the marshalling area by negating the need for traffic from the east having to turn in the road. The increased marshalling area size, with kiosks partway down the area, should mean that traffic will not have to queue on the public road. This was assessed as a beneficial moderate: significant effect.

Navigationally, the inclusion of the pontoons and two anchorages into the harbour area such that they fall under the harbours Marine Safety Management System was identified to be a beneficial moderate: significant effect.

12 Water Quality & 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 and borehole 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 free from fines and 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.

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 surrounding properties was identified. Flooding risk to the ferry terminal was identified as being negligible: non-significant.

The installation of a new drainage system with silt and oil interceptors, however, was identified to result in a beneficial effect of moderate significance by minorly improving diffuse pollution levels compared to the current system. In addition, the HRO will result in a larger area and additional facilities being brought within the Statutory Harbour Limits. This means the Harbour Authority, CMAL, will have jurisdiction over activities in these areas and powers to make byelaws to help ensure water quality is maintained through a larger area, resulting in a moderate significant beneficial effect on localised water quality.

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 East Loch Tarbert due to the development.

13 Landscape, Seascape and Visual

The ferry terminal sits in the middle of Tarbert and as such there are numerous dwellings and settlements, roads and recreational routes which will have visibility of the upgraded ferry terminal development. This was recognised early in the design process and taken account of in the ferry terminal building design and sighting of various components. Unfortunately, due to a lack of space, it was not possible to design out all effects.

Tarbert sits in the South Lewis, Harris and North Uist National Scenic Area NSA. Therefore, it was important to assess whether the Scenic Area would be detrimentally affected by the development.

Computer modelling was completed to produce zones of theoretical visual (ZTV) influence to identify where the development can be seen from, an example of which is provided in Figure 13.1.

The ZTV's were used to identify viewpoints which were utilised for the assessment including the production of photomontages showing what the development would look like from each viewpoints. Two of these have been utilised on the cover of this document. One of the viewpoints was from the ferry as it comes into harbour to understand the seascape effects.

The assessment considered effects during construction, as built and with a ferry berthed.

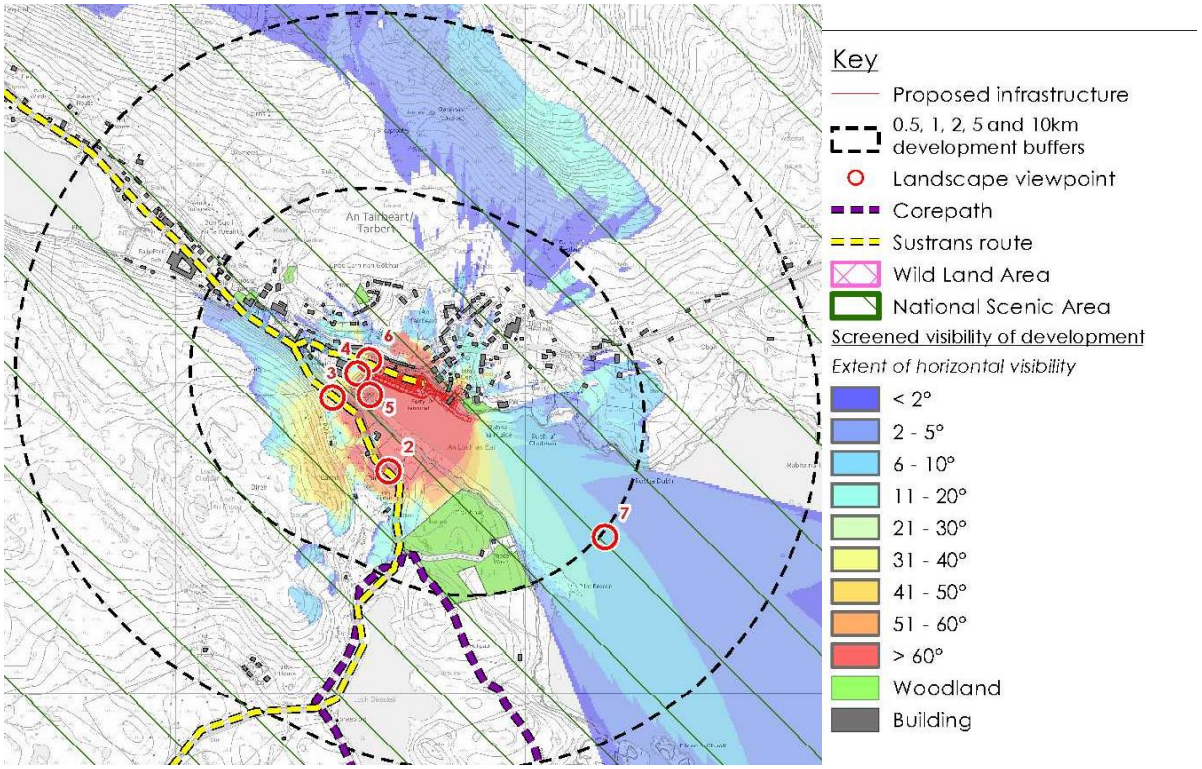

Figure 13.1 Screened ZTV with Landscape Designations

Construction works were found to have significant effects on the following receptors:

- South Lewis, Harris and North Uist NSA within 500 m (localised);
- Tarbert – dwellings with direct open views or oblique or partial views;
- Dispersed dwellings within 500 m with direct open views;
- Users of National Cycle Network 780 within 250 m;
- Visitors and marina users within Tarbert;
- Ferry passengers within 500 m; and
- Path users within 150 m.

Once operational, significant effects are predicted on the following receptors:

- Tarbert – dwellings with direct open views;
- Users of NCN 780 within 150 m; and
- Visitors and marina users within Tarbert.

The following receptors were considered to be subject to intermittent significant effects when the ferry is present during operation:

- South Lewis, Harris and North Uist NSA within 500 m (localised);
- Tarbert – dwellings with direct open views or oblique or partial views;
- Dispersed dwellings within 500 m with direct open views;
- Users of NCN 780 within 150 m
- Visitors and marina users within Tarbert; and
- Path users within 150 m.

14 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 contractor Risk Assessment Method Statements for the works.

15 Conclusion

There were 21 significant adverse effects associated with the construction works without secondary mitigation. Once secondary mitigation was taken into account, the number of residual adverse significant effects reduced to five (Table 15.1). All five are associated with seascape, landscape and visual effects which will occur during the construction works.

The operational phase has nine adverse significant effects associated with it, all relating to seascape, landscape and visual effects. They are not reduced by secondary mitigation. Seven of the significant adverse effects only occur when the ferry is docked at the berth. The remaining two are associated with the visual impacts on dwellings with direct open views to the ferry terminal and the section of the Hebridean Way National Cycle Network (NCN) Route 780 within 150m of the development. Visual impacts on the nearest receptors were recognised as an issue throughout the design process, and efforts were made to minimise the effects through this process. Unfortunately, the sensitive location and lack of space meant that not all significant effects could be designed out.

Facilitating the introduction of the new ferry will bring a range of benefits to Tarbert and the Isle Harris and as whole.

The EIA has identified eight specific significant benefits of the terminal upgrade and associated Harbour Revision Order. The inclusion of an onshore power supply will allow the ferry to cold

iron when alongside at night, reducing both greenhouse gas emissions and significantly noise levels at local residential properties and the Hotel Hebrides.

The land reclamation works required the existing surface water arrangements to be redesigned. The inclusion of oil and silt interceptors within the design will reduce emissions to East Loch Tarbert of solids and immiscible substances such as oil, which can be detrimental to the environment.

The inclusion of a roundabout at the entrance to the marshalling area will negate the need for vehicles travelling from the east to have to carry out a turn on the road, while the increased marshalling area will reduce the potential for vehicles queuing out onto the public highway.

The extension of the Harbour area will incorporate all of the head of East Loch Tarbert to the west including the pontoon area, and an area to the east including two anchorages. CMAL's Marine Safety Management System and by-laws associated with potential pollutants will apply over a wider area. This will give rise to improved navigational safety and reduced environmental risks associated with vessels in these areas. The pontoon area will also benefit from greater water depths which will facilitate access by larger vessels.

Table 15.1: 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
Construction							
South Lewis, Harris and North Uist National Scenic Area	Landscape effects from construction.	High	Medium Adverse	Localised Mod-major	Equipment and materials no longer required on site during construction will be removed promptly. Crane arms would be lowered when not in use. Good housekeeping practices will be employed during construction. Waste receptacles would be covered, and littering would not be tolerated.	Medium Adverse	Localised Mod-major
Tarbert Dwelling with Direct Open Views	Visual effects from construction.	Medium	Large Adverse	Major		Large Adverse	Major
Tarbert Dweellings with Oblique or Partial Views	Visual effects from construction.	Medium	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
Dispersed dwellings within 500m with direct open views.	Visual effects from construction.	Medium	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
A859 within 150m	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
NCN 780 within 150m	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
NCN 780 within 250	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
Operation							
Hotel Hebrides	Nightime noise reduction due to cold ironing.	High	Major Beneficial	Major: Significant	No specific mitigation required.	Major Beneficial	Major: Significant
Residential Properties Close to the Berth	Nightime noise reduction due to cold ironing.	High	Major Beneficial	Major: Significant	No specific mitigation required.	Major Beneficial	Major: Significant

Receptor	Nature of Impact	Receptor Sensitivity / Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Loch Tarbert Water Quality	New Surface Water Drainage System Resulting in Changes to Water Quality	Certain	Medium Beneficial	Moderate: Significant	Inclusion of oil/silt interceptors. Appropriate maintenance of oil/silt interceptor.	Medium Beneficial	Moderate: Significant
Loch Tarbert Water Quality	Marine pollution prevention powers for Harbour Authority over a wider area.	Certain	Medium Beneficial	Moderate: Significant	No specific mitigation required.	Medium Beneficial	Moderate: Significant
Road Safety	Improved road safety due to improved access and marshalling arrangements.	High	Moderate Beneficial	Moderate: Significant	The construction of the roundabout at the marshalling gate will stop dangerous vehicle maneuvers. The on-site marshalling area with be increased.	Moderate Beneficial	Moderate: Significant
Ferry	Inclusion of pontoons and anchorages into the remit of the Harbour Authority and its MSMS leading to reduced navigational risks.	High	Moderate Beneficial	Moderate: Significant	The existing MSMS will be reviewed and revised alongside the promotion of the HRO and in consultation and engagement with the Harbour User Group Forum to provide for PMSC compliance for the full harbour area.	Moderate Benifical	Moderate: significant
Local Vessels		Medium					
Local Vessels	Dredging providing access to deeper draughted boats and on a wider range of sea states.	Medium	Moderate Benificial	Moderate: Significant		Moderate Benifical	Moderate: Significant
South Lewis, Harris and North Uist	Landscape effects from ferry present	High	Medium	Localised Mod-major		Medium	Localised Mod-major

Receptor	Nature of Impact	Receptor Sensitivity / Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
National Scenic Area within 500m					Equipment and materials no longer required on site during operations will be removed promptly. Good housekeeping practices will be employed during operation. Waste receptacles will be covered, and littering would not be tolerated.		
Tarbert Dwelling with Direct Open Views	Visual effects from ferry present.	Medium	Large	Major		Large	Major
Tarbert Dwelling with Direct Open Views	Visual effects from operation.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
Tarbert Dweellings with Oblique or Partial Views	Visual effects from ferry present.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
Dispersed dwellings within 500m with direct open views.	Visual effects from ferry present.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
A859 within 150m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 150m	Visual effects from operation.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 150m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 250m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major

Key

Significant Effect

Contents

1 Introduction

A new ferry is being constructed for use on the Skye Triangle (Tarbert – Uig and Uig-Lochmaddy routes). The ferry is larger and can carry more passengers and vehicles than the existing vessel. Caledonian Marine Assets Ltd (CMAL) are proposing upgrades to the Tarbert ferry terminal to allow the safe berthing of the larger vessel and to provide shoreside facilities for additional passengers and vehicles.

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

A Harbour Revision Order (HRO) is being sought from Transport Scotland to extend the area covered by the existing Harbour. This will include an additional area of land to allow the proposed shoreside upgrades to be completed, the head of East Loch Tarbert and an area to the east to include the approaches to East Loch Tarbert. This will provide a single point of authority to ensure navigational safety of all vessels.

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 HRO applications.

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 Tarbert Ferry Terminal Building, Pier, Tarbert, HS3 3DG. The ferry terminal building is open between the following hours:

- Monday, Wednesday, Friday - 6:00 a.m. - 5:30 p.m.
- Tuesday, Saturday - 9:00 a.m. - 8:00 p.m.
- Thursday - 9:00 a.m. - 5:00 p.m.
- Sunday - 8:00 a.m. - 10:00 a.m. and 5.30 p.m. - 6.30 p.m.

Electronic copies of the full marine licence and HRO application documents can be downloaded from the CMAL website http://www.cmassets.co.uk/project/skye-triangle-infrastructure-works/.

A CD containing the full marine licence and HRO consent application documents can be obtained 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 required.

If you would like to provide feedback with regard to the marine licence or HRO applications, then this should be given directly to Marine Scotland and Transport Scotland as per the advertised routes.

2 Project Description

2.1 Project Need

The Skye Triangle (Tarbert – Uig and Uig- Lochmaddy) 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 terminal facilities are aging and 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 East Loch Tarbert. Tarbert is located on the south-east coast of the Isle of Harris, the upgrade works grid reference centre point is NG 157 999. Tarbert is the main community on the Isle of Harris. The ferries that utilise this terminal provide the shortest link between Harris and Uig on Skye, which has road links to the Scottish Mainland. The harbour is situated to the south of the main village. Tarbert falls within the administrative area of the Comhairle nan Eilean Siar (CnES).

2.4 Harbour Revision Order (HRO)

CMAL are applying for a HRO to extend the existing harbour limits from the current area of 46.22 hectares (ha) (45.7ha marine and 0.52ha terrestrial) to include an additional 152.92ha (152.8ha within the marine element and 0.12ha within the terrestrial environment). Figures 2.1 and 2.2 show the proposed harbour area.

The extended harbour area will incorporate the pontoons and two anchorages into the Harbour Authorities jurisdiction. CMAL, the Harbour Authority, will be responsible for ensuring marine safety in the harbour area.

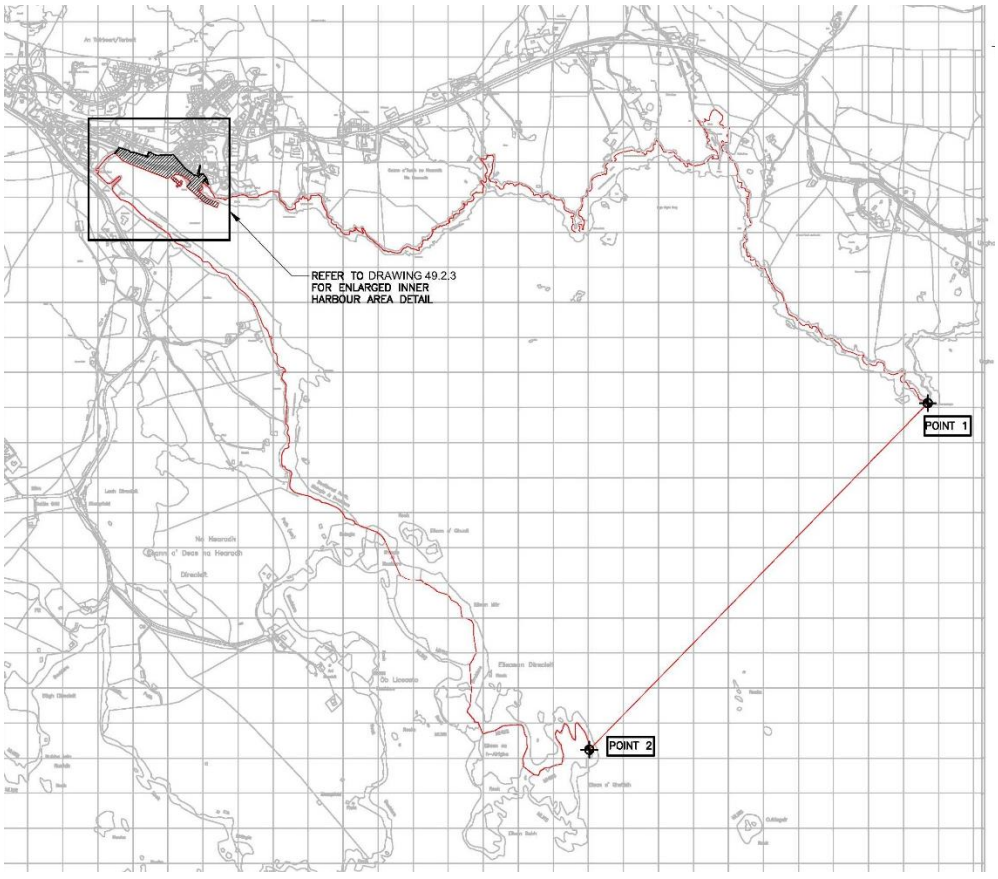

Figure 2.1: Proposed Harbour Area

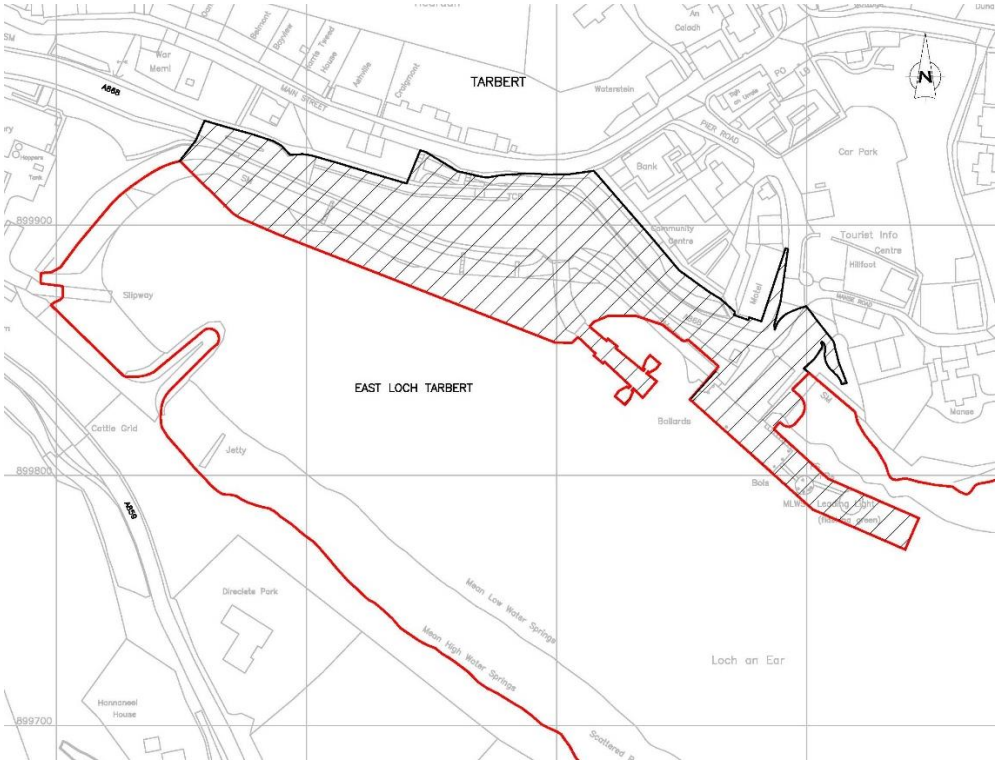

Figure 2.2: West Section of the Proposed Harbour Area

2.5 Project Components

The Tarbert ferry terminal upgrades include the following components:

- Pier demolition, reconstruction, extension, fender and furniture installation;
- Demolition of the existing terminal building;
- Construction of new terminal building;
- Dredging works within East Loch Tarbert to facilitate construction works and vessel manoeuvres;
- Extension of marshalling and carpark area through land reclamation; and
- Temporary construction arrangements including a temporary terminal building and berthing arrangements.

The land reclamation and marshalling area includes the installation of a new roundabout to improve access to the marshalling area. The exit lane from the ferry will run along the seaward edge of the reclamation area, while the feeder lane which allows vehicles to enter the appropriate waiting lane runs around the landward edge of the marshalling area. There will be two check in kiosks of a similar design to those currently in place but white in colour. These will be located partway down the marshalling area.

A raised footpath will be located along the northern edge of the marshalling area between the feeder lane and the public road (A868). The pedestrian footway continues eastward around the ferry terminal, towards the ferry terminal building and along the northwest side of the terminal building. A guardrail separates the path from the public road, protecting the public

from road traffic. Drop kerbs with tactile paving are provided where the pavement meets the road at crossing points.

Two electric vehicle charging spaces, and six parking spaces, will be provided with easy access from the A868. To the east of the parking places is a drop-off/pick up area with spaces for a bus or four cars. At the rear of the new ferry terminal building, there will be two disabled parking spaces and at least three staff parking spaces.

A covered bicycle storage area will also be provided along with a new storage building, once the temporary terminal building is removed from the site.

The new ferry terminal will be larger than the existing terminal. A comparison between the existing building and planned building is provided in Table 2.1.

Table 2.1: Terminal Building Comparison

Requirement	Existing Building	Proposed Building	Commentary
Seating capacity	50 seats	100 seats	Capacity for 95% of sailing, based on 20-year projected figures.
Overall capacity	100 people total (72m^2)	150 people total (105m^2)	Capacity for 100% of sailings based on 20-year projected figures and regulation capacity for concourse/queuing area (0.7m^2 per passenger)
Offices	4.2m long ticket/reservations counter (2 high counters and 1 accessible position) 31m^2 admin office 1 manager office (11.7m^2)	5m long ticket/reservations counter (3 high counters and 1 accessible position) 52m^2 admin office 2 manager offices (11.4m^2 each)	Increase in counter and admin office size due to increased staff & passenger numbers. 2 offices to be shared by 3 local managers plus visiting staff.
'Changing places' unit	None	Included	Transport Scotland, CMAL and CalMac policy.
Public toilets	Male (1 cubicle, 2 urinals, 2 basins and baby change) Female (3 cubicles, 3 basins and baby change) 1 accessible convenience.	Male (2 cubicles, 3 urinals, 3 basins and baby change) Female (5 cubicles, 5 basins and baby change) 1 accessible convenience.	Increased capacity to accommodate increased passenger numbers.
Mess facilities	13m^2	25m^2	Increase due to increased staff numbers.
Drying room	None	Included	Supplied in line with The Workplace (Health, Safety and Welfare) Regulations 1992 and Welfare at Work Guidance
Changing room/shower	None	Included	
Staff toilets	1 unisex	1 Male & 1 Female	

Requirement	Existing Building	Proposed Building	Commentary
			(Health and Safety Executive, 2007).
Store rooms	1 Janitorial/ cleaning products store 1 (35m^2) store for brochures, stationery	1 Janitorial/cleaning products store 1 (19m^2) store for brochures, stationery 1 Comms room	Additional store for appropriate housing for communication equipment currently in the administration office. Note that an external store is planned which will reduce overall storage needs in the building (see 2.1.6)
Plant room	Electrics and heating	Electrics and heating	No change

2.6 Construction

Initial land reclamation work will be completed in the area of the linkspan to provide an area for the temporary ferry terminal to be located. Once the temporary facility is in place, it will be possible to take down the existing terminal building to give access for the pier demolition, reconstruction and extension works.

The main land reclamation is adjacent to the existing marshalling area. The sediments in this area are too soft to build on top of, hence they will need to be dredged out prior to reclamation commencing. To facilitate access by the dredger the pontoons will be taken out of service and moved out of the way. The dredger will dredge the access area (in the vicinity of the normal pontoon location) and the area to be reclaimed. Once dredging is complete the pontoons will be reinstated. This work is planned for the winter months to minimise disturbance of the pontoon users. An area next to the ferry berth needs to be dredged to provide the appropriate water depths for the new vessel. This operational dredge will be carried out around the ferry timetable to avoid interference with ferry services. Dredged material is not suitable for reuse and as such it will be disposed of to the spoil disposal ground near Stornoway.

The land reclamation will involve the removal of some of the existing rock armour. This, along with rock brought to site will be utilised to build a new revetment south of the existing marshalling area. The land reclamation will include the import of material by road to infill the area, the installation of services and drainage system including oil/silt interceptors and surfacing.

To ensure that the lifeline ferry service can remain operational throughout the construction period, a temporary fendering system will be installed adjacent to the existing pier.

The existing pier will be removed to make way for a new extended pier.

Once the pier has been completed the new terminal building will be constructed in the location of the previous existing building. The temporary terminal building will be removed to make way for a new storage facility.

Services and furnishings will be installed at various stages during the construction works to ensure the ferry terminal can continue to operate throughout the works.

2.7 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 terminal, marshalling area and new roundabout will facilitate the management of increased ferry passengers and vehicles without interfering with the local road network.

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 Transport Scotland, and their statutory consultees including: Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and CnES. 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.

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

The extension to the Isle of Harris Distillery was considered as the construction works could overlap which could give rise to cumulative effects associated with dust, noise and traffic.

The Uig ferry terminal upgrade, also part of the Skye Triangle ferry upgrades, will affect ferry sailings and as such will have knock on effects for Tarbert. These were considered in Traffic, Access and Navigation.

4 Statutory Context & Policy

There are a number of statutory requirements for the proposed Tarbert 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 Tarbert Pier Development works located below mean high water springs (MHWS) 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.

A Harbour Revision Order (HRO) is being applied for from Transport Scotland, in line with the Harbours Act 1964 (as amended), to extend the harbour limits defined in the Lochmaddy and East Loch Tarbert (Improvement of Piers &c.) Confirmation Act 1984 ('1984 Order'). Works above the Mean Low Water Spring (MLWS) will be consented via existing powers under the East Loch Tarbert Pier Order 1873 ('1873 Order'), the 1984 Order and through the HRO application process. The Harbours Act 1964 (as amended) requires the HRO submission to be supported by an EIAR.

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 Tarbert ferry terminal upgrade falls within these regulations as it covers an area larger than one hectare.

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

Area (SPA) or a Special Area of Conservation (SAC)). As the Tarbert ferry terminal upgrade is near to Natura Sites, an HRA 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 MHWS and within 12 nautical miles (nm) 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 Tarbert 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 Tarbert ferry terminal upgrade meets GEN requirements and contributes towards the achieving relevant sector specific policies and objectives.

Although the proposed development does not require planning consent, due to the close proximity to land it is deemed appropriate to set out the planning policy context.

The development plan system in Scotland which provides the framework for considering planning applications is made up of 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 Tarbert 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. Cycling facilities are being provided along with safe footpaths. The ability for larger vessels to berth will facilitate addition freight movements by ferry. As such the project is in alignment with the SPP, connected place policies.

Relevant PANs for the Tarbert 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 Air Quality

The focus of the air quality assessment was on the fugitive dust emissions associated with the construction of the Tarbert ferry terminal upgrade and the greenhouse gas (GHG) emissions associated with the construction and operational phases.

Sensitive receptors identified for the dust assessment were: Hotel Hebrides, Marshalling area, Port workers, residential properties and non-residential properties. Sources of dust associated with the terminal upgrade are:

- Demolition works required to remove the existing terminal building to accommodate the reconstruction of a new terminal building;
- Construction works to erect the new terminal building;
- Earthworks required to facilitate the infilling works including the temporary storing of infill materials; and
- Track out associated with the Heavy Goods Vehicles (HGVs) delivering primarily materials to the site.

Dust impacts due to earthworks and track out for Hotel Hebrides, Marshalling area, Port workers, residential properties and non-residential properties were assessed as having a moderate to major significant effect in the absence of mitigation. All other assessments related to dust were non-significant.

Appropriate mitigation has been identified for the management of dust, taking into account the Institute of Air Quality Management and Pollution Prevention Guidelines. A Dust Management Plan has been developed and included within the Construction Environmental Management Document. Mitigation reduces the previously assessed significant effects to non-significant levels.

The carbon cost with regards to materials usage and delivery was calculated. A total of 4778 tonnes of carbon dioxide equivalent (CO_2e) is estimated to be produced as a result of the construction of the Tarbert ferry terminal upgrade, equivalent to the annual carbon footprint of 1017 people or 0.012% of the annual CO_2e for the whole of Scotland in 2016.

The operation of the Tarbert ferry terminal Upgrade will still use electricity which indirectly results in greenhouse gas emissions, although the changes in electricity usage are anticipated to be negligible. Upgrading of the facility, however, does facilitate the reduction of GHG emissions by providing infrastructure to deploy a new ferry with dual fuel engines and cold ironing capabilities, reducing overall GHG emissions from ferry operation.

Cold ironing will save 142 tonnes of CO_2e a year, giving rise to a 47.5% reduction in emissions. This is equivalent to discharges for 30 people per year. Thirty-three years of cold ironing use will be required to balance out the construction CO_2e cost. With appropriate maintenance the ferry terminal upgrade including the associated cold ironing facilities will operate for more than 33 years. It can therefore be argued that over the lifetime of the project it is carbon neutral. However, this doesn't take account of the benefits associated with facilitating the use of the new dual fuel vessel, which will also reduce overall carbon emissions. Hence on balance the project is deemed to be minor: non-significant beneficial from a greenhouse gas perspective.

Mitigation to reduce greenhouse gas emissions associated with construction include the optimisation of material usage through the design process, and local sourcing of materials where practicable; helping to avoid unnecessary CO_2e.

6 Marine Mammals

The Tarbert ferry terminal upgrade is situated on the Isle of Harris, on the western side of the Minch, an area renowned for its importance to marine mammals. Protected areas identified as being relevant to the Tarbert 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 Tarbert 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 at the head of East Loch Tarbert. These waters, in the immediate vicinity (within 1km) of the development, are rather confined, generally shallow, being less than 25m in depth, 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 Tarbert ferry terminal upgrade are assessed as minor, non-significant.

7 Benthic Ecology

In order to appropriately assess the potential effects on organisms on the seafloor (benthic ecology) from the Tarbert ferry terminal upgrade, the baseline condition had to be understood. This was achieved through an extensive literature review and field surveys. The survey operations consisted of two separate benthic surveys campaigns, during which video transects and grab samples were taken. The benthic surveys identified multiple biotope in the proposed infilling and dredging areas. None of the recorded species or biotopes during the benthic surveys are of conservation concern.

The literature review identified two sites specifically designated for benthic features near the proposed development. These are the Luskentyre Banks and Saltings Site of Special Scientific Interest (SSSI) and Tong Saltings SSSI, however, these sites are located approximately 6km and 27km by sea from the proposed development site respectively. The large distance between the development and the SSSIs mean no benthic habitat connectivity is likely to exist and as such they were not assessed further.

The construction stage of the Tarbert ferry terminal Upgrade is likely to 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 benthic flora, fauna, and habitat in the extended marshalling area footprint. 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 East Loch Tarbert benthic communities, as the habitat loss is relatively small in relation to the overall area. The location of the works at the end of the Loch is such that it will not result in habitat fragmentation. There will also be a temporary loss of benthic flora, fauna, and habitat within the dredge pocket, but 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.

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.

8 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 pMPA 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 designated sites.

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 proximal to where their respective riverine habitats meet the marine environment. The Tarbert ferry terminal upgrade is located at the head of East Loch Tarbert. Since no notable watercourses discharge to this area, it is considered unlikely that migrating diadromous fish will transit through, and hence be present in the waters in the vicinity of the proposed construction works. This is also true of the Stornoway spoil ground, since no rivers discharge to the sea in the vicinity of this site.

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 East Loch Tarbert are not anticipated to provide valuable habitat for basking sharks, and there have been no recorded sightings within the Loch. As such it is considered unlikely that this species will be present in the immediate vicinity of the ferry erminal. This is also true of the Stornoway spoil ground.

The potential effects on diadromous fish and basking shark due to the development was 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.

9 Noise and Vibration (In-air)

The Tarbert ferry terminal is located in the centre of the village of Tarbert, and as such there are multiple noise sensitive properties in the immediate vicinity of the development. Baseline noise measurements were taken to understand the current noise levels in the vicinity of the ferry terminal at various times of the day and night.

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.

The initial modelling showed that the noise levels at some properties associated with the works on the terminal building and piling of the pier were not acceptable. Barriers were therefore specified around part of the works to provide noise screening. With these in place the noise levels for all the construction activities were 70 decibels or lower at all receptors. As the works will be carried out between 7am and 7pm Monday to Saturday the assessment concluded that the construction noise effects are non-significant.

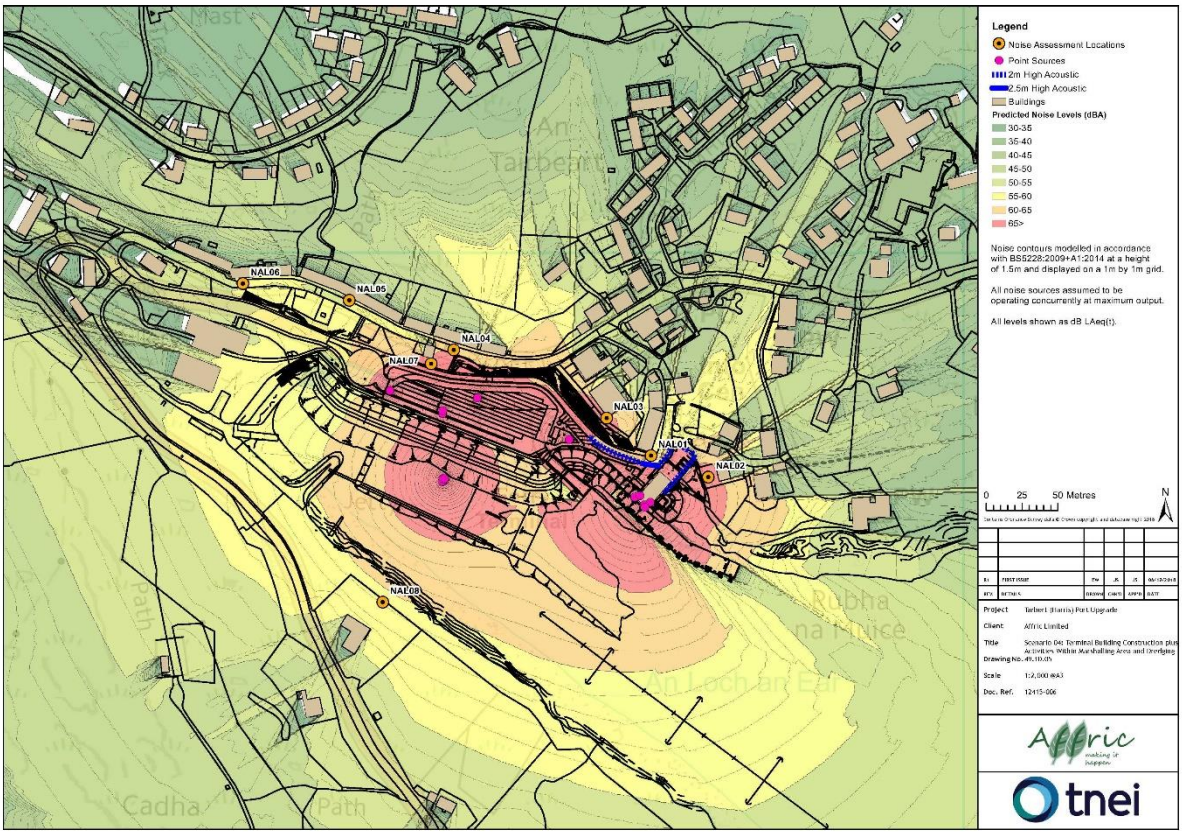

Figure 9.1: Example Noise Contour Map

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 Tarbert.

10 Noise and Vibration (Underwater)

During the proposed Tarbert ferry terminal upgrade works, both vibro and impact piling will be required for the installation of both permanent and temporary works piles which will be installed to construct the new pier structure. The marine piling operations will result in elevated levels of underwater noise. Other construction activities including dredging and rock breaking 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 East Loch Tarbert, 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 facilities. Acoustic deterrent devices may also be installed at the adjacent fish farms, which are located approximately 4km from the proposed development site. As such East Loch Tarbert 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 250m 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 6 and 8).

The bathymetry and geography of East Loch Tarbert is such that most of the underwater noise energy generated by piling operations will be contained within the Loch itself. As such, no cumulative effects with other projects were predicted.

11 Traffic, Access and Navigation

During the construction works there will be a requirement to deliver a large volume of material by road for the land reclamation works. Once operational there is a potential increase in traffic numbers associated with the new ferry, and the marshalling area will be accessed utilising a new roundabout in place of the existing arrangement. A detailed transport assessment was therefore completed to understand the effects of the project on traffic and access in Tarbert, and to aid the roundabout design. The Traffic Assessment has been submitted as a standalone report to support the Marine Licence and HRO applications although the main traffic effects were assessed in the EIAR and are summarised here.

Traffic counts were carried out to understand the existing road usage on the linking roads, namely the A859, Main Street and Pier Road. The designed hourly capacity of each of the roads is 1500 movements. The surveyed maximum flow was on the A859, where 220 vehicles were counted in an hour. Comparing the predicted flows with the calculated design capacity for each link indicates that there is sufficient reserve capacity. It is forecast that the delivery of material for the land reclamation will generate approximately 168 goods vehicle deliveries per week over a 24-week period. Typical two-way hourly flows are estimated at 8 movements throughout the working week or 56 daily movements. In addition, construction staff are estimated to typically give rise to 36 two-way vehicle movements a day. Construction vehicles movements will be planned to avoid ferry arrival times when vehicles are disembarking from the ferry.

The construction traffic assessment identified negligible: non-significant effects on road users and public transport, with minor: non-significant effects on pedestrians, cyclists and local amenity. With regard to road safety, it was identified that the HGV movements could give rise to increased severance and intimidation, especially outside the Sir E. Scott School. Without additional mitigation it was identified to be a moderate: significant effect. The overall effect was reduced to minor: non-significant when mitigation, including liaison with the school, was considered.

Navigational effects of the project were considered in the EIAR. Navigational risk due to the construction works are minor: non-significant as there will not be excessive numbers of vessels involved with the construction works. Prior to and during construction, CMAL will review the risk assessments and marine activity operating procedures in place. Engagement through the Harbour User Group Forum will be increased, to ensure good dialogue with other users.

The effects on ferry sailings associated with the construction works are minimised by the inclusion of a temporary fendering solution which will allow the ferry to berth throughout the works. However, it will not be possible for foot passengers to access the ferry from the pier at times, foot access will be via the linkspan instead. This was assessed as a minor; non-significant

effect but it was acknowledged that there is a need for good communications with passengers regarding this issue.

To facilitate the dredge work, the pontoons will need to be taken out of service for up to 14 weeks. This is planned through the winter months to minimise disturbance, particularly to visiting boats. However, it could have a moderate: significant effect on local vessel owners. Good communications with the pontoon operator and local vessel owners, to allow them to plan ahead, is key to reducing the impact to non-significant levels. It is however noted that the access dredge, once complete, will enhance the facilities available at the pontoon by providing deeper water depths.

Once operational, the increased vehicle and passenger numbers are not expected to cause any noticeable effects. The inclusion of safe pedestrian walkways with tactile drop kerbs give rise to a beneficial minor: non-significant effect on local amenity. The roundabout will improve access to the marshalling area by negating the need for traffic from the east having to turn in the road. The increased marshalling area size, with kiosks partway down the area, should mean that traffic will not have to queue on the public road. This was assessed as a beneficial moderate: significant effect.

Navigationally, the inclusion of the pontoons and two anchorages into the harbour area such that they fall under the harbours Marine Safety Management System was identified to be a beneficial moderate: significant effect.

12 Water Quality & 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 and borehole 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 free from fines and 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.

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 surrounding properties was identified. Flooding risk to the ferry terminal was identified as being negligible: non-significant.

The installation of a new drainage system with silt and oil interceptors, however, was identified to result in a beneficial effect of moderate significance by minorly improving diffuse pollution levels compared to the current system. In addition, the HRO will result in a larger area and additional facilities being brought within the Statutory Harbour Limits. This means the Harbour Authority, CMAL, will have jurisdiction over activities in these areas and powers to make byelaws to help ensure water quality is maintained through a larger area, resulting in a moderate significant beneficial effect on localised water quality.

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 East Loch Tarbert due to the development.

13 Landscape, Seascape and Visual

The ferry terminal sits in the middle of Tarbert and as such there are numerous dwellings and settlements, roads and recreational routes which will have visibility of the upgraded ferry terminal development. This was recognised early in the design process and taken account of in the ferry terminal building design and sighting of various components. Unfortunately, due to a lack of space, it was not possible to design out all effects.

Tarbert sits in the South Lewis, Harris and North Uist National Scenic Area NSA. Therefore, it was important to assess whether the Scenic Area would be detrimentally affected by the development.

Computer modelling was completed to produce zones of theoretical visual (ZTV) influence to identify where the development can be seen from, an example of which is provided in Figure 13.1.

The ZTV's were used to identify viewpoints which were utilised for the assessment including the production of photomontages showing what the development would look like from each viewpoints. Two of these have been utilised on the cover of this document. One of the viewpoints was from the ferry as it comes into harbour to understand the seascape effects.

The assessment considered effects during construction, as built and with a ferry berthed.

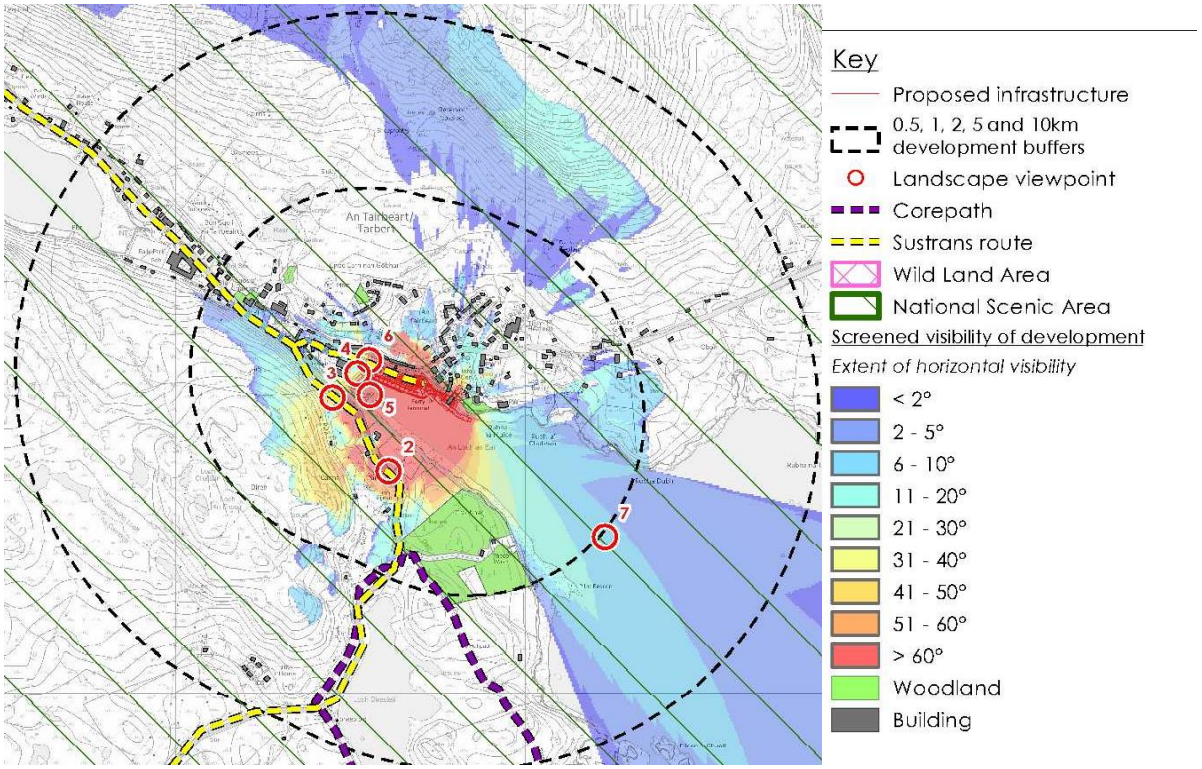

Figure 13.1 Screened ZTV with Landscape Designations

Construction works were found to have significant effects on the following receptors:

- South Lewis, Harris and North Uist NSA within 500 m (localised);
- Tarbert – dwellings with direct open views or oblique or partial views;
- Dispersed dwellings within 500 m with direct open views;
- Users of National Cycle Network 780 within 250 m;
- Visitors and marina users within Tarbert;
- Ferry passengers within 500 m; and
- Path users within 150 m.

Once operational, significant effects are predicted on the following receptors:

- Tarbert – dwellings with direct open views;
- Users of NCN 780 within 150 m; and
- Visitors and marina users within Tarbert.

The following receptors were considered to be subject to intermittent significant effects when the ferry is present during operation:

- South Lewis, Harris and North Uist NSA within 500 m (localised);
- Tarbert – dwellings with direct open views or oblique or partial views;
- Dispersed dwellings within 500 m with direct open views;
- Users of NCN 780 within 150 m
- Visitors and marina users within Tarbert; and
- Path users within 150 m.

14 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 contractor Risk Assessment Method Statements for the works.

15 Conclusion

There were 21 significant adverse effects associated with the construction works without secondary mitigation. Once secondary mitigation was taken into account, the number of residual adverse significant effects reduced to five (Table 15.1). All five are associated with seascape, landscape and visual effects which will occur during the construction works.

The operational phase has nine adverse significant effects associated with it, all relating to seascape, landscape and visual effects. They are not reduced by secondary mitigation. Seven of the significant adverse effects only occur when the ferry is docked at the berth. The remaining two are associated with the visual impacts on dwellings with direct open views to the ferry terminal and the section of the Hebridean Way National Cycle Network (NCN) Route 780 within 150m of the development. Visual impacts on the nearest receptors were recognised as an issue throughout the design process, and efforts were made to minimise the effects through this process. Unfortunately, the sensitive location and lack of space meant that not all significant effects could be designed out.

Facilitating the introduction of the new ferry will bring a range of benefits to Tarbert and the Isle Harris and as whole.

The EIA has identified eight specific significant benefits of the terminal upgrade and associated Harbour Revision Order. The inclusion of an onshore power supply will allow the ferry to cold

iron when alongside at night, reducing both greenhouse gas emissions and significantly noise levels at local residential properties and the Hotel Hebrides.

The land reclamation works required the existing surface water arrangements to be redesigned. The inclusion of oil and silt interceptors within the design will reduce emissions to East Loch Tarbert of solids and immiscible substances such as oil, which can be detrimental to the environment.

The inclusion of a roundabout at the entrance to the marshalling area will negate the need for vehicles travelling from the east to have to carry out a turn on the road, while the increased marshalling area will reduce the potential for vehicles queuing out onto the public highway.

The extension of the Harbour area will incorporate all of the head of East Loch Tarbert to the west including the pontoon area, and an area to the east including two anchorages. CMAL's Marine Safety Management System and by-laws associated with potential pollutants will apply over a wider area. This will give rise to improved navigational safety and reduced environmental risks associated with vessels in these areas. The pontoon area will also benefit from greater water depths which will facilitate access by larger vessels.

Table 15.1: 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
Construction							
South Lewis, Harris and North Uist National Scenic Area	Landscape effects from construction.	High	Medium Adverse	Localised Mod-major	Equipment and materials no longer required on site during construction will be removed promptly. Crane arms would be lowered when not in use. Good housekeeping practices will be employed during construction. Waste receptacles would be covered, and littering would not be tolerated.	Medium Adverse	Localised Mod-major
Tarbert Dwelling with Direct Open Views	Visual effects from construction.	Medium	Large Adverse	Major		Large Adverse	Major
Tarbert Dweellings with Oblique or Partial Views	Visual effects from construction.	Medium	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
Dispersed dwellings within 500m with direct open views.	Visual effects from construction.	Medium	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
A859 within 150m	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
NCN 780 within 150m	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
NCN 780 within 250	Visual effects from construction.	Med-high	Med-large Adverse	Localised Mod-major		Med-large Adverse	Localised Mod-major
Operation							
Hotel Hebrides	Nightime noise reduction due to cold ironing.	High	Major Beneficial	Major: Significant	No specific mitigation required.	Major Beneficial	Major: Significant
Residential Properties Close to the Berth	Nightime noise reduction due to cold ironing.	High	Major Beneficial	Major: Significant	No specific mitigation required.	Major Beneficial	Major: Significant

Receptor	Nature of Impact	Receptor Sensitivity / Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
Loch Tarbert Water Quality	New Surface Water Drainage System Resulting in Changes to Water Quality	Certain	Medium Beneficial	Moderate: Significant	Inclusion of oil/silt interceptors. Appropriate maintenance of oil/silt interceptor.	Medium Beneficial	Moderate: Significant
Loch Tarbert Water Quality	Marine pollution prevention powers for Harbour Authority over a wider area.	Certain	Medium Beneficial	Moderate: Significant	No specific mitigation required.	Medium Beneficial	Moderate: Significant
Road Safety	Improved road safety due to improved access and marshalling arrangements.	High	Moderate Beneficial	Moderate: Significant	The construction of the roundabout at the marshalling gate will stop dangerous vehicle maneuvers. The on-site marshalling area with be increased.	Moderate Beneficial	Moderate: Significant
Ferry	Inclusion of pontoons and anchorages into the remit of the Harbour Authority and its MSMS leading to reduced navigational risks.	High	Moderate Beneficial	Moderate: Significant	The existing MSMS will be reviewed and revised alongside the promotion of the HRO and in consultation and engagement with the Harbour User Group Forum to provide for PMSC compliance for the full harbour area.	Moderate Benifical	Moderate: significant
Local Vessels		Medium					
Local Vessels	Dredging providing access to deeper draughted boats and on a wider range of sea states.	Medium	Moderate Benificial	Moderate: Significant		Moderate Benifical	Moderate: Significant
South Lewis, Harris and North Uist	Landscape effects from ferry present	High	Medium	Localised Mod-major		Medium	Localised Mod-major

Receptor	Nature of Impact	Receptor Sensitivity / Probability	Impact Magnitude	Significance (Absence of Secondary Mitigation)	Mitigation Summary	Residual Impact Magnitude	Significance of Residual Effect
National Scenic Area within 500m					Equipment and materials no longer required on site during operations will be removed promptly. Good housekeeping practices will be employed during operation. Waste receptacles will be covered, and littering would not be tolerated.		
Tarbert Dwelling with Direct Open Views	Visual effects from ferry present.	Medium	Large	Major		Large	Major
Tarbert Dwelling with Direct Open Views	Visual effects from operation.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
Tarbert Dweellings with Oblique or Partial Views	Visual effects from ferry present.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
Dispersed dwellings within 500m with direct open views.	Visual effects from ferry present.	Medium	Med-large	Localised Mod-major		Med-large	Localised Mod-major
A859 within 150m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 150m	Visual effects from operation.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 150m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major
NCN 780 within 250m	Visual effects from ferry present.	Med-high	Med-large	Localised Mod-major		Med-large	Localised Mod-major

Key

Significant Effect