

An aerial photograph of Uig Harbour, showing the town of Uig nestled between the sea and a large, green, hilly landscape. The harbour water is dark, and a pier extends into it. The hills in the background are covered in green grass and some trees. The sky is clear and blue.

Uig Harbour Redevelopment

Environmental Impact Assessment (EIA) Report
Volume 2c: Main Report - Chapter 16 to 21
(Human Environment)

The Highland Council

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16. Socio-Economics, Tourism and Public Access

16.1 Introduction

- 16.1.1 This chapter of the EIA Report provides an assessment of the potential effects of the Proposed Development on the socio-economic and tourism characteristics of the area. Where appropriate it identifies proportionate mitigation measures to prevent, reduce or offset potential adverse effects and/or enhance potential beneficial effects, where possible.
- 16.1.2 **Chapter 3: Project Description** of this EIA Report provides a detailed description of the works required to implement the Proposed Development
- 16.1.3 Potential effects on socio-economics and tourism are often secondary effects as a result of other identified primary effects. This chapter should therefore be read with reference to:
- Chapter 17: Onshore Noise;
 - Chapter 18: Commercial and Recreational Navigation; and
 - Chapter 19: Commercial Fisheries.

16.2 Legislative & Policy Context

- 16.2.1 The assessment has been undertaken within the context of the following relevant legislation, planning policies and guidance documents:
- Scottish Planning Policy 2014 (SPP) (Scottish Government, 2014);
 - Tourism Scotland 2020 (STA, 2012);
 - Marine Tourism Strategy 2020 (STA, 2015);
 - The Highland Coastal Development Strategy (HCDC) (THC, 2010);
 - Highland-Wide Local Development Plan (HWLDP) 2012¹ (THC, 2012);
 - Proposed West Highland and Islands Local Development Plan (WHILDP) 2017² (THC, 2017)
- 16.2.2 **Chapter 4: Legislative and Planning Context** provides an overview of national and local planning policies.

16.3 Assessment Methodology & Data Sources

Desk Study

- 16.3.1 Baseline conditions have been established through desk study of published information. The desk study included the following activities:
- Review of Ordnance Survey Mapping, aerial photography, and local and regional planning policy;

¹ Policy 34 -Settlement Development Areas; Policy 42 - Previously Used Land; Policy 43 – Tourism; Policy 44 – Tourist Accommodation; Policy 47 – Safeguarding Inbye/Appportioned Croftland; Policy 49 – Coastal Development; Policy 77 – Public Access.

² Outcome 1.1 – Growing Communities; Outcome 1.2 – Employment; Outcome 1.3 – Connectivity and Transport; Policy 2 – Delivering Development; Policy 3.7 – Uig.

- Identification of Core Paths, walking and cycling routes and other Rights of Ways (RoW) within the study area;
- Review of VisitScotland, Highland Council data and local websites to identify visitor attractions within the study area;
- High level review of relevant data held by the Scottish Government to establish the social and economic context of the study area; and
- Consideration of stakeholder and local interest representations during consultation discussions.

Assessment Method

16.3.2 There is no specific guidance directly applicable to the assessment of effects of a development of this nature on local economy and tourism etc. However, there are a number of guidance documents relating to other similar industries. The following guidance documents have therefore been used to inform the assessment:

- Guidelines for Environmental Impact Assessment (Institute of Environmental Management and Assessment (IEMA, various dates).
- Guidance as set out in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 8, Pedestrians, Cyclists, Equestrians and Community Effects (Highways Agency, 2010).
- A Handbook on Environmental Impact Assessment (SNH and HES, 2018).
- Guidance on the appraisal of Accessibility and Social Inclusion as set out in Section 4.6 of the Scottish Transport Appraisal Guidance (Transport Scotland, 2008).

16.3.3 The assessment considers the effects of the construction and operation of the Proposed Development on the following aspects of local economy and tourism:

- Local businesses, job creation, local expenditure and potential effects on community facilities;
- Core paths, footpaths, cycleways and other less formal routes including changes in the amenity of users (walkers, pedestrians, cyclists and equestrians) as well as any severance or disturbance of these as a result of the construction and operation of the Proposed Development; and
- Recreational or tourist facilities including consideration of potential changes in the amenity value experienced by visitors. The perception of amenity value may be subjective and changes in amenity value resulting from the Proposed Development may also be subjective.

16.3.4 The assessment considers the effects of the construction and operation of the Proposed Development on public accesses associated with temporary disruption to ferry service during construction and associated with the longer term increase in operational capacity.

Sensitivity of Receptors

16.3.5 Criteria for describing the sensitivity or importance of the receiving environment are summarised below in Table 16-1. The sensitivity of the receptor takes into account the receptor's recognised value or quality in terms of the biodiversity and socio-economic

activities it supports and the ability to absorb an effect without perceptible change. The sensitivity criteria have been derived taking into account relevant legislation, statutory designations or classifications.

Table 16-1 Socio-economic etc. Sensitivity/Value Criteria

Sensitivity/Value	Description
High	The receptor has little or no capacity to absorb change without fundamentally altering its present character, is of high socio-economic, environmental or tourism value, or of international or national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some socio-economic, environmental or tourism value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low socio-economic, environmental or tourism value, or local importance.
Negligible	The receptor is resistant to change and is of little socio-economic, environmental or tourism value.

Magnitude of Effect

16.3.6 Criteria for determining the magnitude of potential effects are contained in Table 16-2. The magnitude considers the scale of the predicted change to existing conditions taking into account its duration, the reversibility of the effect and whether the effect is direct or indirect.

Table 16-2 Magnitude of Effect Criteria

Magnitude	Description
High	Total loss or major alteration to key elements/features of the baseline conditions such that post development character/composition of baseline condition will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition of the baseline condition will be materially changed.
Low	Minor shift away from baseline conditions. Changes arising from the alteration will be detectable but not material; the underlying character/composition of the baseline condition will be similar to the pre-development situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a 'no change' situation.

Significance of Effect

16.3.7 A qualitative approach has been taken to the assessment broadly following the approach illustrated in Table 16-3. The significance of a given effect is based on a combination of the sensitivity or importance of the receptor and the magnitude of a potential effect. It should be noted that this general approach has been treated as a framework during the assessment, and has not been used as a matrix.

- 16.3.8 Effects can be adverse or beneficial. The significance of effect (Adverse or Beneficial) is assessed as major, moderate, minor or negligible. Effects assessed as minor or negligible are considered to be manageable and are therefore 'Not Significant'. Effects assessed as moderate or major are considered to be 'Significant'.

Table 16-3 Assessing Significance of Effect

Magnitude of Effect	Sensitivity of Receptor			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

- 16.3.9 The results of this assessment are presented as residual effects; that is the effect remaining taking into account the mitigation measures that are incorporated into the design of the Proposed Development as well as measures to be implemented during construction and operation. Mitigation has been developed based on current good practice and established construction techniques.

Summary of Consultation

- 16.3.10 As part of the EIA, a Scoping Opinion was requested in September 2017. Responses from consultees are detailed in full in **Chapter 5: Summary of Consultation**; however, Table 16-4 below presents a summary of responses received specifically relevant to the assessment of impacts on socio-economics and tourism.

Table 16-4 Summary of Consultation regarding Socio-Economics, Tourism & Public Access

Consultee	Summary Response	Comment/Action Taken
Marine Scotland	Socio-Economics & Public Access is scoped into the EIA.	This chapter has been prepared to assess the potential effects on socio-economics and amenity.
THC	This is a potential material consideration for the authority and in respect of 'amenity impact' seems closely related to the proposed noise impact assessment proposed.	This chapter has been prepared to assess the potential effects on socio-economics, tourism and public access. Impacts on amenity have been assessed in Chapter 17: Onshore Noise .

16.4 Baseline Conditions

- 16.4.1 The Proposed Development lies on the west coast of the Trotternish Peninsula on the Isle of Skye, in the Uig settlement area. Uig is a ferry port, with twice daily ferry services to the Western Isles, and comprises the harbour area and residential properties around Uig Bay.
- 16.4.2 The Proposed Development Site covers the existing Uig Harbour area, including the King Edward Pier, the marshalling area, a section of intertidal zone to the south-east of the marshalling area, the terminal building, a section of multi-purpose land to the north of the terminal building and a section a separate seabed for the Proposed Sea Disposal Site. The A87 runs through Uig and across the Proposed Development Site along the King Edward Pier.
- 16.4.3 Land to the north and east of the Proposed Development Site is a mix of residential and agricultural usage.
- 16.4.4 Uig is identified as a main settlement in the Proposed WHILDP and therefore has associated 'placemaking' priorities. The Proposed Development Site is specifically identified as a development site (UG03 – Uig Harbour) with the exception of the area proposed as the Proposed Sea Disposal Site, which is located in the marine environment.

Tourism

- 16.4.5 The tourism industry is a key component of the Scottish economy and contributed a total value of £9.7 billion in 2016 (VisitScotland, 2016).
- 16.4.6 Tourism Scotland 2020 sets out Scotland's strategy for tourism to 'make Scotland a destination of first choice' and increasing visitor spending to £5.5 - 6.5 billion (STA, 2012). One of the stated goals identified by the STA of specific relevance to the Proposed Development to address barriers to growth is to enhance ferry routes within Scotland.
- 16.4.7 The Strategic Framework for Scotland's Marine Tourism Sector's Mission is 'to develop and lead the growth of sailing tourism in Scotland from £101m of visitor expenditure to £145m by 2020, and to increase the overall economic value of the marine tourism sector from £360m to over £450m by 2020'.
- 16.4.8 Sustainable tourism contributed approximately £283 million in gross value added and 15,700 jobs in the Highlands and Islands in 2014 (Visit Scotland, 2014). Tourism accounts for approximately 14% of employment in the Highlands area. The Highlands and Islands Enterprise (HIE) identifies the tourism industry as crucial to the area's economy, comprising

but not limited to accommodation establishments, visitor attractions, activities and restaurants (HIE, 2017).

- 16.4.9 The HCDC sets out the issues and opportunities in the tourism and recreation sector (THC, 2010). Visitors tend to travel to the area for its mostly coastal-based natural and cultural heritage. In recent years there has been a growing interest in wildlife and nature-based tourism such as dolphin-watching. A lack of integrated transport links is identified as a potential barrier to growth but development needs to balance new and upgraded transport infrastructure with the natural and unspoilt character that attracts tourists (THC, 2010).
- 16.4.10 The Isle of Skye, the largest island in the Inner Hebrides, is identified by the HIE as one of the renowned destinations in the Highlands and Islands for its dramatic landscapes, wilderness and local history (HIE, 2017). Skye welcomes large numbers of tourists every year with record highs in 2017 (The Guardian, 2017) and (BBC, 2017).
- 16.4.11 Uig offers a number of historical and cultural places of interest and walking routes in its vicinity (VisitScotland, 2016). Ferry services run twice a day from Uig to Lochmaddy and Tarbert in the Western Isles.

Visitor Attractions & Recreation

- 16.4.12 A range of historical, cultural and natural tourist attractions are located in the vicinity of the Proposed Development as shown on **Figure 16-1**. These include sites and routes which support a diverse range of outdoor recreational activities including walking, golfing and kayaking. Attractions range from boat tours and outdoor activity centres to hill walking 'the Storr'.

Public Access

- 16.4.13 In addition to the walking and cycling routes discussed above, THC has also prepared the Skye and Lochalsh Core Paths Plan: Map 3a-c Uig, Cuidrach, Borve & Skeabost (THC, 2011). This provides a framework of routes sufficient for the purposes of giving the public reasonable access throughout the area. A number of core paths are located in the vicinity of Uig Bay as shown in **Figure 16-1**. None of these pass through the Proposed Development Site. The closest core path is located approximately 350 m to the north-west of the Proposed Development. In addition, THC has identified the Heribusta and Loch Sneosdal circular walks around Uig on the Paths around Skye and Lochalsh leaflet (THC, 2006).
- 16.4.14 Under the Land Reform (Scotland) Act 2003, everyone has the right to be on and cross land on the provision of responsible behaviour. This right to access is in addition to RoW and core paths. There are exceptions outlined within Chapter 2(6) of the Act, including construction sites. Current public access is safeguarded under Policy 77: Public Access of the HWLDP (THC, 2012).

Socio-economics

- 16.4.15 The total population for the Highlands area is 234 770 (National Records Scotland (NRS): 2016) which accounts for approximately 4% of the population of Scotland. Population centres in the Highlands include Inverness, Fort William and Nairn. The closest of these population centres is Fort William at approximately 195 km distant. The Proposed Development is located within Uig, within Eilean a' Chéo ward which covers the Isle of Skye, with an estimated ward population of approximately 10 300 people.

16.4.16 2,463,800 people were employed in Scotland in 2011 with 113,700 people employed in the Highland council area. The Scottish Index of Multiple Deprivation (SIMD, 2016) provides the population statistics for the west side of Trotternish Peninsula (Data Zone: S01010683) set out in Table 16-5 below. This area includes the Uig Settlement.

Table 16-5 Population Statistics for Data Zone S01010683 (SIMD, 2016)

Factor	Number of Individuals
Total Population	1004
Population of Working Age	587
Income Deprived	95
Employment Deprived	40

Source: (SIMD, 2016).

16.4.17 Based on the figures in the table above, approximately 7% of the population of working age are 'employment deprived' in the vicinity of the Proposed Development. Approximately 9% of the total population are 'income deprived'.

16.4.18 The ferry service and the associated tourism trade it generates makes a principal contribution to the local economy in Uig. The Uig to Tarbert/Lochmaddy ferry service carried approximately 188,000 passengers in 2016, with approximately 75,000 cars including approximately 300 coaches and approximately 6,000 commercial vehicles (Calmac, 2016).

16.4.19 There are a range of service providers in the vicinity of Uig which cater to tourists and visitors such as hotels, bed & breakfasts, caravan parks, restaurants and cafes. Nineteen accommodation venues are present within 3 km of the Proposed Development as shown on **Figure 16-1**.

16.4.20 A number of marine businesses also operate from Uig Harbour including commercial fisheries, boat tour and fish farm operators, and an outdoor adventure centre.

Summary of Baseline Conditions

Table 16-6 Summary of Baseline Conditions

Receptor	Description	Sensitivity/Value
Tourism & Recreation	A number of tourist attractions are located in the vicinity of the Proposed Development. A number of recreational paths and sites are located in the vicinity of Uig, including the Heribusta and Loch Sneosdal circular walks and the Skeabost golf course.	Medium
Public Access	Several core paths are located in the vicinity of Uig but none of these are located within the Proposed Development Site. The closest core path is located approximately 350 m to the north-west of the Proposed Development.	Medium
Socio-economics	The local economy in Uig is dependent on the ferry service and the tourism trade associated with the service. A number of businesses operate from Uig Harbour and in the immediate vicinity.	Medium

Future Baseline

- 16.4.21 The Proposed WHILDP (THC, 2017) has been reviewed to identify any land use allocations within or close to the Proposed Development Site. Five other potential development sites have been identified also located in Uig:
- UG01 – North Cuil housing development;
 - UG02 – North of Earlish housing development;
 - UG04 – South of Ferry Inn;
 - UG05 – Former Co-Op Site; and
 - UG06 – Former Uig Primary School.
- 16.4.22 No other major development proposals have been identified in the immediate vicinity of the Proposed Development. Smaller development applications exist in the wider area including:
- A marine fish farm approximately 1 km south of the King Edward Pier within Uig Bay; and
 - Two mini hydro schemes approximately 3.5 km to the east of the Proposed Development Site.
- 16.4.23 However, planning applications for the two mini hydro schemes were submitted in 2013 and are still awaiting a decision.
- 16.4.24 The fish farm operator has been granted planning permission and a marine licence for the proposed site in Uig but awaits a moorings licence. Based on consultation with the fish farm operator, the fish farm equipment will be installed as soon as the outstanding licence has been granted.

16.5 Predicted Effects

- 16.5.1 A description of the potential effects on tourism, recreation and socio-economics resulting from the construction and operation of the Proposed Development is provided below.

Construction

Construction Noise, Vibration and Dust Potentially Resulting in Loss of Amenity, Dissuading Tourists and Visitors

- 16.5.2 Construction works have the potential to result in a loss of amenity in the vicinity of the Proposed Development Site, due to an increase in noise and vibration emissions.
- 16.5.3 The assessment of potential effects on onshore noise and vibration is set out in **Chapter 17**. The receptors evaluated represent residential properties in close proximity to the works. These can be considered to be representative of the range of residential properties including visitor accommodation in the area. Without mitigation, construction noise from the Proposed Development has the potential to result in effects resulting in the loss of amenity with the resultant potential to temporarily dissuade tourists and visitors from staying in accommodation in the immediate vicinity of the Proposed Development Site during the construction works and a temporary and localised effect on the local economy.

Note however, **Chapter 17** sets out a series of noise mitigation measures which will be implemented throughout construction. These include installation of noise barriers where ever feasible and careful programming of operations to ensure that noisiest of operations are completed during the least sensitive times of day, particularly between 19:00 and 07:00 and at weekends (13:00 on Saturdays and all Sundays). These will ensure construction noise levels are controlled to the lowest level practicable. Consequently construction noise or vibration from the Proposed Development is not expected to result in significant loss of visitor amenity.

Temporary Community Disruption/Severance Resulting in Loss of Amenity, Dissuading Tourists and Visitors

- 16.5.4 Construction works have the potential to result in some temporary community disturbance/severance as a reflection of the close proximity of Proposed Development at Uig Harbour to the settlement of Uig. Road access will be maintained to the settlement of Uig, along the A87 throughout the construction of the Proposed Development.
- 16.5.5 The Proposed Development is not expected to have a significant effect on public access to the settlement of Uig during construction (see below for separate consideration of disruption to the ferry service).

Loss of Amenity as a Result of Visual Intrusion Affecting Setting of Visitor Attractions

- 16.5.6 Landscape and visual effects resulting from the construction and operation of the Proposed Development were scoped out of the EIA (see **Appendix 1.1** and **Appendix 1.2**). The Proposed Development is situated in a relatively enclosed natural topography which surrounds Uig Bay with land rising quickly from the foreshore/lowland area on which the settlement is built, to crags behind the settlement itself. In addition, the existing pier and harbour buildings are already prominent features within the existing landscape. As demonstrated in the indicative visualisations shown in **Figures 3.5 a and b** the Proposed Development is not expected to have a significant effect on the landscape or the setting of local visitor attractions.

Job Creation during Construction

- 16.5.7 Construction workers will be required to deliver the Proposed Development. It is anticipated that these workers will be drawn from the local area where possible, but will also require a range of specialist skilled workers from outside the local area. An influx of additional construction workers could be expected to offer a potential beneficial effect on the local economy through expenditure on local services in Uig including food and drink and potentially accommodation. Whilst the numbers and stay duration of construction workers required from outside the local area remains subject to contractor appointment and is not yet known, there may also be an opportunity to employ local contractors during construction which could also contribute beneficially to the local economy.
- 16.5.8 Any employment generation as a result of the construction the Proposed Development is likely to be small scale and of minor significance.

Disruption of the Ferry Service

- 16.5.9 The ferry service from Uig is expected to continue as usual throughout the majority of the construction programme with the exception of the period of time required to complete the linkspan and berthing roundhead. The closure is expected to last up to approximately 12

weeks. The timing of this closure is yet to be confirmed, however it is most likely to occur either in the spring or autumn period, therefore avoiding the peak summer season when vehicle and passenger throughput is at its highest.

16.5.10 Disruption to the ferry service could affect a range of ferry users including:

- Local residents who use the ferry service on a regular basis;
- Visitors who intend to use the service to travel to or from the Outer Hebrides; and
- Businesses who transport their merchandise via the ferry service.

16.5.11 A reduced frequency or reliability of ferry service could be expected to result in reduced tourists and visitors numbers using the service, in favour of alternative routes for example from Ullapool or Oban. This would result in a corresponding reduction in visitor footfall and associated income in Uig. Given the central role that the ferry service and associated tourism play for the local economy in Uig; prolonged disruption to the service could result in an adverse impact of medium magnitude affecting local businesses and the local economy in and around Uig considered to be of medium sensitivity. This would however be localised as Uig represents a small tourism centre when compared to other locations on Skye, and is not expected to have a significant effect on tourism on Skye as a whole.

16.5.12 Additional capacity on alternative routes between the mainland and the Outer Hebrides will be considered to be made available by CFL if necessary, therefore it is considered unlikely that the works will significantly affect visitor numbers to the Outer Hebrides. Details of alternative and/or additional services to be provided on other routes, including an amended service to Lochmaddy and Tarbert have yet to be confirmed.

16.5.13 Passenger and vehicle numbers are expected to recover rapidly with the reintroduction of the ferry service, on completion of the linkspan replacement and berthing roundhead construction activities.

16.5.14 Disruption to the ferry service as a result of linkspan replacement and berthing roundhead operations is considered likely to result in localised, temporary effect of up to moderate significance.

Restricted Access to the Harbour and Disruption of Harbour User Operations

16.5.15 Access to sections of the pier for other harbour uses including fishing boats, fishfarm boats and tourist boats will be restricted at various times throughout the construction programme. The exact timing of these restrictions is not yet known. A number of businesses that operate from Uig Harbour require access to the pier and could therefore be affected during the construction of the Proposed Development. **Chapter 18: Commercial and Recreational Navigation** and **Chapter 19: Commercial Fisheries** both address the potential effects on specific harbour users.

Operation

16.5.16 The timetable for the new ferry vessel is expected to be similar to the current ferry timetable, with the same number of departures.

Job Creation/Income Generation during Operation

16.5.17 The operation of the larger ferry vessel may result in the creation of a small number of additional, local jobs. Job creation is expected to be of minor magnitude within a community

of medium sensitivity. Any job creation is therefore expected to represent a benefit of minor significance.

- 16.5.18 Due to the increased vessel capacity when compared to the current vessel, there is the potential for increased visitor footfall in Uig, as well as in Lochmaddy and Tarbert resulting in localised benefit to the local economy in the three harbour towns. Additional income generation from increased footfall is expected to be of minor magnitude in a community of medium sensitivity. Any additional income generation is therefore expected to represent a benefit of minor significance.

Improved Operational Resilience

- 16.5.19 Improvements to the harbour facilities at Uig including the proposal to install a circular cell wall structure to improve the harbour's poor weather operational resilience. These improvements are expected to allow future operations to be maintained in adverse weather conditions which are currently prohibitive to operation of the current harbour facilities.

16.6 Mitigation & Monitoring

Construction

- 16.6.1 Direct and indirect investment in the local economy will be encouraged through the appointed Contractor who will prepare a database of local suppliers (e.g. plant, materials, guest houses, bed and breakfasts) to ensure that local services are used as much as practicable during the construction period.
- 16.6.2 Any disruption to the ferry service at Uig will be clearly communicated to members of the public, along with alternative available ferry service options, to minimise potential impacts on tourists, local residents and commercial businesses. Facilities for other harbour user operations will be maintained throughout construction. The exact method will be confirmed by the Contractor prior to the commencement of the works but a degree of access to the existing berthing facilities will be maintained or alternative berthing facilities will be provided if required to ensure safe access for harbour users.

Operation

- 16.6.3 No additional mitigation is proposed.

16.7 Residual Effects

Construction

- 16.7.1 There are no significant residual effects anticipated during construction on tourist amenity, local economy and public access. Residual effects along with any effects anticipated prior to mitigation and a summary of the mitigation proposed is set out in the summary table in Section 16.5 below.

Operation

- 16.7.2 There are no significant residual effects anticipated during operation on tourist amenity, local economy and public access. Residual effects along with any effects anticipated prior to mitigation and a summary of the mitigation proposed is set out in the summary table in Section 16.5 below.

16.8 Cumulative Effects

- 16.8.1 Should the installation of the proposed fish farm in Uig Bay take place during the construction of the Proposed Development, this could result in cumulative impacts on other harbour users. However, this cumulative impact would be temporary as the installation activities required for the fish farm equipment will be short-term. Through effective communication with the fish farm operators and other harbour users, this is not anticipated to result in significant effects.
- 16.8.2 Once the fish farm equipment has been set up, the fish will be brought in by boat from a hatchery elsewhere (likely to be from the Shetland Islands). When the fish are harvested they will be taken straight to the Shetland Islands by boat and will therefore not have to go via Uig Harbour. Operations at Uig Harbour associated with this proposed fish farm are expected to be limited to feed deliveries. No significant cumulative impacts are anticipated from the operation of the proposed fish farm in combination with the construction or operation of the Proposed Development.
- 16.8.3 No significant cumulative impacts are anticipated with other known planned developments in the area.

16.9 Summary & Conclusion

- 16.9.1 This chapter has considered how the construction and operation of the Proposed Development might be expected to impact upon tourism, the local economy and public access. Where potentially significant impacts were identified, this assessment has considered how these effects could be mitigated. With the implementation of the identified mitigation measures, the residual impacts are not expected to be significant.
- 16.9.2 The Proposed Development may have localised and temporary effects on the local economy and tourism receptors in the local community but these will be largely limited to the construction period. These will likely include a minor loss of amenity for residents and tourists and disruption to the ferry service and harbour operations. However, the construction of the Proposed Development could also result in benefits to the local economy including job creation and spend from construction workers in the area.
- 16.9.3 In addition, there are likely to be beneficial impacts on the local economy, tourism in the area and access from the operation of the Proposed Development due to the increased vessel capacity and improvements to the harbour facilities.

Table 16-7: Summary of Environmental Impacts on Socio-economics, Tourism and Public Access

Description of receptor and effect	Sensitivity or value of receptor	Magnitude of effect	Predicted effects	Mitigation and Monitoring	Residual effect and significance
Construction Phase					
Construction noise resulting in loss of amenity	Medium	Medium	Moderate	Noise mitigation measures and programming of noisy activities into the least sensitive times of the day	Minor
Community disturbance/severance during construction	Medium	Minor	Minor	Access will be maintained to Uig throughout construction	Minor
Loss of amenity as a result of visual intrusion during construction	Medium	Minor	Minor	Landscape and Visual effects were scoped out of the EIA. The existing pier is already a prominent feature in the existing landscape	Negligible
Job creation during construction	Medium	Minor	Minor	Construction will, where ever possible, and dependent on skill requirements, be employed from the local area	Minor
Disruption to ferry service during linkspan replacement and berthing roundhead construction	Medium	Medium	Moderate	Alternative service/increased capacity on other routes to Western Isles will be provided during the period of the linkspan closure.	Minor
Operational Phase					
Job creation as a result of operation of larger vessel	Medium	Minor	Minor beneficial	None	Minor beneficial
Improved operational resilience	Medium	Medium	Moderate beneficial	None	Moderate beneficial

17. Onshore Noise

17.1 Introduction

17.1.1 This chapter of the EIA report provides an assessment of the potential terrestrial noise and vibration impacts from the Proposed Development. In particular, the potential for significant effects to occur from the following activities have been considered:

- Noise and vibration emissions from construction and demolition plant;
- Operational noise emissions from the new boats; and
- Changes in road traffic noise levels on the surrounding roads.

17.1.2 This chapter is supported by the following Technical Appendices

- Appendix 17.1: Acoustic Terminology; and
- Appendix 17.2: Noise Model Input Data.

17.2 Legislative Context

17.2.1 Both the Environmental Protection Act (EPA) 1990 and the Control of Pollution Act (CoPA) 1974 may be used to control noise and vibration from construction works. Within Section 60, the CoPA provides power to Local Authorities to serve a notice to impose operating conditions on a development to minimise the impacts of construction and demolition noise and vibration. Under Section 61 a developer may apply for prior consent to the Local Authority to negotiate and agree operating procedures prior to the commencement of any site works.

17.2.2 Construction and demolition noise can be managed through best practicable means and a noise management plan that is drawn up in agreement with the Local Authority.

National and Local Planning Policy and Guidance

17.2.3 Current national guidance is contained in PAN 1/2011 Planning and Noise. In addition, a Technical Advice Note (TAN) 2011 (Scottish Government, 2011) accompanies this document and provides technical guidance on noise assessment. TAN 2011 states that BS 5228 (BSI, 2014) 'provides a definitive guide to the control of noise from construction and open sites for use with the powers to under [sic] the Control of Pollution Act 1974'.

17.2.4 While there is no specific policy relating to noise impacts from development of this type in the adopted HWLDP (THC, 2012), Policy 72 'Pollution' states that:

'Proposals that may result in significant pollution such as noise (including aircraft noise), air, water and light will only be approved where a detailed assessment report on the levels, character and transmission and receiving environment of the potential pollution is provided by the applicant to show how the pollution can be appropriately avoided and if necessary mitigated.'

17.2.5 The adopted WHILDP (as continued in force, 2012) (THC, 2017) does not include any policies relating to noise impacts from developments.

British Standards and Guidance

BS 5228: 2009+A1:2014 'Noise and Vibration Control on Construction and Open Sites'

17.2.6 BS 5228 (BSI, 2014) includes the following:

- Guidance on the potential impacts of construction and demolition noise and vibration;
- Discussion of the legislative framework;
- Prediction assessment methodology;
- General best practice control measures; and,
- Example criteria that may be used to assess the resulting impact significance of construction and demolition noise and vibration.

BS 7385: 1993 'Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Ground Borne Vibration'

17.2.7 BS 7385 (as referenced in BS 5228) (BSI, 1993) establishes the basic principles for carrying out vibration measurements and processing the data, with regard to evaluating vibration effects on buildings. In addition it includes recommended peak particle velocity (ppv) vibration limits for transient excitation for different types of buildings to give a minimal risk of vibration-induced cosmetic damage.

Calculation of Road Traffic Noise

17.2.8 The Department for Transport (DfT)/Welsh Office publication 'Calculation of Road Traffic Noise' (CRTN) (DfT and Welsh Office, 1988) describes procedures for traffic noise calculation, and is suitable for environmental assessments of schemes where road traffic noise may have an impact.

Design Manual for Road and Bridges

17.2.9 The Highways Agency 'Design Manual for Road and Bridges (DMRB) Volume 11 Section 3 Part 7 - Traffic Noise and Vibration' (Highways Agency, 2010) provides guidance on the appropriate level of assessment to be used when assessing the noise and vibration impacts arising from schemes involving changes in road traffic flows.

17.3 Assessment Methodology & Data Sources

Assessment Scope

- 17.3.1 The scope of this assessment is to identify the significance of the potential effects identified in Section 17.1.
- 17.3.2 Changes in road traffic flows on surrounding roads due to the construction of the Proposed Development is not expected to result in significant noise effects and has therefore been scoped out of this assessment.
- 17.3.3 The ferry timetable is not anticipated to change as a result of the Proposed Development. The sound emitted by the new vessel is not likely to be substantially different to that generated by vessels currently used in the harbour. Hence, the new ferry is not likely to significantly change the sound or vibration levels at receptors and therefore these impacts have been scoped out of the assessment.
- 17.3.4 The temporal scope of this assessment includes consideration of the construction and operational phases of the Proposed Development.

- 17.3.5 The spatial scope of the assessment encompasses any areas where construction works are to be undertaken and extends to the closest noise and vibration sensitive receptors to these works. Additionally, the study area includes representative receptors in proximity to the routes that will be used by road vehicles travelling to or from the site during the construction and operation of the Proposed Development. Potential noise and vibration impacts on ecological receptors are considered within **Chapter 13: Fish and Shellfish Ecology** and **Chapter 14: Marine Mammals** of this EIA Report.

Assessment Method

Determining Baseline Conditions

- 17.3.6 Existing sound levels in the vicinity of the Proposed Development are dominated by road traffic on the A87 and boat movements in the harbour. The site is in a rural location and the baseline sound levels are anticipated to be at least 5 dB below the lowest threshold values in BS 5228-1:2014 (BSI, 2014); hence the lowest threshold values would apply when determining the significance of effects. As these threshold values have been assumed to apply, it was determined that baseline monitoring surveys were not required. This approach was agreed with THC (see Consultation section).
- 17.3.7 Impacts at the closest properties are considered representative of worst-case impacts, impacts at other properties in the vicinity will be of lower magnitude than those identified at these locations.
- 17.3.8 The sensitivity of receptors to noise or vibration impacts has been defined in Table 17-1.

Table 17-1 Noise Receptor Sensitivity

Sensitivity of Receptor	Description
Very High	Concert halls/theatres, specialist vibration sensitive equipment
High	Residential properties, educational buildings, medical facilities, care homes
Medium	Places of worship, community facilities, offices
Low	Other commercial/retail premises

- 17.3.9 No non-residential noise sensitive receptors have been identified in the vicinity of the site; hence all the receptors are classified as having a sensitivity of 'high'.

Assessment Methodology – Construction and Demolition Noise

- 17.3.10 The sound levels generated by construction and demolition activities and experienced by nearby noise sensitive receptors depend upon a number of variables, the most significant of which are:
- Sound generated by plant or equipment used on site, generally expressed as a sound power level;
 - Periods of operation of the plant on the site, known as its 'on-time';
 - Distance between the sound source and the receptors; and
 - Attenuation due to ground absorption and barrier effects.

- 17.3.11 In order to quantify the likely sound from construction works in accordance with the methods and guidance in BS 5228 (BSI, 2014), it is necessary to define the various activities to be undertaken and the equipment to be used, based upon the anticipated programme of work.
- 17.3.12 The anticipated activities with the potential to generate significant levels of noise at receptors are as follows:
- Formation of temporary compound;
 - Dredging of pockets 1 and 2 and disposal;
 - Widening of the existing berth, including the following activities:
 - Demolition and replacement of sections of the wave wall;
 - Driving circular and arc cells;
 - Construction of the deck.
 - Land reclamation, including the following activities:
 - Formation of marshalling area with rock armour revetment construction;
 - Driving piles including as foundations of the new ticket office building structure.
 - Extension of the approachway, including the following activities:
 - Driving steel tubular piles;
 - Construction of the deck.
 - Installation of a new linkspan, including the following activities:
 - Removal of the existing steel superstructure and cutting existing piles;
 - Driving steel tubular or steel sheet piles.
 - Construction activities (new ticket office, fishermans compound and dry berth) on the increased marshalling area;
 - Demolition of the existing ticket office;
 - Maintenance dredging and disposal.
- 17.3.13 Two elements of the Proposed Development have been scoped out of the noise assessment as they consist of installation of precast units which are not likely to generate significant noise or vibration levels at receptors. These operations are as follows:
- Possible LNG fuel tanks installation; and
 - Installation of covered walkway.
- 17.3.14 Construction noise predictions were undertaken using a spreadsheet implementation of the methodology outlined in BS 5228 (BSI, 2014).
- 17.3.15 BS 5228 contains a database of the noise emission from individual items of equipment and activities, and includes routines to predict noise from demolition and construction activities at identified receptors. The prediction method provides guidance on the effects of different types of ground conditions, barrier attenuation and how to assess the impact of fixed and mobile plant.
- 17.3.16 A full list of construction plant for each construction activity, including on-times, was not available to inform the assessment. Therefore representative plant rosters for each construction activity were defined, based on preliminary information from the design

engineers. The plant list and source noise emission data used in predictions are detailed in **Appendix 17.2.**

- 17.3.17 If the contractor proposes to undertake activities and use plant which are significantly different from those used in these noise predictions it is recommended that construction noise levels be reviewed prior to construction commencing.
- 17.3.18 For the purposes of this assessment *Scenario 1 - Single Integrated Delivery Programme* (the Construction Programme as described in **Chapter 3: Project Description**) has been considered. The implementation of the Construction Programme would require construction activities to be completed in a shorter period compared to *Scenario 2 – Phased Delivery Programme*, hence activities are expected to overlap in time and constitute a worst-case scenario.
- 17.3.19 The following periods have been identified from the Construction Programme when multiple activities may occur simultaneously, thereby representing a worst-case:
- Noise Period 1: Preconstruction works for the formation of the temporary compound area;
 - Noise Period 2: Berthing structure widening, dredging of pockets 1 and 2, construction of new marshalling area, construction of the fishermen's compound and storage building;
 - Noise Period 3: Approachway widening, replacement of linkspan, dredging of pockets 1 and 2, construction of new terminal building;
 - Noise Period 4: Demolition of existing ticket office, dredging of pockets 1 and 2; and
 - Noise Period 5: Maintenance dredging of pockets 1 and 2.
- 17.3.20 Predictions have been performed of the potential construction noise levels during each of the above periods assuming all of the activities occur simultaneously. In reality this profile of simultaneous activity is considered unlikely to occur however these assumptions were made to ensure consider a worst-case scenario.
- 17.3.21 For the purposes of this assessment dredging operations have been assumed to take place during above specified noise periods 2, 3 and 4.
- 17.3.22 In addition to operations identified within above noise periods, a diesel generator is expected to be used within the temporary compound area. Therefore this sound source is included in the noise predictions during noise periods 2, 3, and 4.
- 17.3.23 With regard to acceptable noise levels, BS 5228 provides guidance within Annex E including the 'ABC Method' which enables the identification of potentially significant effects at dwellings (BSI, 2014). This proposes threshold values of LAeq,T as a function of baseline sound levels at the receptors, as shown in Table 17-2 below.

Table 17-2 Example Threshold of Potential Significant Effect at Dwellings

Assessment Category and Threshold Value Period	Threshold Value $L_{Aeq,T}$ dB(A) façade		
	Category A ^(a)	Category B ^(b)	Category C ^(c)
Night-time (23:00 – 07:00)	45	50	55
Evenings and Weekends ^(d)	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

NOTE 1: A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

NOTE 3: Applies to residential receptors only.

(a) Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

(b) Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values.

(c) Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.

(d) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays, 07:00 – 23:00 Sundays.

17.3.24 THC's general recommendations on construction noise (Fraser, 2017) include noise limits as shown in Table 17-3 and

17.3.25 Table 17-4. It should be noted that these limits are only guidance. A long-term construction site relates to any works ongoing for more than 6 months.

Table 17-3 Noise limits, Short-term Construction Sites

Days	Times	Maximum Noise Levels	
		L_{Aeq} (1 hour)	$L_{pA(max)}$
Mondays To Saturdays*	0800 to 1900 hours	75 dB(A)	-
If permitted	1900 to 2200 hours	65 dB(A)	-
If permitted	2200 to 0800 hours	40 dB(A)	50 dB(A)
Sundays (if permitted)	0000 to 2400 hours	40 dB(A)	50 dB(A)

Table 17-4 Noise limits, Long-term Construction Sites

Days	Times	Maximum Noise Levels	
		L_{Aeq} (1 hour)	$L_{pA(max)}$
Mondays To Saturdays*	0800 to 1900 hours	55 dB(A)	-
If permitted	1900 to 2200 hours	<10 dB(A) above background	-
If permitted	2200 to 0800 hours	40 dB(A)	50 dB(A)
Sundays (if permitted)	0000 to 2400 hours	40 dB(A)	50 dB(A)

- 17.3.26 Table 17-4 apply. However, it is understood that this guidance relates primarily to the setting of limits within Section 61 Agreements with construction contractors under the CoPA. As required by THC guidance, the assessment has been performed in accordance with BS 5228 (BSI, 2014).
- 17.3.27 As mentioned in para. 17.3.6, given the location of the Proposed Development, it is considered likely that the current baseline sound levels will be below the lowest threshold value in the standard. Hence the applicable Threshold Values are those specified under Category A in Table 17-2. The magnitude of the impact of the construction noise is based on the difference between the likely construction noise level at the receptor and the Threshold Value, as shown in Table 17-5.

Table 17-5 Construction and Demolition Noise Magnitude of Impact

Construction and Demolition Sound Level above Threshold Value (dB)	Magnitude of Impact
<1	Negligible
1>3	Minor
3>5	Moderate
5+	Major

- 17.3.28 BS 5228-1 states that “*if the site noise level exceeds the appropriate category value, then a potential significant effect is indicated. The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect.*” These factors have therefore been considered to determine the effect significance.

Assessment Methodology – Construction and Demolition Vibration

- 17.3.29 BS 5228 Part 2 provides a simple method of determining annoyance alongside evaluation of the potential for cosmetic damage resulting from vibration (BSI, 2014).
- 17.3.30 Table 17-6 (adapted from Table B.1, BS 5228 Part 2) details PPV levels and their potential effect on humans, and provides a semantic scale for description of vibration impacts on human receptors.

Table 17-6 Construction and Demolition Vibration Magnitude of Impact

Vibration Level (mm/s)	Effect	Magnitude of Impact
0.14	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.	Negligible
0.3	Vibration might be just perceptible in residential environments.	Minor
1.0	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.	Moderate
10	Vibration is likely to be intolerable for any more than a very brief exposure to this level.	Major

17.3.31 In addition to the above, vibration from construction and demolition activities may impact on adjacent buildings. The criteria used in this assessment relate to the potential for cosmetic damage, not structural damage. The recommended PPV vibration limits in BS 7385 (referenced in BS 5228) for transient excitation for different types of buildings are presented in Table 17-7.

Table 17-7 Transient Vibration Guide Values for Cosmetic Damage

Type of Structure	Peak Component Particle Velocity in Frequency Range of Predominant Pulse ¹	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
Un-reinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz ²	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

1 - Values referred to are at the base of the building.

2 - At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

17.3.32 The levels quoted in Table 17-7 refer to transient sources of vibration. BS 7385 states that 'Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in ... [Table 17-7] may need to be reduced by up to 50 %.'

17.3.33 BS 7385-2:1993 indicates that minor damage occurs at a vibration level twice that of cosmetic damage and major damage occurs at a vibration level twice that of minor damage (BSI, 1993). This guidance can be used to define the magnitude of impact as shown in Table 17-8.

Table 17-8 Magnitude of Impact for Vibration Damage

Magnitude of Impact	Damage Risk	Continuous Vibration Level ppv (mm/s)
Major	Major	30
Moderate	Minor	15
Minor	Cosmetic	7.5
Negligible	Negligible	6

17.3.34 THC's general recommendations on construction noise state the following: 'The peak particle velocity generated by the operations shall not exceed 5mm/second measured at the building nearest to the operations. This applies to all operations other than blasting.'

17.3.35 Construction vibration predictions were undertaken using a spreadsheet implementation of the 'vibratory piling' empirical prediction method outlined in Table E.1 of BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites (BSI, 2014). The predictions applied the relevant parameters in order to identify a level which only had a 5% chance of being exceeded.

Assessment Methodology – Operational Road Traffic Noise

17.3.36 The impact of the noise generated by the additional traffic due to the operation of the Proposed Development has been assessed by considering the short-term increase in traffic flows during works, following the principles of CRTN and DMRB.

17.3.37 The criteria for the assessment of traffic noise changes arising from the Proposed Development have been adapted from Table 3.1 of DMRB and are provided in Table 17-9.

Table 17-9 Road Traffic Noise Assessment Criteria (Temporary Changes)

Noise Change, $L_{A10,18h}$	Magnitude of Impact
0 – 0.9 dB	Negligible
1 – 2.9 dB	Minor
3 – 4.9 dB	Moderate
5 dB or more	Major

17.3.38 DMRB states that a change in traffic sound levels in the short-term of less than 1 dB $L_{A10,18h}$ is imperceptible to the human ear. Therefore, roads which undergo a change in emitted sound level of less than 1 dB(A) due to the Proposed Development are likely to give rise to only a negligible change in the road traffic sound level.

Significance Criteria

17.3.39 The methodology for determination of the significance of an effect is described in EIA Report **Chapter 6**. This has been adapted for use in this assessment as shown in Table 17-10.

Table 17-10 Significance of Effect from Noise and Vibration

Sensitivity of Receptor	Magnitude of Impact			
	Major	Moderate	Minor	Negligible
Very High	Major	Major	Moderate	Minor
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Negligible	Negligible
Low	Minor	Negligible	Negligible	Negligible

17.3.40 It should be noted that effects can be adverse or beneficial. No beneficial noise related effects are anticipated as a result of the scheme, all identified effects are adverse. Descriptions are provided below for the effects likely to occur depending on their significance, however descriptions these only relate to adverse effects. These are based on the IEMA Guidelines for Environmental Noise Impact Assessment (IEMA, 2014).

- Major: Disruptive, causes a material change in behaviour and/or attitude. Potential for sleep disturbance. Quality of life diminished due to change in character of the area.
- Moderate: Intrusive, noise can be heard and causes small changes in behaviour and/or attitude. Potential for non-awakening sleep disturbance. Affects the character of an area such that there is a perceived change in the quality of life.
- Minor: Non-intrusive, can be heard but does not cause any change in behaviour or attitude. Can slightly affect the character of an area but not such that there is a perceived change in the quality of life.
- Negligible: No discernible effect on the receptor.

17.3.41 Based on the above descriptions, it is considered that effects of negligible or minor significance are not significant, and those effects of moderate or major significance are considered significant.

Summary of Consultation

17.3.42 The assessment methodology was provided to the Environmental Health Department of Highland Council on a phone call dated 29th June 2017 and it was confirmed to be appropriate by the Environmental Health Officer (Fraser, 2017)^{Error! Bookmark not defined.}.

17.3.43 In a subsequent e-mail (Fraser, 2017) THC's document on Construction Noise Limits was provided. The e-mail also provided THC's standard scoping response for construction noise as follows:

'The development includes construction in proximity to noise sensitive properties. Planning conditions are not used to control the impact of construction noise as similar powers are available to the Local Authority under Section 60 of the CoPA 1974. However, where there is potential for disturbance from construction noise the application will need to include a noise assessment.

A construction noise assessment will be required in the following circumstances: -

Where it is proposed to undertake work, which is audible at the site boundary, out with the hours Mon-Fri 8am to 7pm; Sat 8am to 1pm.

OR

Where noise levels during the above periods are likely to exceed 75dB(A) for short term works or 55dB(A) for long term works. Both measurements to be taken as a 1hr LAeq at the curtilage of any noise sensitive receptor. (Generally, long term work is taken to be more than 6 months).

If an assessment is submitted it should be carried out in accordance with BS 5228-1:2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise. Details of any mitigation measures should be provided including proposed hours of operation.

Regardless of whether a construction noise assessment is required, it is expected that the developer/contractor will employ the best practicable means to reduce the impact of noise from construction activities. Attention should be given to construction traffic and the use of tonal reversing alarms.'

17.4 Baseline Conditions

- 17.4.1 Existing sound levels in the vicinity of the Uig Harbour are likely to be dominated by road traffic on the A87 and boat movements in the harbour. The site is considered to be a rural location and the baseline sound levels are anticipated to be low.
- 17.4.2 The noise-sensitive receptors likely to be most exposed to the sound emissions from the Proposed Development have been identified, as shown in Table 17-11 below and illustrated in **Figure 17.1**. Receptors R1 to R3 represent the properties closest to each of the identified construction activities above, and will therefore be exposed to the highest construction noise levels from the works. Receptor R4 is the closest property to the routes where operational road traffic increases are anticipated, hence will be exposed to the highest operational road traffic noise impacts as a result of the Proposed Development.

Table 17-11 Identified Noise Sensitive Receptors

Receptor	Description	Receptor Type	Sensitivity of Receptor	Distance from the Proposed Development Site Boundary (m)
R1	The Haven	Residential	High	39
R2	Fuaim na Mara	Residential	High	58
R3	Orasay	Residential	High	48
R4	Tigh na Carradh	Residential	High	538

17.5 Avoidance Measures/Mitigation 'by design'

- 17.5.1 During all construction works the contractor will follow best practicable means to reduce noise impacts upon the local community. Best practicable means will include the following:
- All construction plant and equipment will comply with EU noise emission limits;
 - Proper use of plant with respect to minimising noise emissions and regular maintenance. All vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers and will be maintained in good efficient working order;

- The access routes within the site will be regularly maintained to prevent the development of potholes in order to minimise noise, in particular from empty vehicles;
- Selection of inherently quiet plant where appropriate. All major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines in intermittent use will be shut down in the intervening periods between work or throttled down to a minimum;
- Materials will be handled with care and be placed, not dropped. Materials will be delivered during normal working hours;
- All ancillary plant such as generators, compressors and pumps will be positioned so as to cause minimum noise disturbance, i.e. furthest from receptors or behind close boarded noise barriers. If necessary, acoustic enclosures will be provided and/or acoustic shielding;
- Construction contractors will be obliged to adhere to the codes of practice for construction working and piling given in BS 5228 and the guidance given therein minimising noise emissions from the site; and
- Reference will be made to the Building Research Establishment (BRE) Pollution Control Guide, Parts 1-5 (BRE, 2003).

17.6 Predicted Effects

Construction Noise

- 17.6.1 The site working hours are anticipated to be from 07.00 hrs to 19.00 hrs Mondays to Fridays and 8.00 hrs to 13.00 hrs on Saturdays. For the purposes of this assessment, it has been assumed that no work will be undertaken on Sundays or Bank Holidays. In addition, 07:00 hrs to 08:00 hrs is outside THC's standard working hours. This is therefore considered to be night-time working irrespective of the times stated in BS 5228, and therefore the Threshold Value during these times is 45 dB(A). At all other times the Threshold Value is 65 dB(A).
- 17.6.2 In addition the maintenance dredging operations are expected to be carried out six days a week from 08.00 hrs to 18.00 hrs; however these will only be carried out every 3 to 5 years and are anticipated to last 2 weeks and are therefore considered 'short-term' according to THC guidance. In which case, the criteria in Table 17-3 of 75dB $L_{Aeq,1hr}$ during normal working hours and 65dB $L_{Aeq,1hr}$ from 13:00 to 18.00 on Saturdays are applicable.
- 17.6.3 The predicted construction noise levels during normal working hours at the façade of each receptor location are provided in Table 17-12. The calculated noise levels are the level which will occur when the works are at an average distance from the receptors.

Table 17-12 Predicted Construction Noise Levels at Receptors

Receptor	Schedule Period	Predicted Construction Noise Level $L_{Aeq,1h}$ (dB)	Threshold Value $L_{Aeq,1h}$ (dB) within THC Working Hours	Magnitude of Impact	Threshold Value $L_{Aeq,1h}$ (dB), Outside THC Working Hours	Magnitude of Impact
R1	1	62	65	Negligible	45	Negligible to Minor
	2	76	65	Major	45	Major
	3	68	65	Moderate	45	Major
	4	70	65	Major	45	Major
	5	58	75	Negligible	65	Negligible
R2	1	62	65	Negligible	45	Negligible to Minor
	2	74	65	Major	45	Major
	3	67	65	Minor	45	Major
	4	69	65	Moderate	45	Major
	5	57	75	Negligible	65	Negligible
R3	1	65	65	Negligible	45	Minor to Major
	2	75	65	Major	45	Major
	3	66	65	Minor	45	Moderate to Major
	4	73	65	Major	45	Major
	5	56	75	Negligible	65	Negligible

- 17.6.4 During the main construction phase, the predicted noise levels are between 2 dB below and 13 dB above the identified threshold value for works during normal construction hours. The magnitude of the daytime construction noise impacts have been identified to vary from negligible to major at all receptors. The sensitivity of the receptors is high therefore the significance of the effects varies from negligible to major at receptor locations R1 and R2, and from minor to major at R3.
- 17.6.5 During the maintenance periods, the construction noise levels are below the threshold at which an assessment is required for normal working hours according to THC guidance (Fraser, 2017), hence impacts are considered negligible.
- 17.6.6 For works undertaken outside THC standard working hours during the main construction phase, the predicted noise levels exceed the identified Threshold Value. During the maintenance dredging the predicted noise impacts and resultant significance are negligible.
- 17.6.7 To assist in determining the requirements for mitigation, the activities within each period which are causing the exceedance of the 65 dB $L_{Aeq,1h}$ threshold value have been identified. The activities which result in exceedances are identified in Table 17-13, along with the range of construction noise levels at receptors likely to occur due to that activity, depending on the activity location. The minimum distance required between the activity and the receptor to avoid exceedance of the 65dB $L_{Aeq,1hr}$ threshold has been identified.

Table 17-13 Predicted Range of Construction Activity Noise Levels at Receptors

Activity	Range of Distances to Receptor (m)			Predicted Range of Construction Noise Levels $L_{Aeq,1h}$ (dB)		
	R1	R2	R3	R1	R2	R3
Formation of the marshalling yard (scenario 2)	40 to 213	58 to 227	48 to 192	61 to 76	61 to 72	62 to 74
Piling building foundations on the marshalling area (scenario 2)	72 to 121	94 to 142	88 to 127	72 to 77	71 to 75	72 to 75
Piling the fisherman's compound (scenario 2)	100 to 241	129 to 260	149 to 221	60 to 72	60 to 69	61 to 68
Approachway steel tubular piling (scenario 3)	53 to 321	78 to 349	87 to 376	58 to 74	57 to 70	56 to 69
Demolition of existing ticket office (scenario 4)	92 to 120	102 to 141	60 to 127	69 to 71	68 to 70	69 to 75

Whilst the above Table shows that noise levels may at times exceed the cumulative noise levels in **Error! Reference source not found.**, the durations of these exceedances are likely to be short whilst works associated with the relevant activity are at their closest location to the receptor.

Construction Vibration

- 17.6.8 Mobile plant associated with operation of the site is unlikely to give rise to high levels of ground borne vibration. Typically the levels of ground borne vibration from tracked earth moving equipment (such as a bulldozer or excavator) are imperceptible to humans at a distance of approximately 20 m and those generated by vehicles with rubber tyres (e.g. a heavy lorry or dump truck) would be imperceptible at more than 10 metres from the haul road (Martin, 1977). Mobile plant are unlikely to come within 10 or 20 metres of any identified sensitive receptor, hence vibration impacts with mobile plant are anticipated to be negligible. The subsequent significance of effect at high sensitivity receptors is negligible.
- 17.6.9 The construction of the Proposed Development will require vibratory piling, which has the potential to generate significant levels of vibration. The closest location of the proposed piling to the identified receptors has therefore been identified and the vibration levels from these activities have been predicted at the nearest sensitive receptors. The results are given in Table 17-14.

Table 17-14 Predicted Construction Vibration Levels at Receptors

Receptor	Dominant construction vibration source	Closest approach distance from dominant vibration source (m)	Predicted construction vibration levels ppv (mms ⁻¹)
R1	Piling for approachway extension	53	1.5
R2	Piling for approachway extension	78	0.9
R3	Piling on marshalling area	87	0.8

17.6.10 At all receptors, the predicted vibration levels fall below the vibration limit of 5 mm/s identified by THC's EHO.

17.6.11 Predicted construction vibration levels have been assessed against the criteria provided in Table 17-8 for potential building damage and in Table 17-6 for annoyance. The magnitude of the vibration impact is classified as negligible at all receptors in terms of building damage. The magnitude of the vibration impact in terms of annoyance is classified as moderate at R1 and minor at R2 and R3. The corresponding significance of effect at high sensitivity receptors is classed as minor at R2 and R3 and moderate at R1.

Operational Road Traffic Noise

17.6.12 Baseline traffic flows on the A87 and the predicted change in traffic flows due to operation of the Proposed Development at a number of traffic counter locations were considered at scoping stage and are set out within **Appendix 1.2**. The worst impacted location is counter reference 1133 (close to the Proposed Development) as the baseline flows at this location are the lowest.

17.6.13 An assessment of the increase in road traffic noise level has been undertaken at a distance of 10 m from the carriageway to provide the likely increase in noise level at R4 which is in proximity to this traffic counter. The predicted increase in noise levels from the passage of traffic along the A87 is given in Table 17-15.

Table 17-15 Operational Road Traffic Flows

Road	2016 Baseline		With Proposed Development		Change in Road Traffic Noise Levels
	Annual Average Daily Traffic (AADT)	%HGVs	Annual Average Daily Traffic (AADT)	%HGVs	
A82	1334	3.1	1654	3.1	1.4

17.6.14 The predicted change in traffic noise emissions of the A87 due to operation of the Proposed Development is 1.4 dB(A). According to the criteria in Table 17-9 the magnitude of the noise impact is classified as minor at R4, hence the significance of effect is also minor.

17.7 Mitigation & Monitoring

Construction Noise

- 17.7.1 The predicted construction noise levels during normal working hours and out of working hours at the three identified receptors are anticipated to result in major effects, prior to any mitigation measures and therefore mitigation is required.
- 17.7.2 The contractor will investigate options for mitigation of all identified impacts to demonstrate that best practicable means have been implemented. This will include consideration of alternative methods of working which may be quieter than those assumed to this assessment. The potential for additional mitigation measures has been examined where feasible for those activities which are anticipated to result in exceedances of the 65 dB $L_{Aeq,1h}$ Table 17-12.
- 17.7.3 Where practicable, mobile or semi-permanent noise barriers located as close to the above construction activities as possible will be utilised to provide shielding between the receptors and the works. However it is unlikely to be feasible to use a barrier to block line of sight to works on the approachway due to access and safety concerns, nor for any of the piling works as the piles are too tall. Noise barriers would provide a minimum attenuation of 10 dB (due to removal of line-of-sight). The activities which could potentially be mitigated by the erection of a barrier are the formation of the marshalling yard and the demolition of the ticket office.
- 17.7.4 In addition, shrouds will be used to attenuate piling noise emissions. Shrouds have been shown to reduce piling noise emissions by 10 to 20 dB. A reduction of 10 dB has been assumed for this assessment. However, for sheet piling typically it is the exposed pile itself that radiates sound, for which a shroud may not be effective. The contractor will investigate whether it is possible to dampen the sheet pile to prevent this secondary noise radiation but for the purposes of this assessment the attenuation has not been assumed for the proposed piling of the fisherman's compound.
- 17.7.5 Incorporating the above mitigation, the predicted range of activity noise levels at receptors are provided in Table 17-17

Table 17-16

Table 17-16: Predicted Range of Construction Activity Mitigation Noise Levels at Receptors

Activity	Predicted Range of Construction Noise Levels $L_{Aeq,1h}$ (dB)		
	R1	R2	R3
Formation of the marshalling yard (scenario 2)	51 to 66	51 to 62	52 to 64
Piling building foundations on the marshalling area (scenario 2)	62 to 67	61 to 65	62 to 65
Approachway steel tubular piling (scenario 3)	48 to 64	47 to 60	46 to 59
Demolition of existing ticket office (scenario 4)	59 to 61	58 to 60	59 to 65

Activity	Predicted Range of Construction Noise Levels $L_{Aeq,1h}$ (dB)		
	R1	R2	R3
17.7.6	Although the above indicates that individual activity noise levels may not result in significant effects, it is of more relevance to consider the cumulative effect of all activities anticipated to occur simultaneously. Nevertheless, it may be that in reality the activities are not undertaken simultaneously or the proposed schedule changes, therefore the likelihood that the individual activity noise levels may exceed the 65 dB $L_{Aeq,1h}$ threshold value has been discussed below.		
17.7.7	The average distance between the plant forming the marshalling yard and a receptor must be 40 m or less to result in an exceedance of the 65 dB $L_{Aeq,1h}$ threshold value. These works are between 40 and 213 m from the closest receptor. It is therefore unlikely that any exceedances of the 65 dB $L_{Aeq,1h}$ threshold value at any receptor as a result of these works would occur.		
17.7.8	The distance between the piling of building foundations on the marshalling yard area and a receptor must be 80 m or less for the noise of this activity to result in an exceedance of the 65 dB $L_{Aeq,1h}$ threshold value. These works are between 72 and 121 m from the closest receptor, therefore only approximately 20% of the piles would be expected to result in an exceedance of the 65 dB $L_{Aeq,1h}$. There are approximately 30 piles to be driven for this activity, and each pile will take approximately 2 days to drive, hence the total duration is 60 days, of which the threshold value would be exceeded for an approximate duration of 12 days.		
17.7.9	With the mitigation in place the noise levels from the ticket office demolition and approachway piling are not anticipated to exceedance the 65 dB $L_{Aeq,1h}$ threshold value at any receptor.		
17.7.10	Residents will be informed of noisy works in advance and the likely durations. High noise levels for short periods could be expected to be tolerated, if prior warning and explanation has been given.		
17.7.11	When planning the works, the impact of noise emissions will be minimised by considering the number and type of plant required to complete the work and the timing, duration and phasing of the works. For example: <ul style="list-style-type: none"> Where practicable, noisy works should be interspersed between quieter works to provide periods of respite. In particular, the sheet piling of the fisherman's compound and the piling of the building foundations on the marshalling yard will not be performed simultaneously; Where practicable, the works will be phased to ensure that the most noisy operations are performed during the least sensitive times of the day (sensitivities ranked as follows): <ul style="list-style-type: none"> Highly sensitive (red): 07:00 to 08:00 Monday to Friday, 07:00 to 13:00 Saturday; 		

- Moderately sensitive (amber): 0800 to 09:00 and 17:00 to 19:00 Monday to Friday; and
- Least sensitive (green): 09:00 to 17:00 Monday to Friday.
- Deliveries will only be accepted during Highland Council normal working hours;
- Minimising the duration of the works is generally beneficial, if higher noise levels may result in a significant reduction in the overall duration of the works this will be considered; and
- Phasing of works at the closest approach to properties where possible to give periods of respite.

17.7.12 Standard bleeper reversing alarms are generally more likely to result in complaints as they are much more tonal in nature than ‘white noise’ alarms. The contractor will, where practicable, only use mobile plant fitted with ‘white noise’ or volume adjustable alarms. In addition, adapting the works so the need to reverse towards the site boundary is kept to a minimum, where practicable, could also reduce the impact.

17.7.13 A noise management plan will be produced to describe the steps which will be taken to mitigate noise effects arising from the works. Typically this would identify the following:

- Sources of work noise emissions;
- Any operational controls such as:
- Management & staff responsibilities;
- Liaison with neighbours;
- Training;
- Site specific mitigation measures;
- Application of best practicable means;
- Noise monitoring (if required); and
- Complaints handling procedures.

Construction Vibration

17.7.14 In terms of the potential for human annoyance, the effects of the construction vibration impacts at receptor R1 have been assessed to be of moderate significance when vibratory piling works are at their closest approach. At all other receptors the effects are no worse than minor significance. It is understood that the use of alternative, low vibration, methods of piling (such as continuous flight auger piling) is not feasible. It has not been possible to identify any other options for reducing the vibration generated by the piling.

17.7.15 However, the identified impact can be tolerated by keeping local residents informed about the working schedules as discussed above. The effects of the construction vibration in terms of potential for building damage are of negligible significance and this will be communicated to residents. Hence no further mitigation is required.

Operation

17.7.16 As the impact of operational road traffic noise is unlikely to result in significant effects at the identified noise sensitive receptors, no mitigation measures are required.

Maintenance

- 17.7.17 As the impact of maintenance dredging noise is unlikely to result in significant effects at the identified noise sensitive receptors, no mitigation measures are required.

17.8 Residual Effects

Construction

- 17.8.1 The use of the proposed construction noise mitigation measures will ensure that construction noise levels are controlled to the lowest levels practicable. The restrictions on noisy working during non-standard construction hours are anticipated to reduce the residual effects to minor significance.
- 17.8.2 With mitigation in place, the typical construction noise levels have been re-calculated for each schedule period of the main construction phase as shown in Table

Table 17-17. The magnitude of impact has been calculated based on the difference between the noise level and the 65 dB $L_{Aeq,1h}$ threshold value.

Table 17-17 Predicted Mitigated Construction Noise Levels at Receptors

Receptor	Schedule Period	Predicted Construction Noise Level $L_{Aeq,1h}$ (dB)	Magnitude of Impact
R1	1	62	Negligible
	2	71	Major
	3	66	Minor
	4	60	Negligible
R2	1	62	Negligible
	2	69	Moderate

- 17.8.3 The majority of the residual construction noise impacts are of negligible or minor magnitude at all receptors, which equates to effects of negligible or minor significance, i.e. Not Significant.
- 17.8.4 The only residual construction noise impacts with moderate or major magnitude (i.e. potentially significant effects) are those anticipated during period 2. This is primarily due to the noise of the sheet piling to create the fisherman's compound, as no feasible options have been identified for mitigation of this noise. For the fisherman's compound there are approximately 120 piles to be driven for this activity, and each pile will take approximately 4 hours to drive. The duration of this piling is therefore anticipated to be around 60 days. For the identified receptors, exposure to such construction noise levels for this duration is considered a Significant effect.
- 17.8.5 The piling of the marshalling yard building foundations is also predicted to contribute significantly to the cumulative noise levels at the receptors during period 2. This piling will last for approximately 60 days. Exposure to the predicted cumulative construction noise levels for this duration is also considered a Significant effect at receptor R1.

- 17.8.6 The proposed mitigation does not reduce the predicted construction vibration levels at receptors; however it is likely to reduce the potential for people to be annoyed. On this basis the significance of the residual effects of the vibration emissions from the construction works has been assessed to be minor or negligible (i.e. Not Significant) at all receptors.

Operation

- 17.8.7 The significance of the residual effects of the operational road traffic emissions due to the Proposed Development has been assessed to be minor or negligible (i.e. not significant) at all receptors.

17.9 Summary & Conclusion

- 17.9.1 An assessment has been performed in order to determine the potential effects of:
- Noise and vibration impacts from construction and demolition plant at nearby sensitive receptors; and
 - Operational road traffic noise impacts at sensitive receptors due to increased flows on the A87.

Construction

- 17.9.2 In order to identify the potential construction noise and vibration impacts upon nearby receptors, an assessment has been performed according to the method and guidance provided in BS 5228 (BSI, 2014).
- 17.9.3 Construction noise and vibration levels have been predicted from periods when simultaneous construction activities are anticipated to occur, identified from the proposed schedule using the Single Integrated Delivery Programme (Scenario 1).
- 17.9.4 Pre-mitigation, the predicted construction noise impacts are anticipated to result in effects ranging from negligible to major significance at all identified receptors.
- 17.9.5 Mitigation in the form of noise barriers and shrouds, restrictions on timing of activities and best practicable means have been recommended such that the significance of effects are as low as possible. In addition, it has been recommended that residents are informed when activities that may produce high noise or vibration levels for a short period of time are to be undertaken. Elevated levels can be tolerated if prior notification and explanation is given.
- 17.9.6 The majority of residual effects are not significant, however, the worst-case residual construction noise effects during the proposed piling to create the fisherman's compound and the marshalling yard building foundations are considered significant at the identified receptors. .
- 17.9.7 In terms of human annoyance, the predicted construction vibration impacts are anticipated to result in a moderate significance of effect at R1 and minor significance at R2 and R3. In terms of building damage, the significance of effect is negligible. The identified impact can be tolerated by keeping local residents informed about the proposed works. The significance of the residual effects is considered to be minor i.e. not significant.

Operation

- 17.9.8 In order to identify the potential operational road traffic noise impacts upon nearby receptors, an assessment has been performed by considering the short-term increase in traffic flows due to the Proposed Development, following the principles of CRTN and DMRB.

- 17.9.9 The assessment indicates that the worst-case effects of the operational road traffic emissions are of minor significance (i.e. not significant) and therefore no mitigation has been proposed.

Maintenance

- 17.9.10 In order to identify the potential noise impacts due to maintenance dredging activities upon nearby receptors, an assessment has been performed according to the method and guidance provided in BS 5228 (BSI, 2014).
- 17.9.11 At all receptor locations the predicted noise impacts are anticipated to result in a negligible significance of effect (i.e. not significant).

18. Commercial and Recreational Navigation

18.1 Introduction

- 18.1.1 This section of the EIA Report provides an assessment of the potential effects of the Proposed Development on the navigation of commercial and recreational vessels.
- 18.1.2 The main user of Uig Harbour is the ferry service operated by CalMac Ferries Ltd (CFL). The harbour is also used by locally based and visiting fishing vessels, plus vessels involved in the aquaculture industry. Cargo vessels use the area when providing service to the commercial fish farms located in adjacent areas of Skye and the Western Isles.
- 18.1.3 A small number of recreational vessels are located in the harbour. The closest Royal Yachting Association (RYA) affiliated clubs are based at Portree on the eastern coast of the Isle of Skye and at Lochmaddy in the Western Isles.

18.2 Legislative Context

Primary legislation

- 18.2.1 International protocols and conventions relating to safety, laws of the sea and pollution apply to shipping and ports. The UK Government has a responsibility to ensure that measures are implemented in order to honour its commitments to these protocols; not least of these is the UK's responsibility under Article 60(7) of the United Nations Convention on the Law of the Sea (UNCLOS) relating to provisions for 'Artificial islands, installations and structures in the exclusive economic zone'. A Navigational Risk Assessment (NRA) is one process by which the necessary considerations of developments can be evaluated.
- 18.2.2 Within UK territorial waters, the UK Government uphold the right of innocent passage as defined in Article 17 of UNCLOS. Beyond the 12 nautical mile (nm) limit of UK territorial waters, shipping has the freedom of navigation. The regulation of shipping should be carried out by the 'flag state control' operated by the country in which the ship is registered. As this has proved unsatisfactory, 'port state control' has become common in national jurisdictions. Under this regime, the UK Government represented by the inspection division of the Maritime and Coastguard Agency (MCA), exercises the rights of the port state to inspect and, if appropriate, detain sub-standard ships.
- 18.2.3 The majority of port operations are administered by a Statutory Harbour Authority (SHA). Every SHA is self-governed with specific legislation (Acts of Parliament) creating the SHA as an entity, with further powers, duties and amendments made over time in response to the changing scope and remit of the SHA. Underpinning the powers of an SHA is a range of national legislation, which places statutory responsibility on the Harbour Authority to ensure navigation and safety within the harbour limits. This includes the 'Harbours, Docks and Piers Clauses Act 1847' and the 'Harbour Act 1964'. Uig Harbour is managed by THC, who is the SHA.

Guidance

18.2.4 A number of guidance documents have been used to inform this chapter. The following documents provide information regarding the issues that should be taken into consideration when assessing potential effect of the Proposed Development on navigational safety:

- Revised Guidelines for Formal Safety Assessment (FSA) for use in the International Maritime Organization (IMO) rule making process (IMO, 2015);
- Methodology for Assessing the Marine Navigational Safety and Emergency Response Risks of Offshore Renewable Energy Installations (OREI) (DfT and MCA, 2013).
- Marine Guidance Note 543 (MGN 543 Merchant + Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response (MCA, 2016)
- Port Marine Safety Code (DfT and MCA, 2016); and
- A Guide to Good Practice on Port Marine Operations (DfT and MCA, 2018)

18.3 Assessment Methodology & Data Sources

18.3.1 For the purposes of this assessment, the study area comprises the entirety of Uig Bay and extends approximately 1.3 km west from the headlands at Ru Idrigill and Ru Chorachan to incorporate the Proposed Sea Disposal Site. The study area is presented in Table 18-1, with coordinates for positions A and B provided in Table 18-1.

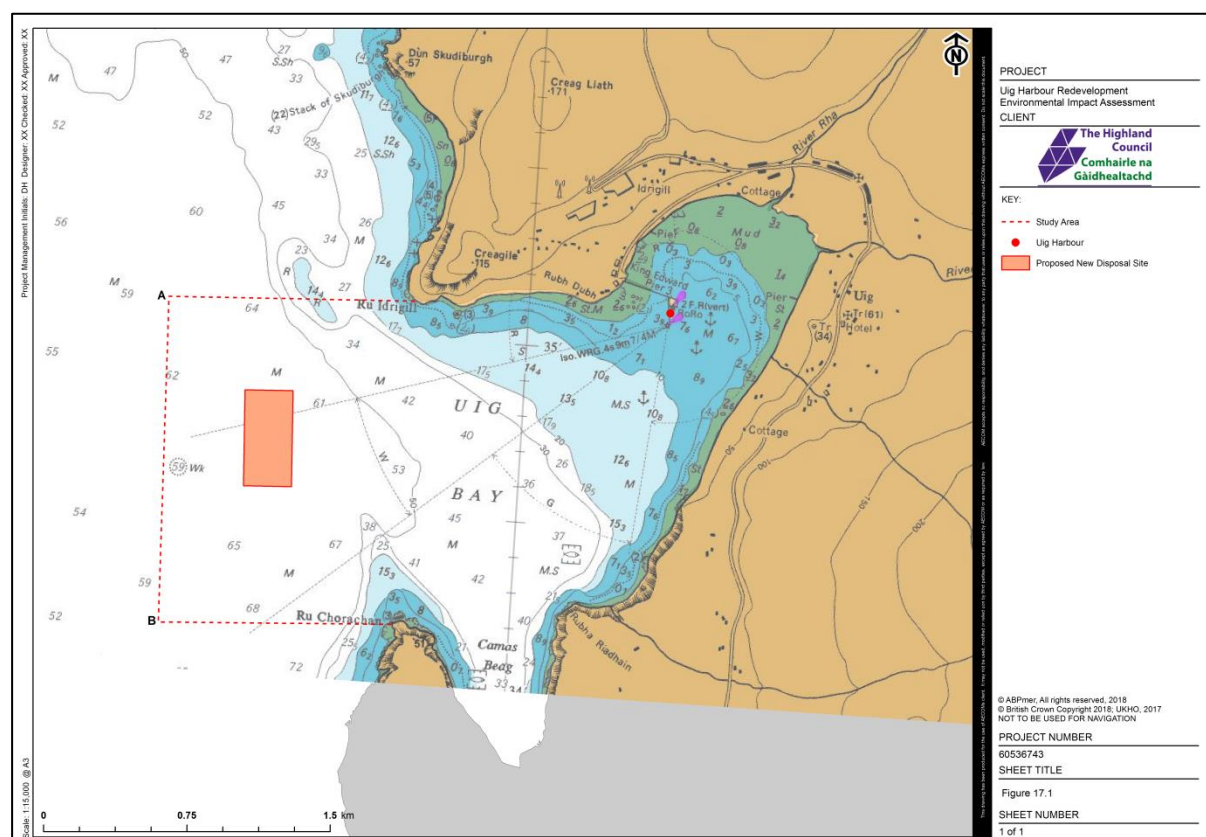


Figure 18-1: Commercial and Recreational Navigation Study Area

Table 18-1 Commercial and Recreational Navigation Study Area Coordinates

Position (see Table 18-1)	Easting (British National Grid; m)	Northing (British National Grid; m)
A	136165	863497
B	136108	861793

18.3.2 The scope of this section is to identify and suggest mitigation for potential effects to the navigation of vessels. This includes the movement of vessels to, from and within Uig Harbour. To determine a navigation baseline for the area, data sources as detailed in the following sections have been used.

Automatic Identification System

18.3.3 Automatic Identification System (AIS) data which covers all UK waters has been used from the year 2015. The data was provided by the Marine Management Organisation and decoded to create a geodatabase of anonymised vessel transits. The data was collected by the MCA using their network of AIS receivers. The data represents a composite of 84 days of AIS data collected in 2015. The following periods of time were supplied by the MCA and form the data set used:

- 1st to 7th from each of the following: January, February, March, April, May, June, July, August and November 2015;
- 8th to 14th of October 2015;
- 29th August to 4th September 2015; and
- 3rd to 9th December 2015.

18.3.4 AIS signals are broadly classified as 'Class A' (AIS-A) and 'Class B' (AIS-B). AIS-A is carried by international voyaging ships with gross tonnage (GT) of 300 tonnes or more, and all passenger ships regardless of size. AIS-B is carried by smaller vessels and is aimed at smaller commercial vessels, the fishing sector and recreational vessel users; however, the use of AIS-B is non-compulsory. Both AIS-A and AIS-B data have been used within this study. The AIS data has been broken down using the following vessel categories which are taken directly from the AIS data transmissions:

- Non-port service craft;
- Port service craft;
- Vessels engaged in dredging or underwater operations;
- High speed craft;
- Military or law enforcement vessels;
- Passenger vessels;
- Cargo vessels;
- Tankers;
- Fishing; and
- Recreational.

- 18.3.5 The Uig Harbour Master was consulted regarding potential implications of the Proposed Development to Commercial and Recreational Navigation. In addition, CFL were consulted regarding potential risks associated with ongoing ferry operations in conjunction with the Proposed Development.

Recreational Activity

- 18.3.6 Information from the RYA national data set was inspected, but did not provide sufficient detail given the relatively small scale of the study area and, therefore, has not been presented.

Navigational Features

- 18.3.7 Navigational features have been considered in this assessment from information provided anecdotally by Harbour Authority staff and port users. In addition, UK Hydrographic Office (UKHO) Admiralty Chart Number 2533 ('Anchorages on the West Coast of Skye') has been used to identify navigational characteristics for the study area.

Maritime Incidents

- 18.3.8 To characterise maritime incidents occurring within the study area, available data has been pooled from a number of sources. These included records held by the Royal National Lifeboat Institution (RNLI) call out data and Marine Accident Investigation Branch (MAIB) records. This data comprises all recorded incident involving vessels occurring in the ten year period from 2007 to 2017.

18.4 Baseline Conditions

Navigational environment

- 18.4.1 Uig is located in a sheltered bay on the Trotternish Peninsular, within Loch Snizort on the Isle of Skye. The entirety of Uig Bay and the study area, thus incorporating the two Dredge Pockets and Proposed Sea Disposal Site, are covered by UKHO Admiralty Chart 2533. This chart is used for navigational purposes and is used in Figure 18-1. The chart indicates three marked anchorages, a sector light and two red flashing lights in a vertical configuration marking the ferry linkspan. One of the anchorages is located to the south of King Edward Pier, with the other two located to the east of the Pier.
- 18.4.2 A sector light is located on the end of King Edward Pier to provide visual confirmation to vessels approaching the harbour that they are within the safely navigable approaches to the port. When a vessel is navigating in the safe sector, the light will be white. The red sector of the light indicates that the vessel is left of the safe track and the green sector indicates that the vessel is right of track.

Harbour Authority

- 18.4.3 THC is the SHA for the port of Uig. Duties and responsibilities of THC as a SHA are drawn from the history of Acts and legislation. The most notable of this set of legislation is the Highland Regional Council (Harbours) Order 1991, which placed 27 ports and harbours under the jurisdiction of THC. In addition, THC is the Local Lighthouse Authority (LLA) within the meaning of the Merchant Shipping Act 1995. This means that as LLA, THC is

responsible for the provision and maintenance of Aids to Navigation (AtoN) within the SHA area.

- 18.4.4 Within the harbour, the principal responsibility for navigational safety and the safe operation of the harbour lies with the Harbour Master. The Harbour Master is empowered to regulate shipping by virtue of Section 52 and 53 of the Harbours, Docks and Piers Clauses Act 1847, which is incorporated into local legislation. This level of control enables the Harbour Master to regulate the movements of traffic within the harbour area to minimise the risk of collision and ensure the safe and timely movement of vessels.

Vessel Transits

- 18.4.5 AIS data, representative of 84 days of AIS collected in 2015, has been used to create transit lines shown in Figure 18-2. These transit lines are presented in classes of vessel identified by type. The vessel types have been taken from AIS classifications inherent within the AIS signal. Figure 18-2 shows the count of vessel transits entering the study area from the 84 days of recorded AIS data in 2015. This count has then been scaled to provide a representative yearly vessel count.
- 18.4.6 The largest proportion of vessel movements in the study area are passenger vessels (89.2%). These movements comprise the ferry service operating between Uig, Lochmaddy and Tarbert. There are also a small number of tourism vessels operating seasonally, which are also included within the passenger category.
- 18.4.7 The next most frequent vessel transit type is that of cargo vessels (4.3%) which are typically vessels transporting produce required by the nearby fish farms. The unknown vessel category (2.2%) and non-port service craft (2.4%) are mostly vessels engaged in the supply or service of fish farms.

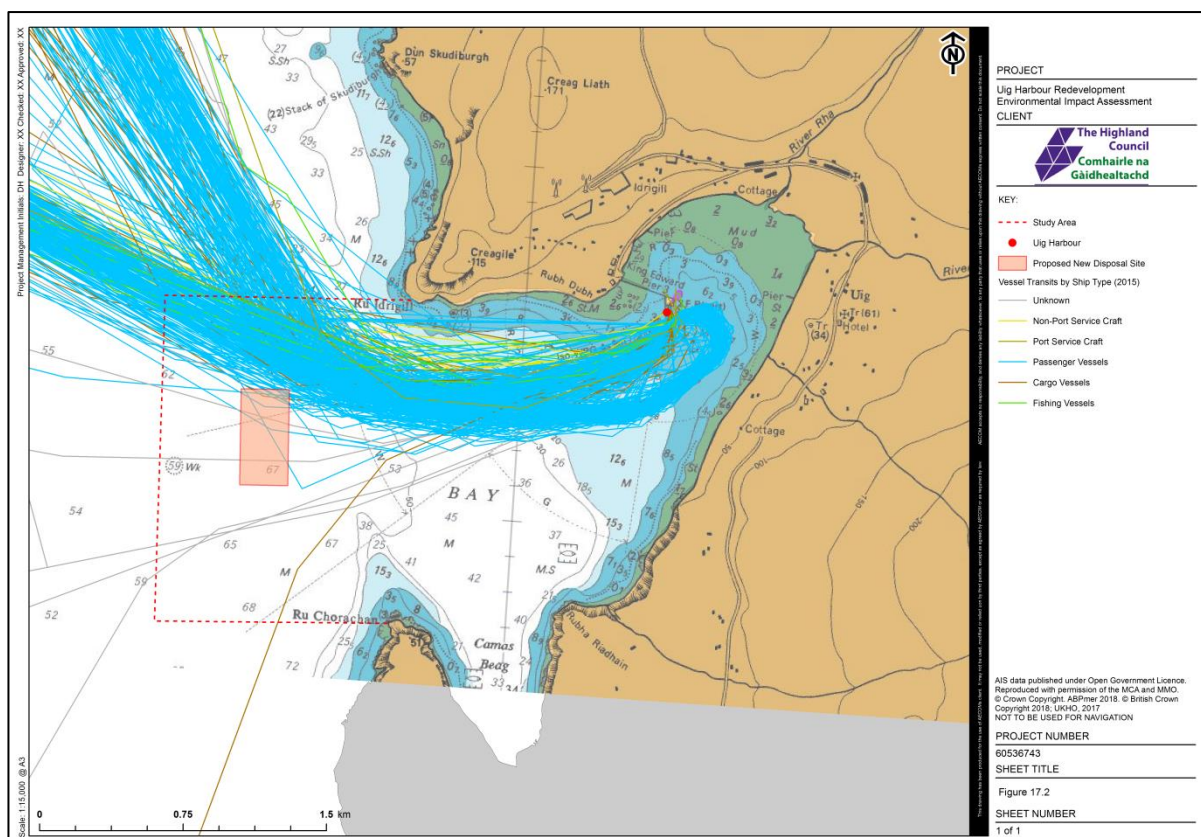


Figure 18-2: AIS Data in Vicinity of the Proposed Development (2015)

Table 18-2 Vessel Transits by Ship Type Group in the Study Area

Vessel Category	Transit Line Count (84 days)**	Scaled (Yearly) Transit Count	Transit Count Percentage (%)
Unknown*	10	43	2.2
Non-Port Service	11	48	2.4
Port Service	2	9	0.4
Passenger	405	1,760	89.2
Cargo	19	83	4.3
Fishing	7	30	1.5
Total	454	1,973	100

* Vessel type 'unknown' is an AIS record which is not correctly transmitting its vessel type at the time of data collection, and cannot therefore be assigned a vessel type. It is included in the dataset to ensure full representation of known vessel activity.

** Data Source: Data is representative of 84 days of AIS-A and AIS-B data from MCA terrestrial AIS receivers:

- 1 to 7 from January, February, March, April, May, June, July, August, November 2015;
- 29 August to 04 September 2015;
- 08 to 14 October 2015; and
- 03 to 09 December 2015.

Emergency Response

- 18.4.8 A range of emergency response is available within the study area. In addition to shore side emergency response, emergency response is provided by the RNLI and Her Majesty's Coastguard (HM Coastguard). The following sections provide further details relevant to the study area.

Royal National Lifeboat Institute (RNLI)

- 18.4.9 Leverburgh RNLI lifeboat station is located approximately 25 nm from Uig Harbour by sea. This station is located on the Isle of Lewis so any emergency response from this station would need to cross the Minch. The station has a Mersey Class lifeboat.
- 18.4.10 Portree RNLI lifeboat station is located approximately 40 nm away by sea. The station has a Trent Class lifeboat.

HM Coastguards

- 18.4.11 HM Coastguard is responsible for the initiation and co-ordination of all civilian maritime Search and Rescue (SAR) within the UK Maritime Search and Rescue Region. This includes the mobilisation, organisation and tasking of adequate resources to respond to persons in distress at sea, or to persons along the shoreline at risk of injury or death. HM Coastguard has access to resources including Aircraft and Coastal search teams.
- 18.4.12 HM Coastguard contracted SAR services are provided from the Stornoway station located on the Isle of Lewis.

Marine Incidents

- 18.4.13 This section reviews marine incidents that have occurred within the study area over the past ten years (to the limit of the available data). The analysis is intended to provide a general indication as to whether the study area is in an area of low or high risk in terms of marine incidents. The following data sources have been used to analyse maritime incidents in the study area:
- MAIB: information includes accidents to ships and personnel reports to the MAIB within the period of 2006 to 2015 inclusive; and
 - RNLI: complete dataset of all callouts from 2006 to 2015 inclusive.
- 18.4.14 Given that the datasets cover slightly different time periods, and use different classifications for identifying accidents and incidents, these have been amalgamated. Where possible, duplication of data has been removed (as the same incident may have been recorded by multiple organisations). The location of maritime incident data is presented in Figure 18-3.
- 18.4.15 There have been four reported incidents within the ten year dataset, as follows:
- Grounding – a yacht at anchor within the study area grounded and required assistance;
 - Person in the water – a man overboard from a cargo vessel which was transiting the study area, resulting in a single fatality;
 - Person in distress – a report of a missing person; and
 - Other nautical safety – a fishing vessel which was reported as overdue.

18.4.16 It can be concluded from the history of marine accidents and incidents, that the area has very few incidents and, therefore, can be categorised as ‘very low incident rate’. It must be noted, however, that the history of incidents does not preclude a serious incident occurring in the future.

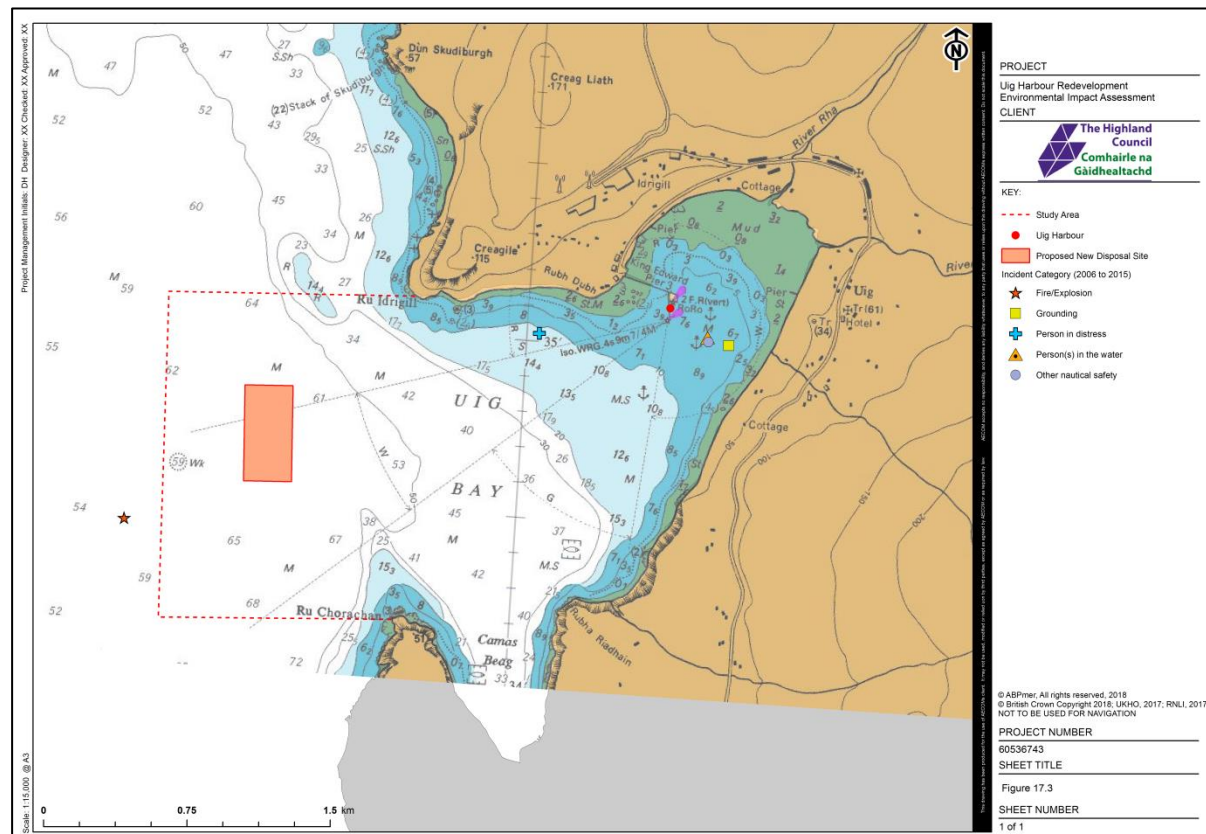


Figure 18-3: Navigation Incidents in Vicinity of Proposed Development

18.5 Predicted Effect

18.5.1 As highlighted in **Chapter 3: Project Description**, the dredging and disposal operations are expected to last 4-6 weeks and could take place 6 days a week from 08:00 till 18:00 with restrictions for working on a Saturday afternoon.

18.5.2 There are no changes anticipated during operation of the Proposed Development from the current baseline in terms of Commercial and Recreational Navigation.

Construction

18.5.3 This section details the key significant impact pathways for the construction phase of the Proposed Development. The key impact pathways relating to Commercial and Recreational Navigation are:

- Dredger accident or incident during dredging;
- Dredger accident or incident whilst on passage between Uig and the Proposed Sea Disposal Site;
- Accident or incident involving construction craft;

- Displacement of vessels; and
- Water quality impacts from pollutants resulting from accidents, incidents or spillages.

Dredger Accident or Incident during Dredging

- 18.5.4 The presence of a dredge vessel in the area provides an increased potential for a marine accident or incident. The potential risks include:
- Collision with vessels operating in the harbour area (recreational vessels, fishing vessels and commercial vessels);
 - Contact between the dredger and the marine works or other fixed structure;
 - Equipment failure to dredge equipment resulting in limitations to vessel manoeuvrability; and
 - Personnel injury as a result of vessel operations.
- 18.5.5 The majority of vessel traffic in the harbour area results from the ferry passages operating between Uig, Lochmaddy and Tarbert. The ferry will be using the area where dredging operations will be carried out. This means that there is potential for accidents or incidents resulting from this interaction.
- 18.5.6 There is also potential for local port users to be involved in a collision situation with the dredger, such as a vessel proceeding to moor in the harbour during dredging operations. In this situation, any actions to avoid collision will be subject to the navigable water available, characteristics of the vessels and the prevailing conditions.
- 18.5.7 The dredger will be operating in close proximity to the marine works and pier infrastructure currently in place at the port. This means that should the vessel be unable to maintain a safe distance due to steering/propulsion failure or adverse weather conditions there will be limited time to react and avoid contact with the structures. If the dredge equipment were to fail and not be retrievable leading to limited manoeuvrability, there is the potential for contact with structures due to the vessel drifting. This situation will also increase the potential for a collision with other vessels due to the reduced ability to take actions to avoid collision.
- 18.5.8 The operation of machinery and mobile nature of the operations means that there is potential for injuries to personnel during operations. International legislation requires vessel personnel to be trained to a sufficient level and have a safety management system in place which includes procedures following an emergency situation.
- 18.5.9 National and international requirements and their associated plans and procedures means that commercially operated vessels will have provisions in place for emergency situations and, therefore, will have some capacity to react. This leads to an assessed sensitivity of medium for this impact pathway. The impact pathway is present during the construction phase only in the vicinity of the marine works, leading to a low magnitude of effects and an assessed significance of minor adverse.

Dredger Accident or Incident whilst on Passage between Uig and the Proposed Sea Disposal Site

- 18.5.10 The transit of a dredger (barge) between the Dredge Pockets and Proposed Sea Disposal Site creates the potential for collision of the dredger with other vessels or a marine incident. Possible navigational hazards include:

- Collisions (between the dredger and other vessels);
- Contact (between the dredger and fixed/moored objects such as navigation buoy or a floating object such as debris); and
- Grounding (of the dredger whilst in transit).

18.5.11 It should be noted, however, that a number of legislative navigational controls are in place to improve navigational safety, principally the International Regulations for the Prevention of Collisions at Sea 1972 (COLREGS) and Standards of Training and Certification of Watchkeepers 1995 (STCW).

18.5.12 Given the relatively low level of vessel traffic in the area and the limited scale of dredge operations, the low exposure to collision risk from a dredger (barge) whilst on transit to or from the Proposed Sea Disposal Site results in an assessed sensitivity of negligible to low. The magnitude of effects on Commercial and Recreational Navigation is low, giving an assessed significance of negligible.

Accident or Incident Involving Construction Craft

18.5.13 The presence of construction craft operating at the marine works has the potential to lead to marine accidents or incidents, including:

- Collision with vessels operating in the harbour area (recreational vessels, fishing vessels and commercial vessels);
- Contact between the construction craft and the marine works or other fixed structure; and
- Personnel injury as a result of vessel operations.

18.5.14 This impact pathway is closely linked to the potential accidents or incidents involving a dredger (barge) detailed above. The construction craft will be operating in close proximity to the marine works and there will be limited time for the vessel to react and avert a potential accident or incident, resulting in a medium sensitivity of the receptor. The scale of effects is limited to the extent of the marine works and is present for the construction period only; therefore, the magnitude of effects is considered to be low. This leads to an assessed significance of minor adverse.

Displacement of Vessels

18.5.15 The presence of the marine works and associated craft will displace vessels that would previously navigate in the area, meaning that they will be required to use other routes. This displacement can lead to the following navigational hazards:

- Collision with other vessels operating in the harbour area (construction craft, recreational vessels, fishing vessels and commercial vessels);
- Contact between vessels and fixed structures or floating objects; and
- Grounding in shallower areas of the harbour.

18.5.16 The current manoeuvre carried out to berth the ferry involves a wide turn in the harbour before approaching the quay. If there are construction or dredge craft operating immediately preceding the expected arrival of the ferry, any delays may result in the ferry being unable to

perform this manoeuvre without alteration. In periods with strong wind and restricted visibility, it could result in the ferry making heavy contact with the berth or collision with other vessels.

- 18.5.17 Fishing vessels currently berthing on King Edward Pier may be displaced by the works meaning that they will either need to anchor in the harbour or berth alongside other vessels in areas that can still be used. This means that there will be increased interaction of vessels due to close proximity. This may lead to collision or contact with a fixed structure or grounding if trying to anchor in shallower areas.
- 18.5.18 There is sufficient navigable water available for vessels to use alternative approaches to the harbour during the construction phase. If the number of berths available is limited during the construction phase then vessels will not be able to go alongside as frequently as the current baseline conditions, giving a sensitivity of medium. The effects are limited to the duration of the marine works and will be present throughout the construction phase, giving a low magnitude of effects. The significance of effects is therefore assessed as minor adverse.

Water Quality Impacts from Pollutants Resulting from Accidents, Incidents or Spillages

- 18.5.19 Any shipping accident has the potential to lead to a spillage of cargo or fuel oil from the ship(s) involved. These types of accident are the ones most likely to lead to large scale oil spills; however, they are also relatively rare events. There are potential risks of water quality impacts associated with any vessel operations and use of plant associated with construction. These can occur either as spillages directly from vessels or spillages from the shore entering the water.
- 18.5.20 Spillages into the water have the potential to adversely affect the marine environment (for a limited period) and, therefore, the sensitivity of effects is considered to be medium. This is likely to alter the baseline conditions in the area and, depending on the substance entering the water, this could materially change baseline conditions giving a medium magnitude of effects. This results in an assessed significance of moderate adverse.

Operation

- 18.5.21 It is anticipated that maintenance dredging will be required at the Dredge Pockets every 3 to 5 years, with operations expected to last approximately 2 weeks and dredge arisings disposed to the Proposed Sea Disposal Site. The impact pathways associated with maintenance dredging are likely to be the same as the capital (construction) works assessed here. However, the comparative scale of effects (e.g. risk of accidents or incidents, displacement of vessels) is expected to be much reduced during maintenance dredging and, therefore, no further assessment is made.
- 18.5.22 The operation of the new berthing arrangement and ferry will not change significantly from current navigational conditions. Therefore, potential impacts of the Proposed Development during operation has been scoped out for Commercial and Recreational Navigation.

18.6 Mitigation & Monitoring

Construction

- 18.6.1 During the construction phase of the Proposed Development, there are a number of mitigation options available to reduce the significance of the effects on vessel navigation, including:

- Local notices to mariners will be published by the SHA and made available to all vessels. These include areas and periods that operations are occurring;
- Coordination of dredging with ferry operations to minimise disruption to services, including review of contractor risk assessments/method statements (RAMS) in accordance with the port's Marine Safety Management System (MSMS);
- Availability of pollution response equipment for Tier 1 incidents, supplied by the contractor and detailed within the RAMS;
- The port's NRAs updated to include the dredging and construction activity; and
- Dredge and Construction craft to carry AIS to allow other vessels and the SHA to monitor their movements.

18.6.2 The mitigation identified will be implemented prior to commencement of construction to ensure that port users are aware of changes and can adapt accordingly. In addition, the approachway widening will be phased and constructed in sections; therefore, berths will be available for use by fishermen and other harbour users during construction. Also, temporary moorings within Uig Bay will be provided during construction (to be removed following construction).

18.6.3 In addition, as noted in Marine Scotland's Scoping Opinion (dated 30 November 2017), the local coastguard and MCA Marine Office must be notified of the commencement of the proposed works. In addition, the UKHO must also be notified of changes for the update of nautical charts and publications. The existing AtoN will be reviewed and an overall plan for AtoN at the ferry terminal discussed and agreed with the Northern Lighthouse Board (NLB).

Operation

18.6.4 There have been no effects identified for the operation of the Proposed Development. This means that there has been no mitigation identified for the operational phase. However, it should be noted that the orientation of the end (southern section) of the pier structure has been designed to enable the ferry to berth during adverse weather conditions, thus supporting commercial navigation during these periods.

18.7 Residual Effects

Construction

18.7.1 Through application of the mitigation identified above, it has been determined that all of the impacts identified will be reduced to negligible.

Permanent

18.7.2 There have been no permanent effects identified for the Proposed Development other than the provision of additional pier improvements for berthing to accommodate the new vessel during adverse weather conditions through the design of the end (southern section) of the pier.

18.8 Cumulative Effects

18.8.1 There have been two projects identified that may present cumulative effects with the Proposed Development, namely:

- Loch Snizort East finfish farm; and
- Rubha Riadhain (Uig Bay) finfish farm.

18.8.2 The identified projects would both represent an increase in vessel traffic in the area due to vessels maintaining the finfish farms and cargo vessels bringing feed to the area. This increase in vessel traffic means that the potential for incidents to occur will also increase.

18.8.3 The currently identified mitigation will apply to the vessels associated with the identified finfish farms and, therefore, it is not anticipated to increase the impacts to a significant level.

18.9 Summary & Conclusion

18.9.1 The Proposed Development could have the potential to impact upon Commercial and Recreational Navigation in the study area. The impacts involve construction and dredge craft incidents due to close proximity to the works, local port users involved in incidents with the construction and dredge craft and being displaced from areas currently navigated.

18.9.2 The density of the vessel traffic, area available for navigation and mitigation available in the area means that none of the identified impacts have been assessed to be significant following the implementation of mitigation.

Table 18-3: Summary of Environmental Impacts on Commercial and Recreational Navigation

Description of receptor and effect	Sensitivity or value of receptor	Magnitude of effect	Predicted effects	Mitigation and monitoring	Residual effect and significance
Dredger accident or incident during dredging	Medium	Low	Minor Adverse (not significant)	Local notices to mariners; coordination of dredging with ferry operations;	Negligible (not significant)
Dredger accident or incident whilst on passage between Uig and the disposal site	Negligible to Low	Low	Negligible (not significant)	availability of pollution response equipment; the port's Navigational Risk Assessments updated to include the dredging and construction activity;	Negligible (not significant)
Accident or incident involving construction craft	Medium	Low	Minor Adverse (not significant)	dredge and construction craft to carry AIS; local coastguard and MCA Marine Office notified.	Negligible (not significant)
Displacement of vessels	Medium	Low	Minor Adverse (not significant)		Negligible (not significant)
Water quality impacts from pollutants resulting	Medium	Medium	Moderate Adverse	Operation of machinery undertaken in	Negligible (not significant)

Description of receptor and effect	Sensitivity or value of receptor	Magnitude of effect	Predicted effects	Mitigation and monitoring	Residual effect and significance
from accidents, incidents or spillages				accordance with standard best practice measures; suitable bunding and storage facilities.	

19. Commercial Fisheries

19.1 Introduction

- 19.1.1 This chapter of the EIA Report provides an assessment of the potential effects that the Proposed Development may have on Commercial Fisheries, including marine aquaculture installations (farms) located in the vicinity of Uig Harbour. A range of fishing and aquaculture activities in the area means that Uig Harbour is regularly used by fishing vessels to land their catch and by aquaculture vessels undertaking service and maintenance activities at the nearby farms.
- 19.1.2 **Chapter 3: Project Description** of the EIA report provides a detailed description of the works required to implement the Proposed Development.
- 19.1.3 Commercial fisheries are considered a receptor in their own right, but also influence and is influenced by other receptors, including **Chapter 8: Marine Water and Sediment Quality** , **Chapter 13: Fish and Shellfish Ecology** and **Chapter 18: Commercial and Recreational Navigation**.

19.2 Legislative Context

- 19.2.1 The Proposed Development does not have any implications with regard to the legislation that governs commercial fisheries and aquaculture in Scotland.
- 19.2.2 Uig Pier is located within the Loch Snizort, Skye Shellfish Waters Protected Area, designated under the former Shellfish Waters Directive (2006/113/EC), which has subsequently been repealed and superseded by the Water Framework Directive (WFD) (2000/60/EC). This legislation and its implications within the context of the Proposed Development is described further in **Chapter 8: Marine Water and Sediment Quality**.

19.3 Assessment Methodology & Data Sources

Desk Study

- 19.3.1 Baseline conditions have been established by undertaking a desk top study using the following publically available data sources relating to wild capture fisheries and aquaculture production in the vicinity of Uig Bay:
- UK Annual Fisheries Statistics (Marine Management Organisation, 2016); and
 - Marine Scotland National Marine Plan interactive (NMPi) maps (Marine Scotland, 2018).
- 19.3.2 The above information was supplemented through consultation with the following stakeholders:
- West Coast Regional Inshore Fisheries Group;
 - THC;
 - The Fish Health Inspectorate, Marine Scotland; and
 - Uig Harbour Master.

- 19.3.3 In addition, Greig Seafood, Marine Harvest and Inverlussa Marine as fish farm operators and contractors in the area were consulted on typical operational uses of the harbour. The baseline information collated on Commercial Fisheries is summarised in the following section.

19.4 Baseline Conditions

Commercial Fishing

- 19.4.1 UK annual fisheries statistics (Marine Management Organisation, 2016) show that *Nephrops*, scallop and crabs were the top three species landed (by weight and value) into Uig by Scottish and English fishing vessels in 2016.
- 19.4.2 Inspection of UK fleet landings by International Council for the Exploration of the Sea (ICES) rectangle (Marine Management Organisation, 2016) showed that the top five species (by volume) caught in the wider area around the Isle of Skye, Wester Ross and the northern isles of the Outer Hebrides in 2016 (from ICES rectangles 43E3, 44E3, 43E4 and 44E4; as shown on Figure 19-1 were:
- *Nephrops* (3,798 tonnes; caught using demersal trawl/seine³ or pots/traps);
 - Sprats (1,123 tonnes; caught by demersal trawl/seine);
 - Scallops (959 tonnes; caught by dredge or ‘other passive gear’ which was not defined but is assumed to be diver caught)
 - Crabs (819 tonnes; caught by pots/traps);and
 - Haddock (55 tonnes caught by demersal trawl/seine).
- 19.4.3 The top five species landed from this area by value were:
- *Nephrops* (£16 million), scallops (£2.32 million);
 - ‘Other demersal’ species (£1.28 million);
 - Crabs (£1.2 million); and
 - Lobster (£0.4 million).
- 19.4.4 The ‘other demersal species’ predominately comprised John Dory (caught by demersal trawl/seine), and wrasse (caught by pots/traps), with the wrasse accounting for the high value of these catches. These data show the importance of shellfisheries (i.e. trawling for *Nephrops*, dredging for scallops and potting for crabs) in the wider region.

³ All gear types cited are the categories assigned in the Marine Management Organisation UK fisheries statistics (MMO, 2017).

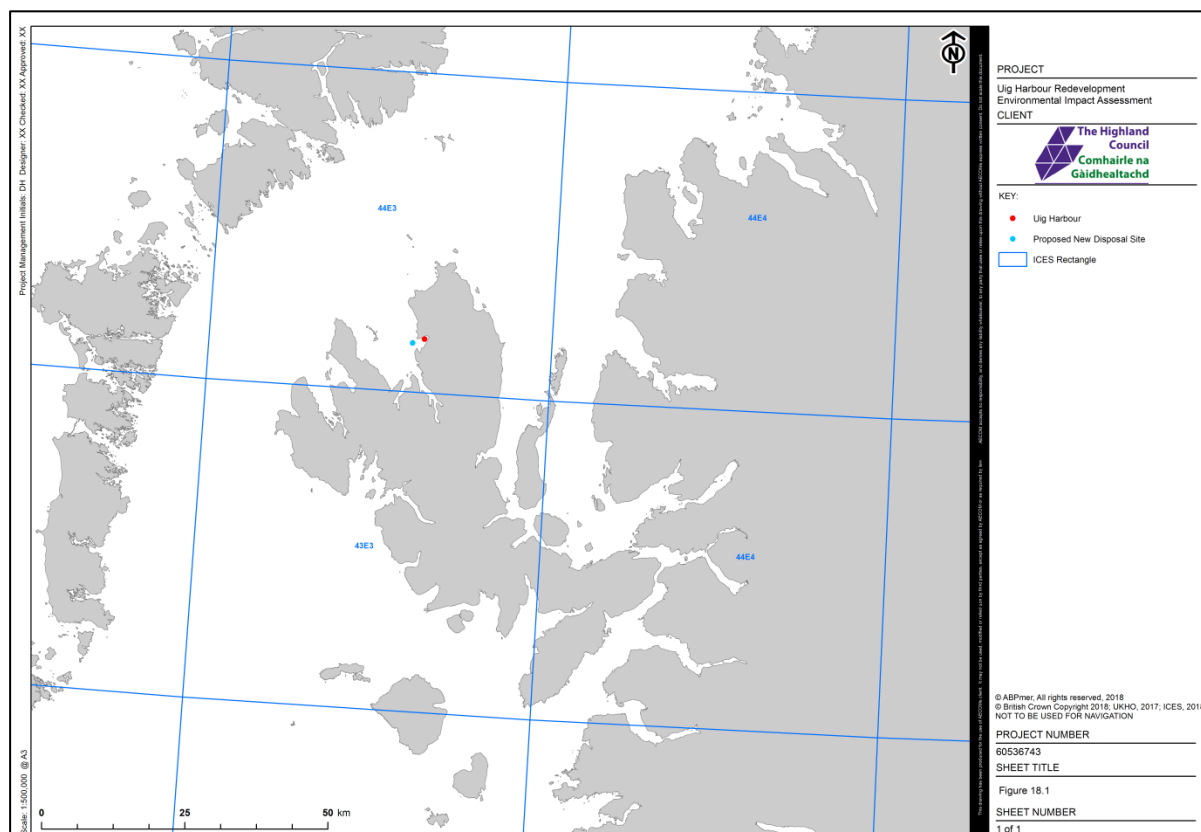


Figure 19-1: ICES Rectangles in Vicinity of the Proposed Development

- 19.4.5 To further characterise fishing activity in the immediate vicinity of Uig Bay and the Proposed Development, stakeholder consultation was undertaken with fishing industry representatives and the Harbour Authority (see list of consultees in Section 19.3).
- 19.4.6 Information provided by the Harbour Authority stated that there are 15 fishing boats that use and/or berth at Uig comprising six vessels 10 m or under in length over all (LOA) and nine vessels over 10 m LOA.
- 19.4.7 Further information about the types of fishing activity, species targeted and the use of facilities at Uig Harbour was provided by the Western Inshore Fisheries Group, based on information provided by its members:
- There are local fishing grounds adjacent to Uig in Loch Snizort; however, most of the landings in Uig are from other areas such as Rodel and the Shiants. Scallops and prawns are also landed [at Uig] but these are generally caught in the Uists;
 - There are a few fishing boats which work out of Uig permanently, although a larger number use the facilities on a less regular basis as and when fishing dictates that they visit the pier. Occasionally, Skye based fishermen and others will leave vessels in Uig for the weekend though this has become less frequent due to the large and increasing numbers of fish farming vessels the pier now accommodates. There is an ice plant that vessels can make use of and they can refuel and replenish fresh water in Uig. If quiet at night, the long pier provides an excellent facility for stretching and measuring warps; and
 - Both creelers and trawlers visit the harbour.

19.4.8 In summary, the landings data and information provided by stakeholders indicate that:

- The wider area is important for high value shellfisheries such as *Nephrops*, scallops, crabs and lobster;
- Whilst there are local fishing grounds in Loch Snizort adjacent to Uig Bay, most of the landings to Uig arise from fishing activity off the Outer Hebrides (e.g. Rodel, the Uists) and the Shiant Islands; and
- A few fishing vessels operate out of Uig Harbour on a permanent basis whilst a larger number of fishing vessels use the harbour on a less regular basis. Both trawlers and creelers utilise the harbour facilities.

Aquaculture

19.4.9 Information from the Marine Scotland maps NMPI, supplemented by information from the Fish Health Inspectorate, The Highlands Council and consultation with fish farm owners/operators in the area, indicate the following active⁴ aquaculture installations are operating in the vicinity of Uig Harbour:

- A finfish farm at Loch Snizort East (FS1309), approximately 4 km south of Uig Harbour, producing Atlantic salmon and wrasse (Figure 19-2); and
- A finfish farm at Loch Greshornish (FS0015), approximately 8.5 km south of Uig Harbour, producing Atlantic salmon, wrasse and lumpsuckers (not shown in Figure 19-2).

19.4.10 In addition, the following inactive⁵ or deregistered⁶ aquaculture installations are located in the vicinity of Uig Harbour:

- An inactive finfish farm in Uig Bay (FS0881), approximately 1.4 km south of the Uig Harbour (Figure 19-2), which has been inactive since 2004. This site has been granted a Controlled Activities Regulations (CAR) licence and planning permission for the production of Atlantic salmon and is awaiting a Marine Licence to enable production to restart. Planning permission was granted on 22 February 2016; a condition of the planning permission granted is that the development must commence within three years of that date; and
- An inactive shellfish site in Camas beag (SS0335), approximately 2.2 km south of the harbour, which the Fish Health Inspectorate confirmed has no farming facilities in place (Fish Health Inspectorate, *pers. comm.* 28.11.17).

⁴ A site actively producing or fallowed as a part of an active production plan (Fish Health Inspectorate, *pers. comm.* 29.11.17).

⁵ No production planned in the foreseeable future, but could be reactivated quickly if required (Fish Health Inspectorate, *pers. comm.* 29.11.17).

⁶ Put beyond immediate use (Fish Health Inspectorate, *pers. comm.* 29.11.17).

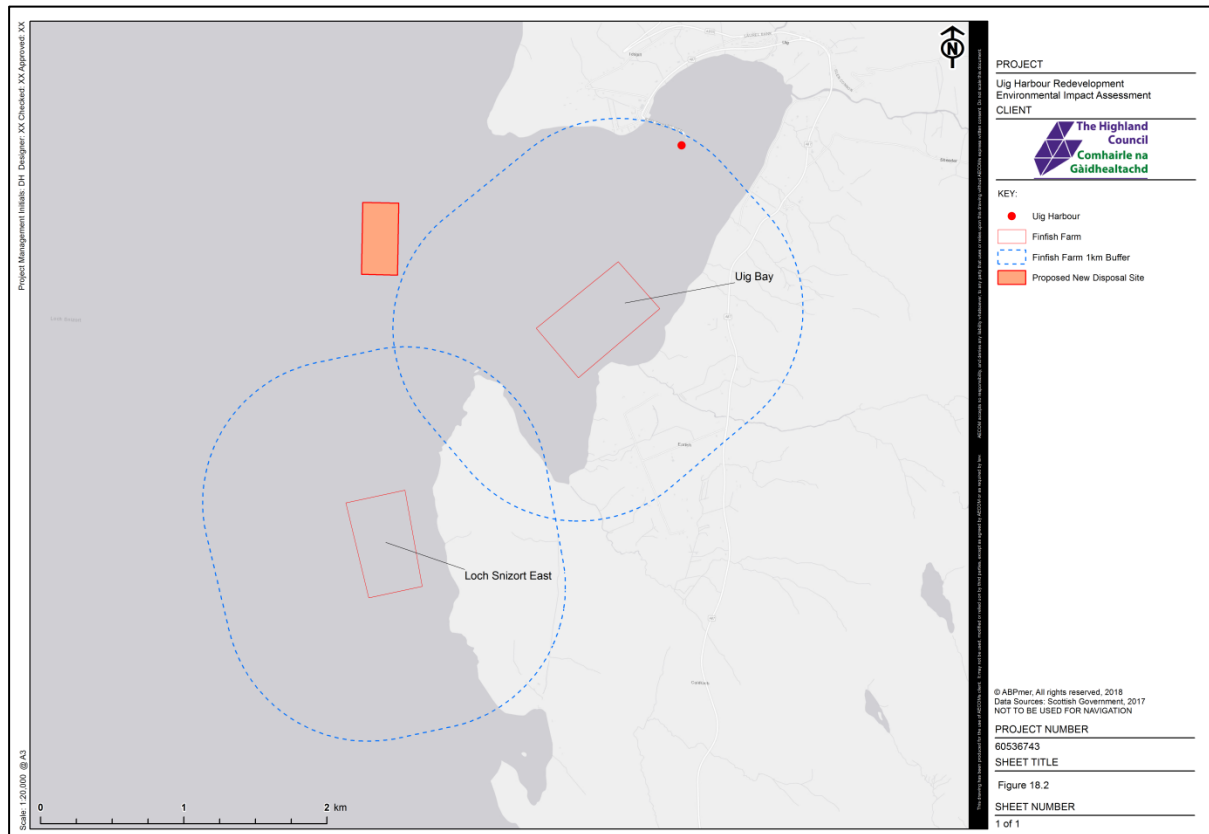


Figure 19-2: Finfish Farms in Vicinity of the Proposed Development

- 19.4.11 Active fish farm sites require access by vessel for husbandry and maintenance activities (e.g. related to provision of feed, medicinal treatments) and harvesting activity. Stakeholder consultation was undertaken to establish the current use of Uig Harbour with respect to current and future likely vessel movements between Uig Harbour and the active fish farms.
- 19.4.12 Information from stakeholders indicated that a number of companies use Uig Harbour for the following activities:
- Accessing the farms for daily operations;
 - Feed deliveries and transfer of feed to the farm site; and
 - Loading of chemical treatments to vessels for transfer and use at farm sites.
- 19.4.13 Berthing requirements and vessel movements ranged from:
- Two boat movements per day, leaving the harbour early morning and returning in the evening;
 - Vessel (15 m and over) berthing once per week approximately 50 times per year;
 - Up to three vessels (20-24 m in length) berthing at various times between once per month and 2-3 times per week.

19.5 Predicted Effects

Construction

19.5.1 This section details the key significant impact pathways for impacts on commercial fisheries and aquaculture, during the construction phase of the Proposed Development. The key impact pathways are:

- Potential disruption of commercial activities due to vessel movements between the Dredge Pockets and the Proposed Sea Disposal Site, through:
- Accidents or incidents involving the dredge vessel or construction vessels in the harbour areas – this potential impact has been assessed in **Chapter 18: Commercial and Recreational Navigation** as negligible with mitigation and is not considered further here;
- Accidents or incidents involving the dredge vessel whilst on passage between Uig and the Proposed Sea Disposal Site – this potential impact has been assessed in **Chapter 18: Commercial and Recreational Navigation** as negligible with mitigation and is not considered further here;
- Displacement of fishing or aquaculture service vessels from berthing on the pier or needing to use alternative approaches to the harbour - this potential impact from a navigational safety aspect has been assessed in **Chapter 18: Commercial and Recreational Navigation** as negligible with mitigation and is not considered further here;
- Displacement of fishing or aquaculture service vessels from berthing on the pier (i.e. Potential disruption of commercial operations) – this potential impact has been assessed in this chapter.
- Potential impacts to fishing activities and farmed fish stocks, including through:
- Changes to water quality (in relation to changes in SSC and/or contaminant concentrations) - this has been considered in **Chapter 7: Marine Physical Environment, Chapter 8: Marine Water and Sediment Quality** and **Chapter 13: Fish and Shellfish Ecology**; however, the potential impact specifically to fishing activities and farmed fish stocks has been assessed in this chapter; and
- Noise and vibration arising from construction phase activities - this has been considered in **Chapter 13: Fish and Shellfish Ecology**; however, the potential impact specifically to fishing activities and farmed fish stocks has been assessed in this chapter.

Potential Disruption of Commercial Operations

19.5.2 The presence of the marine works (including the dredger and construction vessels) and the transit of a dredger between the Dredge Pockets and the Proposed Sea Disposal Site has the potential to displace or disrupt the operation of vessels that use the berthing facilities on the pier and navigate in the area between the pier and fishing grounds or fish farms. Disruption of access to the pier for unloading of fisheries catches or the loading of cargo (e.g. feed, medicinal treatments) for transport to fish farm may cause delays to the commercial operations of fishermen or fish farm owners/operators, with subsequent economic impacts on these businesses.

- 19.5.3 The sensitivity of commercial fishing or aquaculture businesses to displacement from berths and loading/landing facilities is considered to be high due to the lack of other suitable alternative facilities for these commercial operations in the immediate vicinity (for example, the nearest suitable port for landing commercial fisheries catches for most vessels is likely to be Portree). Although these effects will be limited to the duration of the marine works, the magnitude of the impact is considered to be medium, as there is likely to be some loss of access to berthing, landing or loading facilities at times during the construction phase (i.e. a change from the current baseline). As such, the potential impact on commercial fishing and aquaculture operational activities is assessed as moderate adverse without mitigation.

Potential Impact to Fisheries/Farmed Stock Arising from Changes in Water Quality

- 19.5.4 Changes to water quality which may arise from the marine works, which have the potential to effect wild fish and shellfish or farmed fish stocks include potential changes to: suspended sediment concentration (SSC) in the vicinity of the capital construction works, Dredge Pockets and Proposed Sea Disposal Site; dissolved oxygen (DO) levels in the water column, levels of contaminants in the water column and the redistribution of sediment-bound chemical contaminants.
- 19.5.5 This assessment of the potential impacts of the Proposed Development on the fisheries and aquaculture sectors (via impacts on wild fish/shellfish stocks and/or farmed fish stocks) has been informed by the outputs of **Chapter 7: Marine Physical Environment**; **Chapter 8: Marine Water and Sediment Quality** and **Chapter 13: Fish and Shellfish Ecology**.
- 19.5.6 Potential changes to SSCs in the vicinity of the Dredge Pockets and the proposed new disposal site have been assessed in **Chapter 7: Marine Physical Environment**. Predicted maximum increases to SSC in the vicinity of the Uig Bay finfish farm are low (less than 2 mg/l across much of the site), with a slightly larger increase of 6.2 mg/l predicted at the point closest to the Proposed Development (see **Figure 7-6** and Table 7-8 in **Chapter 7**). At the Loch Snizort East finfish farm, predicted maximum increases to SSC are shown to be less than 2 mg/l (see Table 7-8). It is noted that these maximum SSC values are only predicted to occur over short timescales (minutes to hours), before dropping to background levels.
- 19.5.7 Potential impacts of these changes to SSC on fish and shellfish ecology have been assessed in **Chapter 13: Fish and Shellfish Ecology**. The negligible increases in SSCs are not anticipated to result in detrimental impacts such as clogging of feeding apparatus or gills, although increases in sediments may result in temporary movements away from the zone of influence (for non-contained wild fish populations) or short-term cleaning of gills or similar structures. The impact on fish and shellfish ecology is assessed as minor adverse for changes in SSCs. As such, the impact on target fisheries of the commercial fishing fleet or farmed stock in the nearby fish farms is considered, at worst, to be minor adverse.
- 19.5.8 An increase in chemical and biological oxygen demand, associated with elevated SSCs in the water column can reduce DO concentrations. However, the dredged material is coarse in nature and so the overall significance is assessed as negligible to minor adverse in **Chapter 8: Marine Water and Sediment Quality** and hence is not considered further here.
- 19.5.9 Potential impacts to water quality with respect to dredging and disposal activities causing the re-distribution and release of contaminated sediments into the water column, has been assessed in **Chapter 8: Marine Water and Sediment Quality**. This analysis, indicates that dredging and disposal will result in increases in the concentration of metals such as copper, nickel and chromium in the water although they will be very localised, being largely

restricted to the areas in which the activities occur, and will be short-lived due to the rapid settlement of sediments, to which they are mostly bound. The overall significance for this impact pathway on water quality is assessed as minor adverse.

- 19.5.10 The potential impacts of these changes in contaminant concentrations in the water column on fish and shellfish ecology has been assessed in **Chapter 13**. The assessment states that as the concentrations of contaminants predicted for the Proposed Development are expected to be lower than EQS values (indicating a low ecotoxicological risk), and considering the very short-term nature of the increases, the impact on fish and shellfish has been assessed as minor adverse. As such, the impact on target fisheries of the commercial fishing fleet or farmed stock in the nearby fish farms is considered, at worst, to be minor adverse.

Potential Impact to Fisheries/Farmed Stock Arising from Noise and Vibration

- 19.5.11 The marine works have the potential to introduce underwater noise and vibration to the marine environment, which in turn have the potential to affect wild fish/shellfish and/or farmed fish stocks.
- 19.5.12 This assessment of the potential impacts of the Proposed Development (from vibratory and impact piling) on the fisheries and aquaculture sector (via impacts on wild fish/shellfish stocks and/or farmed fish stocks) has been informed by the outputs of the **Chapter 13: Fish and Shellfish Ecology**.
- 19.5.13 There are no underwater sound thresholds currently available for invertebrates but the assessment in **Chapter 8** indicates that based on current evidence significant impacts are expected only in very close proximity to any sound sources.
- 19.5.14 The assessment states that the impact of sound source levels (SSL) and sound propagation from simultaneous impact and vibratory piling on fish will be minor adverse before mitigation, based on the short duration (an estimated maximum of 0.9 hours per day on average), limited extent and only temporary nature of the works, resulting in some behavioural disturbance only.
- 19.5.15 For caged salmon at the Uig Bay fish farm (due for restocking some time in 2019), these fish will be over 1 km away from the source of the impact piling. At a distance of 1 km from the sound source the cumulative SEL is estimated to be 179 dB re 1 μ Pa²-s, below the TTS threshold of 186 dB re 1 μ Pa²-s, so no injury to fish farm salmon is anticipated. On the basis of the short duration of impact piling, and recovery times between periods of impact piling, the impact on caged salmon is expected to be behavioural only and no permanent or temporary injury is expected.
- 19.5.16 With the soft-start approach to piling adopted by the study, the behavioural response in caged salmon is not likely to involve startle or panic reactions and will be relatively low level. This could be movement to the opposite side of the fish farm cage or a change in swimming orientation or water depth. Such behavioural responses are of very short duration because impact piling durations are very short, and caged fish will also rapidly habituate to an increase in sound.
- 19.5.17 As such, the impact on farmed salmon stock in the nearby fish farms is considered, at worst, to be minor adverse.

Operation

- 19.5.18 It is anticipated that maintenance dredging will be required at the Dredge Pockets every 3 to 5 years with operations expected to last approximately 2 weeks and dredge arising disposed of to the Proposed Sea Disposal Site. The impact pathways associated with maintenance dredging are likely to be the same as the capital (construction) works assessed here. However the comparative scale of effects (e.g. disruption to commercial operations, changes in water quality, impacts arising from noise and vibration) is expected to be much reduced during maintenance dredging and, therefore, no further assessment is made.
- 19.5.19 The operation of the new berthing arrangement and ferry will not change significantly from current navigational conditions (as discussed in **Chapter 18: Commercial and Recreational Navigation**). Therefore, operation has been scoped out for commercial fisheries and aquaculture.

19.6 Mitigation & Monitoring

Construction

- 19.6.1 Mitigation measures to reduce/avoid impacts to commercial fishing and aquaculture operations which utilise Uig Pier during the construction phase include the following:
- Approachway widening will be phased and constructed in sections and the remaining or new berth sections will remain for use by the fishermen and other harbour users;
 - A temporary fishermen's compound area will be provided during the construction works;
 - Temporary moorings within Uig Bay will also be provided during the construction works and will be removed following construction. There will be an agreed reduction in harbour dues for the duration of construction.
 - A stakeholder group with the harbour users and community group will be set up by the contractor as a requirement during the construction works and will be written into the contract. The remit of this group will be to ensure that the harbour users and fish farm operators are aware of the contractor's proposed construction works, phasing, mitigation measures and arrangements for access for berthing, landing or loading; and
 - Disruption to the harbour users must be kept to a minimum and the contractor will be required to include measures to limit this disruption in their programme and construction methodology.
- 19.6.2 To minimise the impact of underwater sound generated during construction the statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise⁷ will be followed. Whilst the protocol is designed with marine mammals in mind, the adoption of a soft-start prior to impact piling will also have the effect of helping to minimise the impact of underwater sound on both wild fish populations and farmed stock.
- 19.6.3 For wild fish populations, a soft-start, to commence at the start of all impact piling and after any break longer than 10 minutes, will be adopted at all stages of the construction schedule, resulting in a slow increase in underwater sound allowing any fish in the vicinity of the pier to

⁷ JNCC. 2010. Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise. August 2010. Available from: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling%20protocol_August%202010.pdf

move away before sound levels become injurious or result in a startle response. For farmed fish stocks, the soft-start will prevent a startle or panic reactions.

Operation

- 19.6.4 There have been no effects identified for the operation of the Proposed Development. This means that there has been no mitigation identified for the operational phase.

19.7 Residual Effects

Construction

- 19.7.1 Through application of the mitigation identified above the significance of impacts to the commercial fisheries and aquaculture operations arising from displacement is expected to be reduced to minor adverse.
- 19.7.2 Through application of the mitigation identified above, the impact of changes in underwater noise and vibration on fish and shellfish ecology is considered to be minor adverse. As such, the impact on fisheries targeted by the commercial fishing fleet and farmed salmon stock in the nearby fish farms is considered, at worst, to be minor adverse.

Permanent

- 19.7.3 There have been no permanent effects identified for the Proposed Development.

19.8 Cumulative Effects

- 19.8.1 There have been two projects identified that may present cumulative effects with the Proposed Development:
- The reinstatement and construction of Uig Bay (Rubha Riadhain) finfish farm; and
 - The operation of Loch Snizort East finfish farm.
- 19.8.2 The likely effects from the fishfarms that could interact with the Proposed Development are:
- Increase in underwater sound due to installation and operation of the fish farm
 - Changes in water quality due to fish food released into the water column
- 19.8.3 The likely cumulative effects from the fishfarms that could interact with the Proposed Development are described in detail in Sections 13.11.4 and 13.11.5 and conclude that there is unlikely to be any significant cumulative effects.

19.9 Summary & Conclusion

- 19.9.1 The Proposed Development could have the potential to impact upon commercial fisheries or aquaculture operations in the vicinity of the works, through displacement of vessels from Uig Pier and subsequent impacts on operations, changes to water quality or changes in levels of underwater noise and vibration.
- 19.9.2 If the number of berths available is limited during the construction phase, the impact on commercial fishing or aquaculture operations has been assessed as moderate adverse

without mitigation. The effects are limited to the duration of the marine works and measures to mitigate this impact have been proposed, which is expected to reduce the significance of effects to minor adverse.

- 19.9.3 The disposal of dredge arisings at the Proposed Sea Disposal Site will result in localised and short-term increases in the concentration of chromium, copper and nickel (contaminants in notably high concentrations in the sediments around Uig Bay) dissolved in the water column which remain below the respective EQS. The significance of effects on fisheries targeted by commercial fishing vessels or farmed fish stock is assessed as minor adverse at worst.
- 19.9.4 The SSL and sound propagation from pile driving construction activities (simultaneous impact and vibratory piling) will be of short duration, limited extent and temporary in nature, resulting in some behavioural disturbance only. Mitigation, in the form of the application of a soft-start to all impact piling is designed to minimise sound impacts on fish. The significance of effects on fisheries targeted by commercial fishing vessels or farmed fish stock is assessed as minor adverse at worst.

Table 19-1: Summary of Environmental Impacts on Commercial Fisheries

Description of receptor and effect	Sensitivity or value of receptor	Magnitude of effect	Predicted effects	Mitigation and monitoring	Residual effect and significance
Potential disruption of commercial operations	High	Medium	Moderate Adverse	Phased approachway widening; temporary compound area; temporary moorings; stakeholder group with the harbour users and community group.	Minor Adverse (not significant)
Potential impact to fisheries/ farmed stock arising from changes in water quality	Informed by Chapter 7: Physical Processes; Chapter 8: Marine Water and Sediment Quality and Chapter 13: Fish and Shellfish Ecology		Minor Adverse (not significant)	NA	Minor Adverse (not significant)
Potential impact to fisheries/ farmed stock arising from noise and vibration	Informed by Chapter 13: Fish and Shellfish Ecology		Minor Adverse (not significant)	NA	Minor Adverse (not significant)

20. Marine Archaeology and Cultural Heritage

20.1 Introduction

- 20.1.1 This chapter of the EIA Report provides an assessment of the potential effects of the Uig Harbour Redevelopment (hereafter referred to as the 'Proposed Development') on marine archaeology. Where appropriate it identifies proportionate mitigation measures to prevent, reduce or offset potential adverse effects and/or enhance potentially beneficial effects, where possible.
- 20.1.2 **Chapter 3: Project Description** of this EIA Report provides a detailed description of the works required to implement the Proposed Development.

20.2 Legislative and Planning Policy Context

- 20.2.1 The assessment has been undertaken in accordance with current legislation as well as current and emerging national and local planning policies. The principal items of legislation, policy and guidance comprise:
- Marine (Scotland) Act 2010;
 - Scottish Planning Policy (SPP) (June 2014);
 - Historic Environment Scotland (HES) Policy Statement (HES, 2016a);
 - Historic Environment Circular (HES, 2016b);
 - PAN 2/2011: Planning and Archaeology;
 - Managing Change in the Historic Environment (HES, 2016c).
- 20.2.2 **Chapter 4: Legislative and Planning Context** provides an overview of national and local planning policies.

20.3 Assessment Methodology & Data Sources

Heritage Study Area

- 20.3.1 The study area for the assessment of potential impacts on offshore marine archaeology comprises the Proposed Development Site Boundary below Mean High Water Springs (MHWS). The study area also includes the Proposed Sea Disposal Site and the proposed dredge pockets to the north, east and south of King Edward Pier.

Desk Study

- 20.3.2 A number of sources were consulted in order to establish the baseline conditions within the Proposed Development Site. These include:
- PastMap which is maintained by HES and includes CANMORE⁸ maritime records. Reference to PastMap provided only a broad view relating to the known maritime heritage resource. Information relating to site-specific conditions and the potential for

⁸ CANMORE is the Royal Commission on the Ancient and Historical Monuments of Scotland's online version of the National Monuments record (archived)

previously unrecorded maritime heritage assets to be present within the Proposed Development Site has been gathered from site investigation reports listed below.

- Bathymetric survey of the Proposed Sea Disposal Site and the dredge pockets adjacent to Uig Pier (Aspect, 2018). This survey report provided a high data density enabling good object detection of any remains of potential archaeological interest.
- Remotely Operated Vehicle (ROV) survey. Video footage and stills were collected from five transects in the disposal search site. The survey results were reviewed in order to identify potential anomalies of archaeological interest.
- Geotechnical data. Ground investigations were carried out at various locations within the Proposed Development Site (Holequest Ltd, 2017). These consisted of a series of boreholes, dredge samples and trial pits. The trial pits were excavated across the onshore area only and have not been used to inform the assessment. In addition, surface grab samples were recovered from the Proposed Sea Disposal Site (NorthWest Marine, 2016).

Summary of Consultation

20.3.3 Consultation has been undertaken with HES and the local authority during the production of this EIA Report. A summary of consultation is presented in Table 20-1 below.

Table 20-1 Summary of Consultation Relating to Marine Archaeology and Cultural Heritage Assets

Consultee	Summary of response	Action taken
Scottish Government HES Scoping Opinion of 30.11.17	HES is content that there will be no significant effects on terrestrial assets, including the setting of North Cuil cairn (scheduled monument No. 900), and therefore terrestrial (onshore) heritage within HES' remit can be scoped out of the chapter. However, the assessment should consider the potential impacts to undesignated wreck sites and unknown marine remains (offshore heritage).	Terrestrial cultural heritage, within HES' remit has been scoped out. Potential impacts on known wreck sites are included in the assessment. The potential for unknown assets to be impacted is also assessed in this chapter.
THC Scoping Opinion via THC Planning Service; email dated 15.12.17	THC Team Leader Mark Harvey confirmed that THC agreed with the approach set out in Marine Scotland's scoping opinion which included consultation with HES (marine archaeology to be included in the assessment but terrestrial archaeology is scoped out).	Terrestrial archaeology has been scoped out.

Impact Assessment Methodology

Importance of heritage assets

20.3.4 The assessment of importance of archaeological and heritage assets reflects the relative weight given to them in HES and SPP. Table 20.2 summarises the relative importance of key cultural heritage resources.

Table 20-2 Criteria for Establishing the Importance of Marine Archaeology and Cultural Heritage Assets

Importance	Definition
High	Sites of national or international importance, including: World Heritage Sites Scheduled Monuments, and sites proposed for scheduling Non-designated archaeological sites and areas of likely national importance identified in HERs/SMRs as Non-Statutory Register Sites ⁹ Category A Listed Buildings Gardens and Designed Landscapes (Inventory sites) Outstanding Conservation Areas Designated Wreck Sites Historic Battlefields (Inventory sites)
Medium	Sites of regional importance, including: Archaeological sites and areas of distinctive regional importance Archaeologically Sensitive Areas Category B Listed Buildings Conservation Areas Non-Inventory Designed Landscapes
Low	Sites of local importance, including: Archaeological sites of local importance Category C Listed Buildings Unlisted historic buildings and townscapes with local (vernacular) characteristics
Very low	Sites of little or no importance, including: Sites of former archaeological features Unlisted buildings of minor historic or architectural interest Poorly preserved examples of particular types of feature

20.3.5 Guidance published by HES (2016c) states that setting can be important to the way historic structures or places are understood, appreciated and experienced and setting can contribute to an asset's importance. The guidance also suggests that if a particular development is likely to affect the setting of a historic environment asset, an objective written assessment should be prepared to inform the decision-making process.

Assessing the Magnitude of Impact

20.3.6 Once the importance of the heritage asset has been established, the magnitude of impact arising from the development is assessed. The sources of impact may arise during construction or operation and can be characterised in terms of timing, scale, duration, and reversibility and can occur to the physical fabric of the asset or by changes to its setting. The level and degree of impact is assigned by reference to a five level scale as set out in Table 20-3.

⁹ Non-Statutory Registered sites were identified in some Local Authority areas through a Historic Scotland funded project in the 1980s. In most cases the designations have not been verified by further field inspections and Historic Scotland does not rely solely, or mainly, on such designations when selecting sites for scheduling. Nevertheless, it is recognised that such designations denote potentially important archaeological sites and features and that they should be considered to be important assets. In recognition of this, assets with such designations (whilst they have no statutory protection equivalent to Scheduled Monuments) are considered in the assessment as being of national importance unless field inspection suggests otherwise.

Table 20-3 Criteria for Determining the Magnitude of Impact on Marine Archaeology and Cultural Heritage Assets

Magnitude of impact	Description of impact
High	Change such that the heritage importance of the asset is totally altered or destroyed. Comprehensive change to the surroundings of an asset, such that its baseline setting is substantially or totally altered, resulting in a serious loss in our ability to understand and appreciate the asset.
Medium	Change such that the heritage importance of the asset is affected. Impacts discernibly changing the surroundings of an asset, such that its baseline setting is partly altered.
Low	Change such that the heritage importance of the asset is slightly affected. Slight change to setting resulting in a minimal change in our ability to understand and appreciate the asset.
Very low	Changes to the asset that hardly affect its importance. A very slight and barely distinguishable change from baseline conditions resulting in no real change in our ability to understand and appreciate the asset.
No impact	No changes to the baseline conditions of the heritage asset.

Significance of Effect

- 20.3.7 An assessment to classify the significance of the effect on a heritage asset, having taken into consideration any embedded mitigation, is determined using the matrix at Table 20.4. This takes account of the importance of the heritage asset and the magnitude of impact. Effects can be adverse or beneficial.

Table 20-4 Significance of Effect on Marine Archaeology and Cultural Heritage Assets

Magnitude of Impact	Importance of Heritage Asset/Sensitivity of Setting			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very low	Minor	Negligible	Negligible	Negligible
No impact	Neutral	Neutral	Neutral	Neutral

- 20.3.8 This chapter considers that major or moderate effects are significant, in accordance with standard EIA practice. Once the significance of effect has been assessed, additional mitigation can be used to reduce or compensate for any significant adverse effects, or to enhance positive effects. Reassessing the significance of the effect after applying additional mitigation and allows the level of residual effect to be assessed.

20.4 Baseline Conditions

Geological baseline

- 20.4.1 The principal substrata of the study area comprises igneous rock of the Skye II lava group. Geotechnical investigations around the pier, linkspan and associated approachways recorded drift geology comprising glacial clay, sand and gravel overlain by silt which contained lenses and pockets of peat. Boreholes from the intertidal zone recorded silt, clay, sand and gravel overlain by more recent organic strata. Made ground was recorded to a depth of 1.3 m at the landward side of the pier, in the area of the proposed ferry terminal building (Holequest Ltd., 2018).

Archaeological baseline

- 20.4.2 Uig is the largest settlement on Trotternish, the most northerly of the collection of peninsulas that form the Isle of Skye. A pier existed by 1840 and in 1894 it was extended to serve the steamers that provided regular services to Tarbert on Harris and the rest of North West Scotland. The pier was officially opened on 1st September 1902 by King Edward VII and Queen Alexandra¹⁰. The King Edward Pier¹¹ is recorded in the Historic Environment Record as a non-designated heritage asset of local importance (Historic Environment Record reference MHG35156). In the car park to the west of the pier there is a commemorative monument that marks the 1902 landing of the royal visitors (**Figure 20-1**). It was restored in 1994 and the restoration is dedicated to the fallen of World War II which is noted on a plaque attached to the lower part of the memorial¹².
- 20.4.3 There are two known wreck sites in proximity to Uig Bay but these are located outside of the study area (Figure 20.1). These comprise the wreck of a motor fishing vessel, *Sarah Lena* which was lost on 25 June 2010 (Canmore reference number 324533), located approximately 2.6 km south-west of the pier and c.177m west of the Proposed Sea Disposal Site; and the steamship *Irlanda* (Canmore reference number 295657) which was stranded and sunk at Idrigill Point in 1943, approximately 1.7 km west of the pier¹³ (**Figure 20-1**). Both of these wreck sites are located beyond the areas proposed for dredging for construction of the Proposed Development.

Bathymetric Survey Results

- 20.4.4 3D Bathymetric survey data was acquired using a R2sonic 2024 system with a beam width of 0.5°. The velocity of the water column was measured using a Valesport 650 Velocity Probe and the resulting raw data was stored and processed using proprietary software. The method employed was capable of detecting objects larger than 0.5 m within the survey areas. The survey focussed on areas where there was a potential for impacts to arise as a result of the Proposed Development. These areas included the Proposed Sea Disposal Site, where deposited sediment has the potential to harm archaeological artefacts on the seabed including wrecks; the dredge pockets, where dredging activities have the potential to damage or remove archaeological artefacts on the seabed, and at King Edward Pier, where piling associated with the approach widening has the potential to damage archaeological artefacts on the seabed.

¹⁰ (<http://www.ambaile.org.uk>)

¹¹ (<https://canmore.org.uk/site/160442/uig-king-edward-pier>)

¹² (<http://canmore.org.uk/site/11200>)

¹³ (<https://canmore.org.uk>).

Sediment Disposal Site

- 20.4.5 There is no indication of any wreck sites or anomalies of archaeological interest at the proposed Sediment Disposal Site. The wreck of the *Sarah Lena* is recorded 177 m to the west. The results show a smooth buried landform that slopes from the north-east corner (at -11 m Chart Datum) (CD) to a depth of -69 m CD towards the west side. Along the western side of the site there appear to be a number of deeper hollows (max. depth of -77 m CD), and the end of a sharp ridge is evident along the south side. There is potential for dispersed sediment, originating from the Sediment Disposal Site, to cover the wreck of the *Sarah Lena*, which may result in harm to the surviving structure. This potential impact will be assessed further in Section 20.5.

Dredge Pockets

- 20.4.6 At the Proposed Development Site there is also no evidence of wreck sites or any other anomalies of archaeological interest. In Dredge Pocket 1 the landform appears to slope from west to east between -3 m CD to -6 m CD at the south-east. There is a broad hollow (result of possible scouring action from ship activity) at the north end of the area which is also at -6 m CD. Dredge Pocket 2 is gently sloping to the east and is located at Mean Low Water (0 m CD).

ROV Survey Results

- 20.4.7 Video footage gathered from the ROV survey was reviewed by the Project Archaeologist. The footage did not identify any seabed anomalies that were indicative of potential archaeological activity, wreck sites or artefacts.

Results of Ground Investigations at Proposed Development Site

- 20.4.8 Site investigations were carried out during the summer and autumn of 2017 and comprised a series of boreholes and dredge samples around the existing pier structure and in the area of proposed dredging. However, three boreholes (BH01, BH02 and BH06A) and two Dredge Samples (DS01 and DS02B) were close to Dredge Pocket 1; and two boreholes (BH09 and BH09A) were near to Dredge Pocket 2 (Figures 7.2 and 7.3).
- 20.4.9 In general the investigations in the area around the pier encountered naturally deposited granular strata (sands and gravels) with variable cobble and boulder content that contained abundant shell and shell debris, immediately beneath the seabed. Within these strata organic material was also present (described as slightly sandy locally slightly gravelly organic silt with variable cobble and boulder content) which contained lenses and pockets of peat. The strata overlay sterile glacial deposits up to the final depth of the boreholes.
- 20.4.10 Peaty deposits (1.2 m thick) are recorded in BH6A at the eastern edge of Dredge Pocket 1 where it occurs at a depth of 4.20 m to 5.40 m (-6.67 m CD to -7.87 m CD), 'Very soft slightly sandy gravelly clayey organic Silt with occasional Shells and Shell Debris, lenses of silty Clay and dark reddish brown Peat'.
- 20.4.11 Possible organic sediment is also noted in DS01, located towards the centre of Dredge Pocket 1 and at a depth of 4.90 m to 6.20 m (-7.15 m CD to -8.45 m CD), 'Dark grey very clayey very gravelly fine to coarse sand with occasional boulders (Possibly slightly organic)'. Close to Dredge Pocket 2 organic sediment was noted in BH09 where organic sand and organic clayey silt was noted between 0.90 m to 6.40 m depths (-4.41 m CD to -7.91 m CD). Elsewhere a deposit of organic fibrous peat (2.35 m thick) was recorded in BH8A at a depth

of 4.20 m to 6.55 m (-6.08 m CD to -8.43 m CD), and organic silts are noted in BH03 at 4.60 m to 5.80 m depth (-6.98 m CD to -8.18 m CD); BH04 at 4.80 m to 6.40 m depth (-7.69 m CD to -9.29 m CD); and in BH05 at 3.50 m to 6.00 m depth (-6.89 m CD to -9.39 m CD).

- 20.4.12 The peaty deposits and organic sediments that are assessed as being of low (local) importance are undated, but if they are in-situ deposits they may reflect a changing pattern of sea level change that could have formed in ancient lake seabeds or forested peatlands. These sediments may contain a range of diverse plant and animal remains which may provide important information on past environments, sea level histories and the dates of any changes (Wessex Archaeology Ltd, 2007). If found in relation to evidence of human activity; these environmental data can help to reconstruct the past landscapes in which people were living.

Results of Ground Investigations at Proposed Sea Disposal Site

- 20.4.13 Fourteen surface sediment samples were taken at seven locations across the Proposed Sea Disposal Site. Nothing of archaeological interest was found in the grab samples which consisted of mud (found in the more central locations) or fine gravel/sand (locations closer to the shore) (Munsie, 2016).

20.5 Predicted Effects

Construction

Changes to the King Edward Pier

- 20.5.1 The approachway along King Edward Pier will be widened by 6 m along the northern face of the pier as part of the Proposed Development to allow the flow of two way traffic and improve vessel capacity. In addition, a protective pedestrian walkway will be constructed along the southern edge of the pier. All existing dock furniture, including bollards, mooring rings, ladders and access steps, will be reinstated along the northern face of the pier once the widening has been completed. As a result there will be a very low impact to the pier that is of low importance, and would be a negligible effect to its heritage value and setting.

Effects on Undated peaty Deposits and Organic Sediments of Potential Palaeoenvironmental Interest

- 20.5.2 The submerged peaty deposits and organic sediments that are assessed as being of low (local) importance are undated and may contain a range of diverse plant and animal remains which may provide important information on past environments, sea level histories and the dates of any changes.
- 20.5.3 The widening of the pier structure by an additional 6 m and the existing berthing structure (14.5m), and replacing and repositioning of the linkspan and lifting dolphins onto new concrete blocks will require piled foundations (piles to be driven 10 m into sea bed). Widening the existing pier and berthing structure will require over 1000 piles (combination of straight web piles, H piles, steel tubular piles and sheet piles).
- 20.5.4 The new piles that are required for these structures would directly impact the undated peaty deposits and organic sediments that are of potential palaeoenvironmental interest. Although it is likely that the existing pier structure has previously impacted the resource, the scheme requires a substantial number of new piles in a dense array resulting in the localised loss of

the potential asset. In addition, the use of a piling crane with a 10 ton drop hammer or vibro hammer has the potential to affect the integrity of the peaty deposits and organic sediment across a wider area surrounding each borehole as a result of vibration (Historic England, 2015).

- 20.5.5 Changes to the local current patterns or changes to sediment movement as a result of the proposed new piles could also result in localised indirect impact on the undated peaty deposits and organic sediments that are of potential palaeoenvironmental interest.
- 20.5.6 There would not be a direct impact on the undated peaty deposit or organic sediment at Dredge Pockets 1 where dredging is required to a depth of -5.6m CD (surface of peat deposit is at -6.67m CD), or at Dredge Pocket 2 (proposed dredging will not impact the organic sediment located at -2.41m CD). However, the reduction in the depth of the covering natural sediment that provides protection and the scouring action from maritime vessels berthing at the proposed new facility could result in an indirect impact upon the potential palaeoenvironmental resource.
- 20.5.7 Overall, therefore it is assessed that there would be up to a high impact on the local potential palaeoenvironmental resource that is of low importance; resulting in a moderate significance of effect.

Potential Impacts to Wreck Sites

- 20.5.8 The wreck of a motor fishing vessel, *Sarah Lena* (Canmore reference number 324533), is located approximately c. 177 m west of the proposed Proposed Sea Disposal Site. The majority of the sediment dispersion modelling shows the majority of sediment dispersing away from the wreck site and towards the east. However, one model suggests that the wreck will be located within an area that will be affected by sediment dispersal, with maximum concentrations at seabed level predicted to be between 5 – 10 mg/l. This low level of sediment is unlikely to harm the wreck and the impact is assessed to be very low. The wreck is not designated and is assessed to be of low importance. The significance of effect is assessed as negligible.

Operation

- 20.5.9 Physical impacts to marine cultural heritage assets are limited to the construction phase of the Proposed Development, and a level of appropriate archaeological mitigation will be undertaken at the pre-construction stage. There are possible additional impacts upon the undated peaty deposits and organic sediments of potential palaeoenvironmental interest as a result of the maintenance dredging that will be required every 3 to 5 years at Dredge Pocket 1, but this will be clarified following archaeological surveys to determine the quality and date of the resource.

20.6 Mitigation & Monitoring

- 20.6.1 The emphasis in Scottish Government PAN 2/2011: Planning and Archaeology (PAN2) is the preservation of important remains in situ where practicable and by record where preservation is not possible.
- 20.6.2 A staged programme of archaeological investigation (geoarchaeological survey and assessment) will be undertaken to determine the palaeoenvironmental potential of the peaty deposits and organic sediments found during ground investigations. The scope of the

investigation will be agreed with relevant stakeholders prior to construction commencing, and may include: an initial survey including a geoarchaeological assessment (drilling and recovery of a suitable core from peaty deposits to determine dates for the start and end of the peat formation, and if appropriate, an assessment of the preservation and content of the core). The results of the geoarchaeological investigation would inform detailed measures such as scientific dating and analysis, to mitigate impacts arising from the Proposed Development. The recovery of cores for geoarchaeological assessment and potential analysis can be recovered during geotechnical site investigation.

20.6.3 Archaeological investigation will be carried out in accordance with a written scheme of investigation that approved by the local authority's planning archaeologist.

20.6.4 It is assessed that the implementation of a successful mitigation strategy will reduce the effects arising from the Proposed Development to an acceptable level.

20.7 Residual Effects

20.7.1 After mitigation the residual effect of the Proposed Development on the heritage resource would be minor. There would be a minor adverse effect on one asset of local importance (undated peaty deposits and organic sediments that are of potential palaeoenvironmental interest), and a negligible effect on Kind Edward Pier.

20.8 Cumulative Effects

20.8.1 There would be no cumulative effects upon the cultural heritage resource.

20.9 Summary & Conclusion

20.9.1 The assessment has identified that there would not be any significant effects on cultural heritage as a result of the proposed scheme.

Table 20-5: Summary of Environmental Impacts on archaeology and Cultural Heritage

Asset	Importance	Impact	Residual Effect
King Edward Pier	Low	Very Low	Negligible
Undated peat deposits and organic sediments of potential palaeoenvironmental interest	Low	High	Minor Adverse
Wreck site of the Sara Lena	Low	Very Low	Negligible

21. Summary of Mitigation

21.1 Introduction

- 21.1.1 This chapter of the Environmental Impact Assessment (EIA) Report summarises the mitigation commitments over and above those incorporated within the design of the proposals as set out within **Chapter 3** of this report. This mitigation measures will be carried forward into the Construction Environmental Management Plan (CEMP) and topic specific management plans, and where appropriate into an Operational Environmental Management Plan (OEMP) as the primary mechanism of mitigation delivery, which, it is anticipated will be conditioned as part of the suite of consent licences which are sought for this Proposed Development.
- 21.1.2 Mitigation commitments are summarised in **Table 21.1** below and described in further relevant detail in chapters 7-20 of this EIA Report

Environmental Topic	Summary of Mitigation Measure	EIA Report Section/Paragraph Reference
General	An Environmental Clerk of Works (ECoW) will be appointed who will be responsible for the preparation and implementation of the CEMP, ensuring that mitigation measures identified in this EIA Report are appropriate implemented. The ECoW will be supported by environmental specialists such as ecologists as and when required.	Section 3.4, Para 3.4.35
Marine Physical Environment	The significance of effects on the marine physical environment associated with the Proposed Development has been assessed as negligible to minor adverse. No further mitigation is proposed, for either construction or operation.	Section 7.6, Para 7.6.1
Marine Water and Sediment Quality	Sediment disposal will be evenly distributed across the seabed at the proposed new sea disposal site for both construction and operational dredge arising.	Section 8.6, Para 8.6.1
	The operation of any construction machinery will be undertaken in accordance with standard good practice, including good pre-construction planning, site practices and adherence to relevant guidance for pollution prevention during construction and operation.	Section 8.6, Para 8.6.2
	During construction there will be suitable bunding and storage provided by the Contractor to prevent the release of fuel oils, lubricating fluids etc. associated with plant and equipment into controlled waters. Appropriate safety precautions will be followed during refuelling activities to minimise the risk of an oil spill. The same mitigation measures would be employed during operation, where appropriate.	Section 8.6, Para 8.6.3

Flood Risk and Climate Change	Temporary wave barriers will be installed along the pier following the demolition of existing wave protection wall sections to protect users from waves during the construction period.	Section 9.8, Table 9-7
Flood Risk and Climate Change (continued)	Warning signs will be installed to deter people from using the pier in adverse weather conditions.	Section 9.8, Table 9-7
	Flood and weather warnings will be monitoring by the Contractor and construction workers alerted when adverse conditions are expected.	Section 9.8, Table 9-7
	Construction drainage arrangements will be agreed with SEPA, THC and Scottish Water and will be detailed in the CEMP, prior to construction commencing.	Section 9.8, Table 9-7
	Construction laydown area, site offices and site compound will be located away from the harbour area, on higher ground.	Section 9.8, Table 9-7
	<p>A Flood Risk Management Plan (FRMP) will be produced prior to construction commencing. The FRMP will include:</p> <ul style="list-style-type: none"> – 24 hr availability to mobilise staff in the event of a flood warning; – All plant, machinery and materials capable of being mobilised in a flood will be removed from site, during any site close down period e.g. holiday periods; – Details of evacuation and close down procedures in the event of a flood, including arrangements for removing potential hazardous materials and anything capable of becoming entrained in flood waters, from temporary work areas. 	Section 9.8, Table 9-7

Flood Risk and Climate Change (cont)	The detailed design of the covered walkway to be installed for the operational phase will protect pier users against all conditions in which the ferry is able to operate.	Section 9.8, Table 9-8
	Whilst residual effects of the Proposed Development on wave overtopping at sensitive receptors including the Bakur Bar is will be minor, is acknowledged that the baseline condition already includes an existing risk of wave overtopping. The Applicant will none-the-less carryout further consultation with the affected properties to explore what, if any, opportunity exists for the Proposed Development to voluntarily contribute towards an improvement to the baseline condition.	Section 9.8, Table 9-8
	Buildings will be constructed with floor levels above the 1 in 200 year flood event level.	Section 9.8, Table 9-8
	Water resistant materials and forms of construction will be used as appropriate.	Section 9.8, Table 9-8
	A 600 mm freeboard will be provided above Coastal Flood Boundary Levels.	Section 9.8, Table 9-8
	Permanent drainage system will be designed to accept up to a 1 in 30 year flood event. Any event larger than this will drain directly to the sea.	Section 9.8, Table 9-8
Ground Conditions and Contamination	All necessary measures required to ensure compliance of the construction works with applicable legislation for the protection of surface and groundwater, and incorporating good practice guidance for works on or near water, will be embedded within the Construction Environmental Management Plan (CEMP).	Section 10.6, Para 10.8.2

Ground Conditions and Contamination (Cont.)	Pre-construction ground investigation will be undertaken for the onshore sections of the Proposed Development to confirm the condition of soil and groundwater beneath the site.	Section 10.8, Para 10.8.1
	Potential effects from any contamination on the construction workforce will be mitigated by the use of appropriate protective equipment such as gloves and respiratory protection, and effective dust suppression techniques.	Section 10.3, Table 10-5 and Section 10.8, Para 10.8.3
	The Contractor will ensure that all materials used in earthworks are suitable for proposed use and will not result in any increase in contamination-related risks on identified receptors.	Section 10.8, Para 10.8.4
	Appropriate Pollution Control Measures to address any contaminated land will be implemented by the Contractor, include: <ul style="list-style-type: none"> – PPE to be used as applicable; – In the event of the identification of previously unknown contamination, including isolated hotspots, these will be further investigated and the requirement for, and implementation of, any additional containment or disposal of materials will be identified. Any required remediation measures will be identified; 	Section 10.8, Para 10.8.5
Ground Conditions and Contamination (Cont.)	<ul style="list-style-type: none"> – Arisings and temporary stockpiles will be placed away from water courses and drainage systems. Surface water will be directed away from stockpiles; 	

- Earthworks design will attempt to balance any cut/fill operations to minimise requirement for off-site disposal;
- Stockpiles will be sealed to prevent rainwater infiltration. Alternatively bunding/temporary drainage systems will be put in place if required. All appropriate guidelines will be followed and any relevant licences (e.g. discharge consents will be obtain;
- Fuels or chemicals will be stored in bunded areas with impermeable base in accordance with SEPA guidelines;
- Any dewatering will be discharged appropriate in accordance with any relevant licences;
- Wastes will be segregated on site and, where possible, retained on site and re-used or re-cycled. Any landfill sites used will be appropriate licenced to receive the particular waste;

Ground Conditions and Contamination
(Cont.)

- A dust suppression/management system will be implemented in order to control potential risk of airborne contamination migrating offsite.

Foundations will be designed and constructed to prevent the creation of pathways for the migration of contaminants and will be constructed of materials suitable for the ground conditions and designed used.

Section 10.8, Para 10.8.6

	Hardstanding of the road surfaces and marshalling area will reduce migration of contaminants into soils and groundwater.	Section 10.8, Para 10.8.7
	Piling design and construction works will be completed following a risk assessment in accordance with the Environment Agency's guidance on Pollution Prevention in Piling.	Section 10.8, Para 10.8.8
	A Site Waste Management Plan (SWMP) will be developed. This will set targets for recovery of wastes, including excavated materials.	Section 10.8, Para 10.8.9
	For the operational phase, appropriate protection measures will be incorporated into the design of the electrical transformer that is proposed to be constructed on-shore in order to mitigate against the potential for saltwater corrosion and minimise the risk of potential leaks/loss of containment.	Section 10.8, Para 10.8.12
Ground Conditions and Contamination (Cont.)	Appropriate waste storage facilities will be incorporated into the Proposed Development for the operational phase.	Section 10.8, Para 10.8.13
Marine Nature Conservation Areas	The Proposed Development will minimised the use of impact piling where ever possible using vibratory piling methods where ever possible. No simultaneous impact piling of the noisiest, will be undertaken when the pile is in water, at any time during construction	Section 14.6, Para 14.6.1

Standard piling mitigation measures as set out within JNCC Guidance (JNCC, 2010) will be applied as a minimum, including the following:

- **Marine mammal observation:** piling activities will be monitored by suitable qualified and experienced MMOs and PAM operatives whose primary role is to detect marine mammals and to potentially recommend a delay in the commencement of piling activity if any marine mammals are detected;

MMOs will ensure observations seek, record and report harbour porpoise but also any other protected mobile species including common seal, basking shark and minke whale, for which the SAC and MPA above are designated

- **Mitigation zone:** the extent of this zone represents the area in which a marine mammal could be exposed to sound that could cause injury and will be no less than 500 metres with the project specific extent of this zone defined and agreed with the regulatory authority; and
- **Soft-Start of pile driver:** a gradual ramping up of piling power, incrementally over a set time period, of not less than 20 minutes.

Chapters 11 and 14
Section 11.8, Para 11.8.1
Sections 14.6, 14.8 and 14.9

Mitigation measures will be set out within a Marine Mammal Management Plan (MMMP). The piling contractor(s) will be required to comply with the MMMP.

Section 14.6, Para 14.6.4

	<p>Measures to address the potential for possible effects associated with Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) and to minimise behavioural disturbance in marine mammals as far as possible, include:</p>	<p>Chapters 11 and 14 Section 11.8, Para 11.8.2 Sections 14.6 and 14.8.</p>
	<ul style="list-style-type: none"> – A 500m mitigation zone will be monitored by appropriately qualified and experienced marine mammal observers (MMOs) positioned at suitable vantage points to observe and monitor Uig Bay. The number and location of MMOs deployed will be agreed within the MMMp before construction starts; 	
<p>Marine Nature Conservation Areas (cont.)</p>	<ul style="list-style-type: none"> – A standard pre-watch period of 30 minutes will be implemented before the commencement of any piling activity. Piling will not commence if any marine mammals are detected within the mitigation zone or until 20 minutes¹⁴ after the last visual or acoustic detection; – The use of Passive Acoustic Monitoring (PAM) equipment positioned at a location to be agreed, to monitor for harbour porpoise, will be required for any impact piling that commences during periods of darkness, poor weather conditions and reduced visibility of marine mammals. The monitoring will be conducted by suitable qualified and experienced PAM operatives; 	

¹⁴ A 20 minute period is adopted by the JNCC seismic survey guidance. Issues of swimming speed and noise dosage are considered in the Thame Developer report - it is considered that twenty minutes is a sufficient period of time to allow individuals to be at a distance where risk of injury or death is minor.

- A soft-start procedure will be required for all impact piling, with initial power levels to be approximately 10% of the final level; and
- Sound monitoring, including the collection of noise data from piling soft-starts, will be undertaken to monitor the effectiveness of the mitigation measures.
- Noise data collected during the construction of the Proposed Development will be considered for addition to the JNCC Marine Noise Registry

	No further mitigation measures have been identified for the operational phase.	Section 11.8, Para 11.8.3
Benthic Ecology	All sediments from capital dredge activities at DP1 will be disposed of in the proposed new licenced sediment disposal site outside Uig Bay.	Section 12.9, Para 12.9.1
	All sediments from maintenance dredge activities will be disposed of at the licenced disposal site and will be subject to a separate licence application at the time.	Section 12.9, Para 12.9.3
	No additional mitigation measures are required during the operation phase. Maintenance dredging will be required but will comprise small sediment volumes relative to the construction phase and will use methods adopted for previous dredge operations at the pier. All sediments will be disposed of at the licenced disposal site and will be subject to a separate licence application at the time.	Chapters 12, 13 and 14: Section 12.9, 12.9.3 Section 13.9, Para 13, 9.4 and 13.9.5 Section 14.9, Para 14.9.3
	The CEMP will include appropriate measures to control and limit the risk of marine invasive non-native species following best practice (e.g. (Payne, Cook, & Macleod, 2014)), if considered necessary	Section 12.7, Para 12.7.1

Fish and Shellfish Ecology	The statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010) will be followed.	Section 13.1, Para 13.1.1
	A soft-start approach will be used prior to impact piling which will minimise the impact of underwater sound on fish.	Section 13.1, Para 13.1.2
Marine Mammals	Adopted mitigation measures will be provided within a Marine Mammal Management Plan (MMMP) with which the piling contractor(s) will be required to comply.	Section 14.6, Para 14.6.4
	No simultaneous impact piling of the noisiest piles, when the pile is in water, at any time during construction.	Para 14.6.6 and 14.6.7
	However, where at least one of two piling locations is exposed at low tide simultaneous impact piling can be undertaken.	
	Any noise data collected during the construction of the Proposed Development will be added to the noise registry.	Section 14.8, Para 14.8.83
Ornithology	Good practice measures to protect seawater quality and minimise pollution of intertidal habitats during construction will be adhered to through the implementation of a CEMP to protect against pollution-related impacts on birds or bird habitats.	Section 15.6, Para 15.6.1
	If vegetation clearance is required during the breeding bird season, an ecological clerk of works will complete pre-clearance survey to ensure no breeding birds are present or would likely be disturbed.	Section 15.8, Para 15.8.1

	Cutting/trimming of taller grassy or herbaceous vegetation will be carried out in late February, ahead of the breeding bird season and will be maintained as such, to prevent corncrake and other breeding birds from nesting in the working area.	Section 15.8, Para 15.8.1
	Dredge vessels will move directly between dredge site and the dredge disposal site (located in the outer bay). This will minimise any visual or noise disturbance to white-tailed eagle.	Section 15.8, Para 15.8.1
Socio-economics	A database of local suppliers (plant, materials, guest houses etc.) will be compiled. Local services will be used as much as practicable during the construction period.	Section 16.2, Para 16.6.1
	Any disruption to the ferry service will be clearly communicated to members of the public. Alternative services during this period will be clearly advertised.	Section 16.2, Para 16.6.2
Onshore Noise	All construction plant and equipment will comply with EU noise emission limits.	Section 17.5, Para 17.5.1
	All vehicles and mechanical plant will be fitted with exhaust silencers and will be maintained in good, efficient working order.	Section 17.5, Para 17.5.1
	Access routes within the site will be maintained to prevent potholes in order to minimise noise, in particular from empty vehicles.	Section 17.5, Para 17.5.1
	Quiet plant will be selected where appropriate to minimise noise output. 'Sound reduced' models of compressors will be used. These will be properly lined and sealed with acoustic covers. Pneumatic percussion tools will be fitted with mufflers or silencers of the type recommended by the manufacturers.	Section 17.5, Para 17.5.1

Onshore Noise (Cont.)

Machines in intermittent use will be shut down in intervening periods or throttled down to a minimum.	Section 17.5, Para 17.5.1
Materials will be handled with care: placed. Not dropped.	Section 17.5, Para 17.5.1
Materials will be delivered during normal working hours only.	Section 17.5, Para 17.5.1
All ancillary plant (generators, compressors, pumps etc.) will be positioned to cause minimum noise disturbance. i.e. furthest from receptors or behind close boarded noise barriers. Acoustic enclosures/shielding will be provided, if necessary.	Section 17.5, Para 17.5.1
Construction contractors will adhere to the Codes of Practice for construction work and piling set out within BS 5228 and specifically with reference to minimising noise emissions from the site.	Section 17.5, Para 17.5.1
Appropriate reference will be taken to Building Research Establishment (BRE) 'Pollution Control' Guidelines. Parts 1-5. BRE, 2003.	Section 17.5, Para 17.5.1
Contractors will demonstrate that best practicable means have been implemented, including consideration of alternative methods of working, which may be quieter than those assumed in this assessment	
Where practicable, mobile or semi-permanent noise barriers located as close to the construction activities as possible will be utilised to shield noise sensitive receptors from works.	Section 17.7, Para 17.7.2
Shrouds will be used to attenuate piling noise emissions.	
Residents will be informed of when noisy works are going to be undertaken and the likely durations.	Section 17.7, Para 17.7.3

Onshore Noise (Cont.)

The Contractor will programme works to minimise noise emissions including:

Section 17.7, Para 17.7.4

- Ensuring that noisy works will be interspersed between quieter works to provide periods of respite
- Ensuring that the most noisy operations are performed during the least sensitive times of day;
- highly sensitive (red): 07:00 to 08:00 Monday to Friday, 07:00 to 13:00 Saturday;
- moderately sensitive (amber): 0800 to 09:00 and 17:00 to 19:00 Monday to Friday; and
- least sensitive (green): 09:00 to 17:00 Monday to Friday
- That all deliveries are carried out during THC ‘normal working hours’;
- Minimising the duration of works; and
- Phasing of works closest to properties to provide periods of respite.

The temporary construction compound will be located as far as practicable from nearby receptors.

Section 17.7, Para 17.7.5

The contractor will, where practicable, only use mobile plant fitted with ‘white noise’ or volume adjustable alarms.

Section 17.7, Para 17.7.6

The works will be orientated to minimise the need to reverse towards the site boundary.

Onshore Noise (Cont.)	<p>A noise management plan will be produced to describe the steps which will be taken to mitigate noise effects arising from the works. Typically this would identify the following:</p> <ul style="list-style-type: none"> – Sources of work noise emissions; – Any operational controls such as: – Management & staff responsibilities; – Liaison with neighbours; – Training; – Site specific mitigation measures; – Application of best practicable means; – Noise monitoring (if required); and – Complaints handling procedures. 	Section 17.7, Para 17.7.7
Commercial and Recreational Navigation	<p>There will be local notices to mariners that will be published by the SHA and made available to all vessels.</p>	Section 18.6, Para 18.6.1
	<p>Coordination of dredging with ferry operations to minimise disruption to services alongside a review of contractor risk assessments/method statements (RAMS) in accordance with the port's Marine Safety Management System (MSMS).</p>	Section 18.6, Para 18.6.1
	<p>Availability of pollution response equipment for Tier 1 incidents.</p>	Section 18.6, Para 18.6.1
	<p>The port's Navigational Risk Assessments will be updated to include the dredging and construction activity and Dredge and Construction craft.</p>	Section 18.6, Para 18.6.1
Commercial and Recreational Navigation (Cont.)	<p>Dredge and Construction craft will carry AIS to allow other vessels and the SHA to track their movements.</p>	Section 18.6, Para 18.6.1

	The approachway widening will be phased and constructed in sections; therefore, berths will be available for use by fishermen and other harbour users during construction.	Section 18.6, Para 18.6.2
	Temporary moorings within Uig Bay will be provided during construction.	Section 18.6, Para 18.6.2
	The local coastguard, MAC Marine Office and UKHO will be notified of the commencement of proposed works.	Section 18.6, Para 18.6.3
	The existing Aids to Navigation (AtoN) will be reviewed and an overall plan for AtoN at the ferry terminal discussed and agreed with the Northern Lighthouse Board (NLB).	Section 18.6, Para 18.6.3
Commercial Fisheries	Approachway widening will be phased and constructed in sections and the remaining or new berth sections will remain for use by the fishermen and other harbour users.	Section 19.6, Para 19.6.1
	A temporary compound area will be provided during the construction works.	Section 19.6, Para 19.6.1
	Temporary moorings within Uig Bay will be provided during construction and would include an agreed reduction in the harbour dues.	Section 19.6, Para 19.6.1
Commercial Fisheries (Cont.)	A stakeholder group with the harbour users and community group will be set up by the Contractor as a requirement during the construction works and will be written into the contract.	Section 19.6, Para 19.6.1
	Disruption to the harbour users must be kept to a minimum and the Contractor must include measures to limit this disruption in their programme and construction methodology.	Section 19.6, Para 19.6.1

	To minimise the impact of underwater sound generated during construction the statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise will be followed.	Section 19.6, Para 19.6.2
	For wild fish populations, a soft-start, to commence at the start of all impact piling and after any break longer than 10 minutes, will be adopted at all stages of the construction schedule.	Section 19.6, Para 19.6.3
Marine Archaeology	Any important remains identified will be preserved in situ where possible. Where not practical, remains will be preserved by record.	Section 20.6, Para 20.6.1
	Archaeological investigation will be carried out in accordance with a written scheme of investigation that approved by the local authority's planning archaeologist.	Section 20.6, Para 20.6.3
Marine Archaeology (Cont.)	A Staged programme of archaeological investigation will be undertaken at the pre-construction stage to determine the palaeoenvironmental potential of peaty deposits and organic sediments. The results of which would inform detailed mitigation measures.	Section 20.6, Para 20.6.2

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