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A82 Croit Anna to Caledonia Seawall Repair

Record of Determination

	Name	Organisation	Signature	Date
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Client:	Transport Scotland			

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EC Directive 97/11 (as amended)
Roads (Scotland) Act 1984 (as amended) (Environmental Impact Assessment) Regulations 2017 and The Marine Works (Environmental Impact Assessment) Regulations 2017

RECORD OF DETERMINATION

Name of Project:

A82 Croit Anna to Caledonia Seawall Repair

Location:

The proposed seawall repairs are planned along the coastline of the A82 Achintore Road on the outskirts of Fort William, spanning 860m from a south-westerly to north-easterly direction as detailed in Appendix A Figure A1.

Description of Project:

On the 15th of January 2020 BEAR Scotland Operations Team received information of a serious seawall failure as a result of Storm Brendan that raged across parts of the United Kingdom (UK), affecting England, Scotland and Wales with significant sea-swell and gusts of wind up to 80 miles per hour (MPH) being recorded. The seawall failure spanning 860m along the A82 Achintore Road near Fort William has potential danger of compromising the A82 Trunk Road asset and resulting in the closure of the major road.

As an interim measure to protect the sheer face, A82 Trunk Road and the wider public utilising the asset, collapsed material was pulled back into the seaward side of the existing barrier via excavators. These works were undertaken via a Marine License Exemption from Marine Scotland under provision 21 (1)(c) of The Marine Licensing (Exempt Activities) (Scottish Inshore Region) Order 2011 that was granted on the 16th of January 2020.

Following emergency measures to protect the A82 and the public, BEAR Scotland intend to repair the seawall failure with a more sustainable design that includes the creation of a benched armour stone revetment (Option 1) for areas that do not intrude into mean high water springs (MHWS) and an armour stone revetment with modular block retaining wall (Option 2) for areas intruding into MHWS. Appendix A Figure A2 and Figure A3 detail a cross-section of Option 1 and 2 and their constructional distribution along the 860m seawall failure respectively. The maximum MHWS intrusion of Option 2 will be 75m².

The proposed Option 1 and 2 of the A82 Croit Anna to Caledonia Seawall Repair consist of the following key components (Appendix A Figure A3):

Option 1:

- Filling of existing voids in revetment via compaction of existing face;
- Creation of 0.6m X 0.6m steps across the face of compacted revetment using 6I/J fill material (Type 1);
- Installation of armour stone grading of 1m to 2m with a rock armour toe depth of 2m;
- Reconstruction of 1m wide footpath; and
- Replacement of existing vehicle restraint system (VRS) via 0.6m x 0.6m x 15m concrete log foundation.

Option 2:

- Backfill embankment with 6I/J fill material (Type 1);
- Installation of a 0.8m (min) x 3.1m x 15m concrete foundation;
- Installation of concrete modular blocks, varying in height from 2 to 6 blocks;
- Placement of rock armour grading of 1m to 1.5m;
- Reconstruction of footpath of approximately 1.5m width; and
- Replacement of VRS.

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As the proposed works are a repair of an existing structure, with design modification to the pre-storm design to improve durability, no change in operation of the seawall from pre-storm damage conditions are expected.

It is likely that maintenance works overtime will be required during operation to maintain the seawall in good working order and serve its purpose in protecting the A82 Trunk Road. Maintenance works are likely to include minor concrete structural repairs and resurfacing of the reconstructed footpath.

Part of the remains of the damaged seawall require demolition to facilitate the construction of the proposed works. The volume of demolished material will be minimised through design and using existing revetment debris to fill voids in the existing face via compaction as part of Option 1 (Appendix A Figure A3). Due to extensive Japanese knotweed (*Reynoutria japonica*) colonisation throughout the scheme footprint, no demolished material, soils or vegetation will be taken from site, preventing spread of the invasive plant species beyond the site boundary.

The seawall is designed to protect the A82 Trunk Road from natural coastal erosion, hence, there are no future plans to remove the structure. Therefore, it is not deemed necessary to plan demolition and reinstatement works for removal of the seawall feature.

BEAR Scotland intends to commence the proposed works mid-January 2021, with works being undertaken on weekdays between the hours of 0700 and 1900. No overnight works are proposed due to the risks associated with open excavation works.

Project Procurement:

The scheme will be delivered As of Right.

Description of Local Environment:

The following baseline descriptions are listed to follow the appropriate Design Manual for Roads and Bridges (DMRB) chapters for environmental assessment and do not reflect a ranking of sensitivity. A literature review with regards to baseline information was undertaken using relevant reports, research articles and consultation with statutory and non-statutory bodies.

AIR AND CLIMATE:

The Air Quality in Scotland website powered by Ricardo Energy & Environment (2019) containing centralised air quality data for Scotland was reviewed to establish the baseline air quality parameters in the vicinity of the proposed A82 Achintore Road Sea Wall Repairs. A review of the Air Quality in Scotland website determined that the proposed works do not lie within an Air Quality Management Area (AQMA). It was also established that the closest air quality monitoring station is in Fort William, approximately 3.5 km (straight line) north-east of the proposed repairs. Given the location of the monitoring site, notably different land use between the sites and works being of very low risk to reduce air quality, the results from the monitoring station are not deemed relevant to the proposed works.

The proposed seawall repairs are in immediate vicinity and run diagonally to the A82 Trunk Road. The A82 is a key road, connecting the north-east and south-west of the Scottish Highlands, directly connecting Fort William to Inverness and falling within the boundaries of The Highland Council. As the A82 is used by motorised and non-motorised users, itself is a human sensitivity.

The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west, opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels which are very busy during summer months due to high tourist influxes into the area.

CULTURAL HERITAGE AND MATERIAL ASSETS:

Within 300m of the construction footprint there are multiple cultural heritage features of local value. These include Canmores and Historic Environment Records (Appendix B Figure B1 and Appendix B

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Table 1), none of which are located within the footprint of the proposed seawall repairs (Historic Environment Scotland, 2020).

BIODIVERSITY:

Designated Sites

Designated statutory ecological sites including Natura 2000 (including potential sites), Sites of Special Scientific Interest (SSSI) and Marine Protected Areas (MPAs) in the area of the proposed seawall repairs are detailed in Table 1. The proposed seawall repair works will be limited to the A82 shoreline and will not encroach on any designated sites listed in Table 1, hence, significant impacts on terrestrial ecological designated sites are not expected and not further considered.

Table 1: Ecological designated sites with ecological/habitat connectivity to the development site.

Site	Designation	Distance and Direction from Works	Designated Features
Ach na Todhair	SSSI	Approx. 130m SE (straight line).	Designated for: <ul style="list-style-type: none"> • Upland assemblage – favourable recovered (2014); and • Upland mixed ash woodland – favourable maintained (2008).
Doire Donn	SSSI	Approx. 1.2 km NW (straight line).	Designated for: <ul style="list-style-type: none"> • Beetles – favourable maintained (2010); • Chequered skipper (<i>Carterocephalus palaemon</i>) – favourable maintained (2013); and • Upland oak woodland – unfavourable declining (2015).
Moidart and Ardgour	Special Protection Area (SPA)	Approx. 3.9 km SWS (straight line).	Designated for: <ul style="list-style-type: none"> • Golden eagle (<i>Aquila chrysaetos</i>), breeding – favourable maintained (2010).
Ben Nevis	SSSI and Special Area of Conservation (SAC)	Approx. 4.4 km W (straight line).	SSSI designated for: <ul style="list-style-type: none"> • Breeding bird assemblage – favourable maintained (2003); • Bryophyte assemblage – favourable maintained (2013); • Caledonian ignepus (earth science) – favourable maintained (2012); • Fly assemblage – favourable maintained (2015); • Native pinew ood – unfavourable recovering (2013); • Small mountain ringlet (<i>Erebia epiphron</i>) – favourable maintained (2015); • Upland assemblage – unfavourable recovering (2013); • Upland oak woodland – favourable maintained (2001); and • Vascular plant assemblage – favourable maintained (2013). SAC designated for: <ul style="list-style-type: none"> • Acidic scree – favourable maintained (2009); • Alpine and subalpine calcareous grasslands – unfavourable no change (2009); • Alpine and subalpine heaths – unfavourable recovering (2017); • Base-rich scree – favourable maintained (2003);

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			<ul style="list-style-type: none"> Blanket bog – unfavourable no change (2013); Caledonian forest – unfavourable recovering (2013); Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels – favourable maintained (2009); Dry heaths – unfavourable recovering (2015); High altitude plant communities associated with areas of water seepage – favourable maintained (2013); Montane acid grasslands – unfavourable recovering (2013); Mountain willow scrub – favourable recovered (2017); Plants in cervices on acid rocks – favourable maintained (2003); Plants in cervices on base-rich rocks – favourable maintained (2013); Species-rich grassland with mat-grass in upland areas – unfavourable declining (2013); Tall herb communities – favourable maintained (2014); Western acidic oak woodland – favourable maintained (2001); and Wet heathland with cross-leaved heath – unfavourable no change (2013).
Glen Eive and Glen Fyne	SPA	Approx. 11.9 km S (straight line).	Designated for: <ul style="list-style-type: none"> Golden eagle (<i>Aquila chrysaetos</i>), breeding – favourable maintained (2010).

Terrestrial Mammals

The works are located along the shores of Loch Linnie, bordering the A82 Trunk Road on the southern approach to Fort William. The scheme is not situated within or adjacent to any site designated for ecology or nature conservation.

Records on the National Biodiversity Network (NBN) over a 10-year period within 5 km of the proposed works were reviewed to identify records of protected species (NBN Atlas, 2020). Only records with an open-use attribution (OGL, CCO, CC-BY) were included in the search criteria.

Notable mammalian species records on NBN Atlas include 25 records of European otter (*Lutra lutra*), 2 records of pine marten (*Martes martes*), 2 records of common pipistrelle (*Pipistrellus pipistrellus*) and 32 records of Eurasian red squirrel (*Sciurus vulgaris*).

Significant impacts on pine marten and Eurasian red squirrels which are protected under the Wildlife and Countryside Act 1981 (as amended) are not expected, as these species inhabit woodland habitats (Andren and Lemnell, 1992; Clevenger, 1994) and works are limited to an area consisting of coastal rock outcrops with no tree coverage. Therefore, the species are not taken forward for further assessment.

Similarly, bat populations in Scotland which are protected under Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) are not anticipated to inhabit the coastal rock outcrops that are frequently covered by water during high-tides or strong sea-swell resulting from storms. Furthermore, no suitable features for bats have been identified on site during two separate site visits. Therefore, no significant impact on bat populations are anticipated as a result of the proposed works and the species is not taken forward for further assessment.

However, the coastal outcrops along the proposed works at Loch Linnie are deemed to provide good otter habitat given its proximity to foraging grounds and freshwater, whilst providing good resting/hiding

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places (Chanin, 2003a).

On the 13th of February 2020, BEAR Scotland North West Environmental Team undertook an ecological survey of the development site with a 200m buffer on the coastline. [REDACTED]

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Invasive Non-Native Species

The ecological survey also identified extensive spread of invasive Japanese knotweed (*Fallopia japonica*) along the entire length of the scheme footprint. The location of the identified invasive species has been recorded on the BEAR Scotland Invasive Non-Native Species Register that covers the Trunk Road Network by BEAR Scotland in Scotland. Roots and stumps with visible buds were recorded throughout the remaining seawall and down the shore, almost to the water's edge. Rhizomes were visible in the sand extending lengthways along the beach. Old dead plants were also present in more sheltered areas. A further site visit on the 24th of August 2020 confirmed the extensive spread of the invasive species which appeared to actively flower on site.

Ornithology

Within 2 km of the works over a 10-year period 133 ornithological species were recorded (NBN Atlas, 2020). Under the Wildlife and Countryside Act 1981 all wild birds and their active nests are protected. Short sections of the shoreline along the 860m long scheme have potential to support ground nesting birds. Frequent use by walkers with dogs along the shoreline of Loch Linnie however reduces the ground breeding habitat quality. The majority of the 860m shoreline section on which works are proposed gets covered during high-tides or storm surges, making it unsuitable for ground breeding birds.

Localised shrub vegetation located along the 860m section of the shoreline have potential to support breeding birds between March and August (inclusive).

The tidal waters of Loch Linnie expose tidal benthic habitat that provide suitable foraging habitat for seabirds, especially waders.

Marine Mammals

Waters along the west coast of Scotland are utilised by several marine mammal species which are protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). The sea loch waters along the A82 Croit Anna to Caledonia Seawall Repair works (Loch Linnie) are known to be occasionally frequented by harbour seals (*Phoca vitulina*) (NBN Atlas, 2020). Cetaceans are not anticipated to occur within the waters near the proposed seawall works given the narrow mouth of Loch Linnie at the village of Corran. Although cetaceans may occur in wider Loch Linnhe which directly connects to the wider Inner Seas off the West Coast of Scotland.

Diadromous Fish

Loch Linnie forms part of the migratory route for multiple diadromous fish species to and from several river catchments given its connectivity to the wider marine environment. Therefore, Atlantic salmon (*Salmo salar*), European eel (*Anguilla anguilla*) and sea trout (*Salmo trutta morpha trutta*) are considered as receptors.

Benthic Ecology

No information about benthic ecology within areas of instruction below MHWS (75m² in total) could be identified. Therefore, benthic ecology within the area of intrusion was considered as a sensitivity within this report.

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LANDSCAPE:

The landscape surrounding the proposed seawall repairs is characterised by open views across Loch Linnie from south-west to north-east. Residential properties and commercial woodland plantations on high ground are located to the south. The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels which are very busy during summer months due to high tourist influxes into the area.

LAND:

The proposed works area is situated on the coastline between the A82 and Loch Linnie on the site that contained the pre-storm damaged seawall. The land comprises of rocky foreshore with rock ranging in size from small pebbles to boulders. To the north-west of the works area lies the wider Loch Linnie and to the south-east lie individual residential properties that line the A82.

NOISE:

Anthropogenic noise within the vicinity of the proposed works is limited to the A82 Trunk Road which carries commercial and public traffic and is a popular tourist route and includes residential properties located within 15m to 20m to the south-east. During periods of low to no traffic, the baseline noise in the vicinity of the works likely occurs from natural sources such as wave action and wind. Sensitive receptors to noise and vibration associated to the proposed works are several residential and commercial properties bordering the A82 Trunk Road to the south-east, opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels which are very busy during summer months due to high tourist influxes into the area.

POPULATION AND HUMAN HEALTH:

The proposed seawall repairs are in immediate vicinity and run diagonally to A82 Trunk Road. The Trunk Road is a key road connecting the north-east and south-west of the Scottish Highlands, directly connecting Fort William to Inverness and falling within the boundaries of The Highland Council. As the Trunk Road is utilised by motorised and non-motorised is considered a human sensitivity.

The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels which are very busy during summer months due to high tourist influxes into the area.

No National Cycle Network Route is located on the section of the A82 Trunk Road to which the seawall repairs relate (Sustrans, 2018).

WATER:

The proposed works run diagonally to Loch Linnie and in specific locations will intrude below mean high water spring (MHWS) as detailed in Appendix A Figure A2. The maximum intrusion below MHWS is 75m². Loch Linnie is a long coastal loch that covers approximately 25.3 km². Several small freshwater systems drain into Loch Linnie from higher grounds. The Scottish Environment Protection Agency (SEPA) categorised Loch Linnie (ID: 200089) as having an overall good status and chemical pass in 2018.

No bathing waters designated under the Bathing Waters (Scotland) Regulations 2008 are located within vicinity of the proposed works. The closest is located on the shores of Oban, approximately 44 km south-south-west by sea from the proposed works (SEPA, 2020).

Loch Eil contains a protected shellfish water area, approximately 5.7km (by sea) north-west of the proposed works. A further protected shellfish water is situated 32.8 km south-west in located in Loch Leven (Marine Scotland, 2019).

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SOILS AND GEOLOGY:

The proposed works run along the shore of Loch Linnie and are largely confined to the previous seawall structure that was destroyed by Storm Brendan and consisted of imported rock. Significant sea-swell resulting from Storm Brendon eroded and washed away much of the existing soils and geology along the scheme extents, hence, soil and geology data from the British Geological Survey (BGS) is deemed to be no longer applicable.

No statutorily designated geological sites were identified within vicinity of the proposed works.

Seabed geology within the 75m² works footprint below MHWS is unknown.

WASTE, MATERIALS AND USE OF NATURAL RESOURCES:

Part of the remains of the damaged seawall require demolition to facilitate the construction of the proposed works. The volume of demolished material will be minimised through design and using existing revetment debris to fill voids in the existing face via compaction as part of Option 1 (Appendix A Figure A3). Due to extensive Japanese knotweed colonisation throughout the scheme footprint, no demolished material (rock only), soils or vegetation will be taken from site, preventing spread of the invasive plant species beyond the site boundary. Removal of the old VRS will also result in moderate quantities of metal waste. Materials used to facilitate the construction predominantly consist of rock armour, concrete, road surfacing to reinstate the footpath and metal for installation of new VRSs.

Description of the main environmental impacts of the project and proposed mitigation:

As a result of a desktop study and site visits, issues requiring consideration have been identified and potential effects have then been considered. Considered potential environmental effects have been split into construction and operational effects, conclusion wheatear an effect is likely to be significant is based on consideration of mitigation measures discussed in each topic section. However, consideration of potential operational effects will be limited hydrogeological impacts as the proposed works are a replacement of the storm damaged seawall with modifications as discussed in Description of Project Section, meaning the operational effects will be as the baseline of the seawall pre-storm damage.

A summary of mitigation is noted in Table 3: Environmental Impacts and Proposed Mitigation Summary.

Disruption due to construction' and impacts on 'policies and plans' are covered within each environmental topic heading where applicable. Unless otherwise stated, the study area considered for the assessment of potential impacts extends 200m in each direction from the construction footprint.

AIR AND CLIMATE:

Dust

Generation of dust from works can pose adverse effects on flora through smothering, preventing effective photosynthesis (Thompson *et al*, 1984). Dust can also poses human health effects and be a nuisance (IAQM, 2016).

Sources of dust associated with the construction of the A82 Croit Anna to Caledonia Seawall Repair are:

- Earthworks that involve the movement of old seawall material within the site and incorporating it with the backfill between the carriageway and the concrete modular blocks (see Appendix A Figure A3).
- Trackout associated with raw material delivery and machinery.
- Construction of the seawall using rock armour and Type 1 backfill material.

As detailed in the Description of Project Section, approximately 5,350t of backfill Type 1 material is required between the carriageway and the concrete modular blocks (see Appendix A Figure A3).

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Placement of approximately 250t of rock armour will also be required. These materials have potentially give rise to dust emissions, particularly during dry and windy conditions. For simplicity and impact assessment purposes, the backfilling and rock armour installation are classified as earthworks as described in Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2016). The earthworks across the sites will be < 2,500m² and will use less than 5 heavy earth moving vehicles (max 2 excavators and 2 dumper trucks) on site. As per IAQM Guidance (2016) the arising dust potential risk is small. The risk of dust emissions is further reduced by works being undertaken during wetter months (commencing in January 2021). In addition, rock armour will comprise of boulders of 1m to 2m diameter, their large mass meaning they have negligible dust potential.

No stockpiling of material with dust potential is required as all backfill material and rock armour will be delivered by road on a 'as required basis', particularly since works will be undertaken via 16m to 32m sections at a time. Therefore, a dust emission risk related to stockpiling is minimal.

Vehicle movements during construction works are not anticipated to create dust/mud trackout beyond the working area onto the wider A82 Trunk Road as working area is situated on the rocky shore which comprises of pebbles and boulders with minimal organic soil.

As there is a potential small risk of dust emissions related to earthworks, a dust management plan will be implemented as detailed in the of Site Environmental Management Plan (SEMP) that details measures to prevent dust emissions. These measures include:

- All delivery vehicles carrying material with dust potential will be covered when traveling to or leaving the site, preventing the spread of dust beyond the work area.
- All vehicles should stick to surfaced areas and avoid encroaching on land as far as reasonably practicable to limit trackout.
- Good housekeeping will be employed across the site throughout construction to prevent dust.
- Dust generated from construction activities such as rock installation and backfilling will minimised by damping down material.
- The movement of dusty material will be minimised by appropriately planning material movements.
- Throughout the construction period monitoring of visible dust emissions and surface soiling will be conducted once each working day within the vicinity of the site boundary, by the site supervisor, all inspection results being recorded.
- The site supervisor will take note of weather forecasts to ensure that measures are in place prior to period of dry or windy weather.
- Where deemed necessary road sweepers will be employed to minimise the spread of dust/mud across the A82 Trunk Road.

With the above measures implemented via the SEMP, no significant effects on human or biodiversity receptors, including designated sites, through dust are anticipated.

Greenhouse Gas Emissions

The use of construction material, plant, machinery and equipment are all sources of greenhouse gasses (GHG) which contribute to anthropogenic climate change, either directly or indirectly. Metals and miscellaneous material such as fuel, oils and plastics (geotextiles) required for the A82 Croit Anna to Caledonia Seawall Repair works are costly commodities with high carbon costs (UK Government, 2019).

As the project is still at the early stages of the design process, the actual GHG sources and material volumes are not known, hence, carbon calculations could not be undertaken. But the continual detailed design process will optimise material usage for both environmental and financial reasons. Although it must be noted that limitations to construction material selection exists as these materials must meet functional requirements of the development.

In line with the Institute of Environmental Management and Assessment (IEMA) Guidance on Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA & ARUP, 2017), efforts will be made to minimise GHG emissions associated with the construction aspects. Where

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material and engineering requirements allow, materials should be sourced locally, reducing transport distances and associated GHG emissions.

Implementation of efficient working practices such as appropriately planning material movements and switching off machinery/plant when not in use enables a reduction in GHG emissions associated with the overall construction phase. All machinery and plant will also be serviced regularly.

Construction operatives will also be encouraged to car share, utilise public transport or company provided transportation, further reducing transport related greenhouse gas emissions. This will also reduce traffic volume and noise.

Where external lighting will be utilised, these will be switched off when not required, minimising electricity/fuel usage, indirectly reducing GHG emissions.

While the above measures will reduce the projects GHG emissions, elimination of GHG emissions associated with the works by virtue is not achievable, hence, the GHG emissions will contribute to anthropogenic climate change, although the likely emissions of the project are not deemed significant compared to the national emissions (Scottish Government, 2019).

CULTURAL HERITAGE AND MATERIAL ASSETS:

Disturbance, Damage and Destruction of Cultural Heritage Features

The desktop study identified several cultural heritage features within 300m of the proposed seawall works as discussed in the Cultural Heritage baseline section. None of these features are related to the proposed working area, as detailed in Appendix B Figure B1. As works will be limited to shoreline, no significant effects on cultural heritage receptors are anticipated. Nonetheless, a protocol for unknown archaeological discoveries will be implemented as part of the SEMP.

BIODIVERSITY:

The proposed A82 Croit Anna to Caledonia Seawall Repair works have the potential to affect biodiversity through several direct and indirect impacts. Potential impacts on biodiversity assessed in this section of the report include:

- Habitat loss from rock armour revetment creation.
- Loss of containment of hazardous material stored onsite.
- Disturbance of biodiversity through construction noise (terrestrial and underwater noise), lighting and human presence.

Dust impacts on biodiversity are discussed in the Air Quality Section above.

Ecological Designated Sites

Designated statutory ecological sites including Natura 2000 (including potential sites), Sites of Special Scientific Interest (SSSI) and Marine Protected Areas (MPAs) in the wider area of the proposed seawall repairs are detailed in Table 1. The proposed seawall repair works will be limited to the A82 shoreline and will not encourage on any designated sites listed in Table 1, hence, significant impacts on terrestrial ecological designated sites are not expected. Similarly, impacts on ecological marine designated sites or those with marine features are not anticipated given the large distance between the designated sites and the work site, the closest designated site being 28.4 km south-west of the development site.

Biodiversity - Loss of Containment

Accidental loss of hazardous substances like hydrocarbons (e.g. fuel and oils) has the potential to result in direct and indirect negative effects on fauna and flora. Impacts associated to pollution can be acute; high concentrations of substances may result in increased mortality rates over short periods (Chanin, 2003a; Moiseenko, 2010). Alternatively, pollution events may cause chronic impacts, with pollutants causing phenotypic plasticity or accumulation in organic tissue (particularly liver and kidney cells) and enabling transition of pollutants through the ecosystem via prey and predator relationships. Effects including behavioural changes, reduced fertility rates and lethality

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have also been reported after both short and long-term pollution exposure in fish (Moiseenko, 2010).

The proposed works will require several materials with pollution potential, notably of which include:

- Concrete;
- Cement wash; and
- Fuel, oils and chemicals including hydraulic fluid associated with construction plant and machinery

However, the accidental release of pollutants is an extreme unlikely event as pollution prevention measures will be strictly enforced on site and the relevant Pollution Prevention (PPGs) and Guidance for Pollution Prevention (GGP) will be strictly adhered to, significantly minimizing the risk of a pollution event capable of affecting flora and fauna. These are discussed in detail in the Waste, Materials and Use of Natural Resources Section. Therefore, the effect of loss of containment on fauna or flora is not anticipated to give rise to a significant effect.

Biodiversity – Underwater Noise from Construction

The mechanical placement of the rock will result in the creation of underwater noise. Rock placement operations are anticipated to have an appropriate duration of 6 months, with works being conducted between 07:00 to 19:00 to minimise in-air noise emissions as discussed in the Noise Section below. Of the 750t of rock armour, only a small volume will be placed within the water environment, reducing the potential underwater noise generation.

It is likely that if seals are present in the immediate vicinity of the works they may leave and avoid the local area of the works. This would result in a localised loss of resting and foraging habitat. However, the wider loch provides good seal habitat, meaning the lost area would be negligible in proportion to the wider Loch Linnhe. In addition, rock will be placed on the seabed instead of dropped, reducing underwater noise through a reduction of kinetic impact energy. Given the size of Loch Linnhe and the mobile nature of seals, they will be able to avoid and navigate passed areas with elevated noise levels. Therefore, disturbance to seals from underwater noise is not considered to be significant.

Underwater noise impacts on cetaceans are not anticipated as the large marine mammals are unlikely to occur in the shallow waters near the proposed works. In addition, the narrow mouth to upper Loch Linnhe at the village of Corran further reduces the likelihood of cetaceans being able to move into waters near the proposed works.

The swim bladder in Atlantic salmon, European eel and sea trout is not related to the species hearing, meaning the species are less susceptible to underwater noise than those species whose swim bladder is connected to the hearing (Popper *et al.* 2017). Given the size of Loch Linnhe and the mobile nature of diadromous fish, diadromous fish will also be able to avoid the waters immediately of the works and travel along the opposite shoreline of the loch. Therefore, underwater noise impact as a result of the proposed works on diadromous fish is not anticipated to give rise to a significant effect.

European Otter – Habitat Change

Demolition and movement of the storm damaged seawall followed by construction of the new rock armour revetment will result in a change of habitat within an area that is utilised by otter. This habitat change will result in a temporary habitat loss that is considered negligible given the wider availability of habitat and foraging grounds in Loch Linnhe. Upon completion of the works, the habitat change will result in an increased area of rock armour compared to the pre-storm managed seawall, resulting in habitat creation that is considered to have a minor positive effect at a local species population level.

The construction of Option 2 below MHWS will result in a 75m² permanent reduction of tidal foraging habitat due to the placement of rock armour placement. Due to the range of otter foraging behaviour, with some recorded up to 20 km in one night (Chanin, 2003a), and size of available suitable foraging habitat within Loch Linnhe, the loss of habitat is not considered to impact the species conservation status or be significant.

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Diadromous Fish – Fish Passage

Option 2 of the rock armour revetment creation will see rock armour installation below MHWS along the Loch Linnhe shoreline as detailed in Drawing Appendix A Figure A2. The works below MHWS will result in approximately 75m² marine habitat loss. As the works are limited along the shoreline, no barrier effects will be created as a result of the proposed work. Therefore, no impacts on migratory fish passage will occur as a result of the construction of the rock armour revetment.

Ornithology – Loss of Habitat

The construction of Option 2 below MHWS will result in a 75m² permanent reduction of tidal foraging habitat due to the placement of rock armour. The size of the lost tidal foraging habitat compared to the size of available suitable foraging habitat within wider Loch Linnhe is considered negligible, hence, tidal habitat loss is not considered to significantly impact birds and their conservation status.

Ornithology – Destruction of Nests

Demolition of the storm damaged rock armour revetment and installation of new rock revetment requires the involvement and moving around at site of heavy machinery. The rocky shore within the proposed construction boundary and storm damaged rock armour revetment have potential to support ground nesting birds. Although, the habitat for ground nesting is somewhat degraded through high anthropogenic disturbance of the stretch of shoreline in form of walkers and free running dogs. The majority of bird breeding generally occurs from March to August (inclusive), however inter-annual and species preferences do occur (SNH, 2009). If nests were there during the demolition or construction works, then there is the danger of it being accidentally destroyed. Active nests of wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), making it an offence to:

- Take, damage, destroy or interfere with a nest of any bird while it is in use or being built.
- Obstruct or prevent any bird from using its nest.
- Take or destroy an egg of any bird.

For any wild bird species listed on Schedule 1, it's also an offence to disturb:

- Any bird while it is building a nest.
- Any bird while is in, on, or near a nest containing eggs or young.
- Any bird while lekking.
- The dependent young of any bird.

As the works are intended to commence mid-January 2021, no immediate impacts on potential breeding birds are expected. However, as the works progress over the months until completion in mid July 2021 along the 860m section of shoreline, the risk of accidentally damaging or destroying an active nest increases due to breeding activity of several birds increasing from March onwards (SNH, 2009). To minimise encountering breeding birds or active nests, upon start of construction in January 2021 an active level of disturbance in the form of deterrents will be maintained along the 860m construction boundary with the aim to discourage birds of establishing nests. However, it is acknowledged that even with continues deterrent activities some birds may establish nests onsite. Therefore, prior to moving to the next 16m or 32m section of construction a breeding bird check will be undertaken of that section. Construction operatives will also be informed to be vigilant with the site supervisor to undertake continuous monitoring for breeding birds on site. Construction operatives will also be briefed via toolbox talks about potential breeding birds onsite and procedures to be undertaken if breeding birds are identified on site. If a nest is identified during the works, works in immediate vicinity of the nest are to stop and the site supervisor and BEAR Scotland NW Environmental Team are to be informed. The active nest site will be protected by imposing a construction exclusion zone, which may vary in size depending on the species of bird until an

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appropriate removal license is sought and granted by NatureScot. Such a license would only be sought if required to enable continued construction progression.

Where the above measures are implemented, no significant impact on breeding birds that could impair the affected species conservation status or population dynamics are anticipated.

Ornithology – Disturbance from Construction Noise and Human Presence

There is potential to impact wild birds using the area during the works as a result of increased anthropogenic noise associated with use of plant, machinery and equipment, including percussive tools causing noise and vibrations. It is known that construction noise and increased human presence can adversely affect wild birds, impacting physiology and behaviour of birds (Bottalico, 2016).

An avoidance response at localised scale from ornithological species that are present in the immediate vicinity of the works is anticipated due to the construction activities and arising noise. This would result in a localised loss of nesting and foraging habitat. However, the wider loch provides good foraging and ground nesting habitat, meaning the lost area would be negligible in proportion to the wider Loch Linnie. The resting and foraging habitat loss will also be temporary with the site returning to pre-storm damage seawall baseline conditions following completion of works, meaning ornithological species are likely to return upon completion of the works.

The best practice means, as defined in Section 72 of the Control of Pollution Act 1974 and BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites will always be employed to reduce noise to a minimum. Noisy activities along the 860m section of the shoreline are also not anticipated to occur simultaneously.

Subsequently, noise and vibration impacts associated with the works are not anticipated to significantly affect ornithological species, with any effects localised, temporary and not impacting the conservation status of any ornithological species.

The A82 is an active road which experiences moderate to high volumes of traffic, with summer months seeing a significant traffic increase due to an influx of tourists. Walkers with dogs also frequently utilise the shoreline of Loch Linnie within the boundaries of the proposed works for leisure purposes. Subsequently, the presence of construction operatives will not significantly deviate from the current baseline, meaning additional human presence is unlikely to cause significant disturbance to ornithological species present in the vicinity of the works that will already experience a high level of anthropogenic disturbance.

Impacts on ecological designated sites as detailed in Table 1 with ornithological qualifying features will not occur, as all works will be limited to the shoreline of Loch Linnie and all sites with ornithological qualifying features over 1 km from the works boundary.

Ornithology – Light Pollution

Excessive or misdirected artificial light during darker months or at night can adversely affect ornithological species, particularly migratory and marine species (Cabrera-Cruz, Smolinsky & Buler, 2018). Known effects on birds include phototaxis, disorientation (profoundly in migrating sea birds), alterations to reproductive physiology and selection of nesting sites (Cabrera-Cruz, Smolinsky & Buler, 2018).

Artificial lighting on the worksite along the shore of Loch Linnie may be required to facilitate safe working during winter months. However, the overall use of artificial lighting should be limited as construction hours are limited 7am to 7pm. Where lighting is required, the site lighting layout will be positioned and angled to only illuminate the localised active working areas and be temporary in nature, not shining onto the waters of Loch Linnie. Where it is identified that lighting spreads beyond the immediate construction boundary, screening will be installed to prevent light leaving the site boundary. Subsequently, artificial lighting impacts on ornithological species are not anticipated.

Benthic – Habitat Loss

Option 2 involves 75m² of rock armour installation below MHWS in order to construct the rock armour revetment which is essential to protect the A82 Trunk Road asset from further sea erosion.

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As a result of the rock armour placement 75m² of benthic habitat below MHWS will be lost. The biotope complex of the lost habitat is unknown as no benthic surveys have been completed. However, site visits by the BEAR Scotland NW Environmental Team identified the tidal habitat to comprise muddy sand with pebbles.

Sections of benthic habitat that will be lost due to rock armour installation will have been degraded through interim measures to protect A82 Trunk Road following the storm. The interim measure involved collapsed material being pulled from the sea back into the seaward side of the existing barrier via excavators. These works were undertaken via a Marine License Exemption from Marine Scotland under provision 21 (1)(c) of The Marine Licensing (Exempt Activities) (Scottish Inshore Region) Order 2011 that was granted on the 16th of January 2020.

Whilst there will be a loss of benthic flora, fauna, and habitat in the development footprint, it is not expected that this will have population level, ecosystem function or services effect on the wider Loch Linnie benthic communities, as the habitat loss is relatively small in relation to the overall area of the Loch Linnie. Therefore, the works are not anticipated to result in significant effects on the benthic habitat or ecology.

The nature of the works will also not result in benthic habitat fragmentation, which could potentially affect ecological processes (Matias *et al*, 2015), as the works are along the shoreline and not create a barrier across Loch Linnie.

Invasive Non-Native Species – Unintentional Spread of Japanese Knotweed

Site visits along the 860m project footprint identified extensive spread of invasive non-native species (INNS) Japanese knotweed along the entire length of the scheme footprint. Roots and stumps with visible buds were recorded throughout the remaining seawall and down the shore, almost to the water's edge. Rhizomes were visible in the sand extending lengthways along the beach. Old dead plants were also present in more sheltered areas. Some plant specimens along the scheme footprint are very mature and exceed 2m height. The area of Japanese knotweed infestation is situated outwith Trunk Road boundary as indicated by IRIS (software detailing land ownership). Thus, has not been previously managed by BEAR Scotland.

In Scotland, invasive non-native plant species like Japanese knotweed are covered under the Wildlife and Countryside Act 1981 (as amended by the Wildlife and Natural Environment (Scotland) Act 2012). Making it an offence to plant, or otherwise cause to grow, a plant in a wild at a location outside its native range.

Given the urgency of constructing the rock armour revetment to prevent undercutting of the A82 through erosion and delays to the project as a result of the coronavirus pandemic, making long-term measures to eradicate the INNS impossible. Indeed, the extensive and progressed colonization onsite potentially makes eradication impossible even long-term.

Therefore, instead of elimination of the INNS onsite, INNS reduction and strict biosecurity measures to prevent its spread beyond the site boundary will be implemented. BEAR Scotland during a site visit identified several sections along the 860m project footprint where the INNS is still limited and can be treated with herbicide prior to works commencing. Herbicide treatment will be in line with SEPA Technical Guidance Note - On-site management of Japanese Knotweed and associated contaminated soils (SEPA, 2008). However, research by Jones *et al* (2018) demonstrates that foliage spraying of the INNS using glyphosate-based herbicide even short-term may have some advantages, though it is acknowledged that short-term results, as would be in this case, is limited, but given the time restraint to maintain the safety of the A82 is deemed the most appropriate option.

Sections that were identified with very dense INNS growth are not suitable for herbicide treatment given the time restraints. Instead it is intended to bury the INNS in those sections beneath the rock armor revetment to be created. There is potential for the burial of the INNS to result in localized elimination, however, considering the extensive spread in the wider area is anticipated to only result in negligible positive effect.

BEAR Scotland also explored other potential management options, including removal of soils and vegetation from site for treatment, scraping of soils onsite to create a bund to allow long-term

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herbicide treatment and using onsite soil as infill. However, all these options were assessed to be unviable. Removing material from site for treatment was assessed to have unacceptable financial implications, particularly given the constraint of suitable premises capable of receiving and treating such waste. Changing the design to incorporate onsite material is also not suitable because it requires the diversion of Scottish Water Sewers and would drastically increase the project footprint below MHWS, potentially negatively affecting the environment. Finally, scrapping and storing soils onsite via bund and treating it over long periods was excluded as the safety of the bund could not be guaranteed, with it potentially being washed away through high tidal movement, spreading the INNS along the shores of Loch Linnie.

To prevent the spread of Japanese knotweed beyond the site strict biosecurity measures will be implemented, particularly since track machinery is required. These measures will include:

- Disturbance of soils and vegetation onsite, particularly Japanese knotweed itself, will be minimised as far as reasonably practicable.
- Vehicles leaving the site must be cleaned thoroughly at a designated point with run off to be maintained on site. Following cleaning of the vehicle it must be inspected by the site supervisor to ensure it is adequately cleaned to minimise the risk of spreading the INNS beyond the site boundary.
- Site operatives must clean their boots thoroughly using a brush and water every time they leave the site.
- All site operatives will also be given a toolbox talk on Japanese knotweed prior to commencing works as part of the site induction.

Where the above measures are implemented, the risk of spreading the INNS beyond the site boundary is reduced.

LANDSCAPE:

Landscape Change

During the construction phase there will be a temporary visual impact as a result of the works on the shoreline of Loch Linnie requiring earth moving vehicles (<5), traffic management, machinery and plant. However, plant, machinery and equipment will be stored onsite only temporary with works intended to be completed within 6 months, making changes to the existing baseline temporary. Throughout all stages of the works, the site will also be kept clean and tidy, with materials, equipment and wastes appropriately stored, minimising the landscape and visual effects. Any lifting plant such as cranes will lower their arm when not in use. Thus, the visual impact associated with the construction phase is not anticipated to be significant and any visual effects will be temporary in nature.

The proposed construction of Option 1 and 2 detailed in Appendix A Figure A3 will have different visual landscape effects due to different engineering actions and different viewpoints along the 860m scheme length. Removal and reconstruction of the footway and vehicle restraint system will be like-for-like resulting in no visual baseline change. Similarly, placement of backfill and installation of concrete modular blocks (Option 2) will be covered by rock armour and topsoil, making them un-visible from pedestrians using the walkway, traffic along the A82 and residential properties located to the south-east of the shoreline. In addition, installation of the rock armour will not result in a significant deviation of the baseline as the 860m shoreline contained rock armour prior to its destruction by Storm Brendan. Natural topography of the A82 Trunk Road and residential/commercial properties block the view onto the pre-storm rock armour. This topography will also block the majority of the view from the A82 Trunk Road and residential/commercial properties along the scheme extents. There is potential for sections of the rock armour that intrude into MHWS will be visible, however, these sections are small and are not anticipated to impact the visual aesthetics of the area since the rock armour blends into the natural geology of the area.

LAND USE:

Given the nature of the works and these being limited to an area of shoreline that previously comprised of a seawall, no change to land use of the local area will occur.

NOISE:

Construction Noise

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It is widely known that elevated noise over prolonged periods can cause annoyance and in extreme circumstances pose a risk to human health (European Commission, 2015). While works along the 860m by virtue will result in in-air noise emissions, the majority of the works comprises of earthworks, concrete pours and controlled lifting operations to install rock armour, all of which are operations that generate relatively low levels of noise. The nature of the works and spatial limitations mean less than 5 heavy vehicles will be operating on site at any given time. The worst-case scenario would be that all heavy plant are operating concurrently in full operational mode within the closest areas to each receptor (15m). However, in reality only a proportion of machinery will be operating at any given time, reducing noise emissions. Due to the risks involved with open excavations and tidal working, our operatives will only be working from 7am to 7pm. In addition, a one-way system will be implemented on site which will limit the number of reversing movements and the subsequent noise from any reversing alarms. Percussive noise generating operations such as saw cutting and jackhammering at times throughout the works will be required, however, these would not commence before 8am.

To minimise emissions of in-air noise as a result of the works, control measures will be incorporated into the Site Environmental Management Plan (SEMP). These measures will align with BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites and will include:

- Maintaining good communication with local residents, informing them of the proposed work schedule and times and durations of any abnormal noisy activity that may arise throughout the works.
- Only permit haulage vehicles arriving and leaving site between 7am and 7pm.
- Utilise inherently quiet plant where engineering parameters permit.
- Ensure where possible that all major auxiliary plant such as generators are sound reduced models fitted with acoustic covers which will be closed whenever the plant is in use.
- Ensure where possible all percussive tools are fitted with mufflers or silencers in line with manufacturers recommendations.
- Shut down or throttle down machinery when not in use.
- Ensure all equipment utilised on site is regularly maintained.
- Vehicles should be loaded carefully, and the drop height is to be minimised to reduce kinetic impact energy.
- All ancillary plant such as generators will be positioned so to cause minimum noise disturbance.

Where the above measures are implemented, no significant impact on residential or commercial properties are anticipated.

Non-vehicular and vehicular travellers transiting along the A82 during works, however, will be exposed to higher noise levels compared to any other receptor. But their exposure will be limited to their transiting time along the works, exposure levels decreasing exponentially as distance between works and receptors decreases. The best practice means, as defined in Section 72 of the Control of Pollution Act 1974 and BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites, as well as those detailed above will also always be employed to reduce noise to a minimum. Noisy activities are also not anticipated to occur simultaneously as works will be undertaken in 16m or 32m sections. Subsequently, noise and vibration impacts associated with the works are not anticipated to significantly affect A82 Trunk Road users.

Impact of noise on ecological designated sites and biodiversity are discussed in the Biodiversity Section.

POPULATION AND HUMAN HEALTH:

To facilitate the safety of construction operatives and allow works to be efficiently undertaken, temporary traffic management arrangements will be designed in accordance with the Traffic Signs Manual, Chapter 8, Part 1, dated 2009. Traffic management will comprise of temporary traffic lights, footway closure with appropriate diversion, heras fencing and varioguard. Advanced warning will be given to the public of the proposed traffic management and any diversions for pedestrians. BEAR Scotland is not intending to target the whole 860m scheme at once, instead at 16m or 32m sections, meaning works will be undertaken using progressive traffic management, up to 300m in length,

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reducing the length of traffic management at any one time. Traffic management will be required throughout the 6-month construction period.

Although no formally recognised cycle routes run through this section of the A82, cyclists are known to cycle along the route, especially during daylight hours in summer months, using the pavement that runs along the A82. Implementation of traffic management provisions will require blocking the pavement as this needs to be reconstructed due to undercutting by the sea which will impact pedestrians and cyclists. Equestrians, however, are unlikely to use the section given the high speeds of the A82. While closure of the pavement will reduce the mobility of pedestrians, cyclists and equestrians, measures in line with Traffic Signs Manual, Chapter 8, Part 1, dated 2009 will be implemented to create an appropriate diversion around the section of the pavement to be closed. Therefore, no significant impacts on pedestrians, cyclists and equestrians through closure of the pavement are anticipated.

Potential population and human health impacts relating to air quality and noise are discussed in Air and Climate and Noise sections respectively.

WATER:

Loss of Containment

There is potential for impacts on water quality through a loss of containment as a result of the works requiring several materials with pollution potential like concrete, fuel, oils, chemicals like hydraulic fluid associated with construction plant, machinery and equipment. If a spill were to occur along the 860m work boundary, the spill could enter Loch Linnie directly due to its proximity. The environmental impact posed by a pollutant is dependent on the type of material and quantity entering the environment.

Approximate volumes/tonnage of material with pollution potential at this stage are not known.

All material will be appropriately stored and handled in line with industry best practice and pollution prevention measures as discussed in the Waste, Materials and Use of Natural Resources Section to reduce the likelihood of a pollution event. Therefore, a loss of containment with potential to reduce water quality is very unlikely to occur.

Effects of loss of containment on biodiversity are discussed in the Biodiversity Section.

Increased Sediment Loading

Installation of the rock armour could give rise to increased sediment loading of the water column by introducing sediment stuck to rocks or through remobilisation of seabed sediment. Elevated levels of sediment in the water column are known to negatively impact water quality and biodiversity where levels are very high (Tundu *et al*, 2018; Wenger *et al*, 2017). However, all rocks to be installed will be clean and free of fines, preventing an introduction of fines into the water environment. The rocks will also be placed and not dropped, reducing impact energy on the seabed and associated resuspension of sediments. As Loch Linnie is a large tidal marine loch any remobilised/introduced sediment will quickly resettle and disperse. Considering the above, negative impacts relating to increased sediment loading of the water column are not anticipated.

Coastal Processes

Research shows that extensive or poorly placed rock armour can adversely impact abiotic and biotic factors, including changes to localised sediment movement, increased/decreased water movement, limiting influx of natural organic material and sediments during construction (Reid and Church, 2015). However, the proposed rock armour will be installed along the shoreline with only 75m² intruding into below MHWS with a maximum penetration of 1.6m. Given the small area of land take below MHWS within a shallow marine loch and limited vertical intrusion below MHWS, compared to the wider Loch Linnie, no significant effects on coastal process are anticipated.

SOILS AND GEOLOGY:

Soil and Geology Disturbance and Loss

The majority of the 860m scheme length is dominated by pebble beach with remains of the storm damaged seawall. Localised pockets of thin soils, in the early stages of natural successions with an array of vegetation and shrubs exist along the 860m scheme footprint. No trees are located along

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the scheme footprint.

As part of the demolition and construction of the new rock armour revetment, earthworks and vegetation removal operations are required along the 860m scheme length. None of the soil or vegetation on site will be taken off site due to the heavy colonisation of Japanese knotweed as discussed in the Biodiversity Section. Instead it will be redistributed on site, buried below the new rock armour revetment or incorporated in the design where engineering parameters allow. The earthworks and subsequent construction works will have direct impacts on the soils and vegetation on the site. However, given the relatively small footprint of organic soils on site and vegetation, impacts are not anticipated to be significant nor will ecosystem services be affected to a scale that has adverse ecological or human consequences.

WASTE, MATERIALS AND USE OF NATURAL RESOURCES:

Waste

The proposed project will give rise to a variety of wastes including plastics, metals and other miscellaneous material like packaging associated with both construction and welfare facilities. Wastewater from wheel washing and cleaning of concrete contaminated equipment and tools will also be created. Earthworks that give rise to soil and vegetation material are not considered as waste since it will not be taken off site due to the heavy colonisation of Japanese knotweed, discussed in Biodiversity Section.

All waste will be removed from site and disposed of safely in line with all relevant waste regulations. To ensure waste is appropriately managed the waste hierarchy (Reduce, Reuse, Recycle and Dispose) will be employed throughout the construction works. Where possible, waste production will be minimised. For example, the use of reusable cutlery, crockery and water bottles is to be provided within welfare facilities where possible. Care will be taken to only order the correct quantity of required materials, preventing disposal of unused materials. Suppliers will also be requested to minimise all packaging of materials utilised on site where possible.

In addition, facilities onsite will be provided in a designated area to enable the correct segregation of waste, maximising recycling onsite. These are to be clearly marked and labelled. Likely materials suitable for recycling include wood, glass, metals, plastics, oils and paper. Wastes not suitable for recycling will be sent to landfill or special waste treatment facilities, pending on the type of waste. All waste stored onsite will be adequately protected against the elements and vermin.

All wastes and unused materials will be removed from site in a safe manner by a licensed waste carrier upon completion of the works. The appointed waste carrier will have a valid SEPA waste carrier registration. A copy of which will be retained by BEAR Scotland. A copy of the waste transfer note is also to be provided to BEAR Scotland as early as practicably feasible and retained.

During the site induction all staff are to be informed that littering will not be tolerated. Staff are also encouraged to collect any litter seen on site.

All concrete washing will be undertaken in a designated area with full containment, preventing cement wash entering the natural surroundings. Cement washings will be captured and appropriately treated (settled out and pH corrected where required) prior to disposal off site.

All wheel washing operations related to Japanese knotweed spread prevention will be undertaken in a fully contained designated area in line with Guidance for Pollution Prevention (GPP) 13: Vehicle washing and cleaning. The arising wastewaters will be captured and be disposed off site as liquid waste.

Where the above measures are implemented, no significant impact in relation to waste is anticipated.

Fuel, Oils and Chemicals

As discussed in the Water – Loss of Containment Section, a number of pollution sources will be onsite, including fuels, oils and chemicals associated with construction works, machinery, equipment and plant. Works run directly diagonal, and in parts are below MHWS of Loch Linnie. If a loss of containment at the site were to occur, there is a risk of loss of containment entering the Loch

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Linnie. However, standard industry mitigation measures and pollution prevention measures will be strictly adhered to throughout the construction works, reducing the likelihood of pollutants entering Loch Linnie.

All onsite activities will be in accordance with relevant Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs). Specific documents relevant to works include:

- PPG 1: Understanding your environmental responsibilities – good environmental practices.
- GPP 4: Treatment and disposal of wastewater where there is no connection to the public sewer.
- GPP 5: Works and maintenance in or near water.
- PPG 6: working at construction and demolition sites.
- GPP 8: Safe storage and disposal of used oils.
- PPG 18: Managing firewater and major spillages.
- GPP 21: Pollution incident response planning.
- GPP 22: Dealing with spills.
- GPP 26: Safe storage – drums and intermediate bulk containers.

All hazardous materials will be stored in accordance with the Control of Substances Hazardous to Health (COSHH) data. Any hazardous material to be utilised onsite is also required to undergo assessment under the COSHH Regulations 2002. These assessments will contain a section on the environment which highlights any precaution and mitigation requirements.

All hazardous material onsite will be stored in a designated storage area with oils and chemical stored in appropriately bunded storage cabinets. The COSHH store will be locked with only appropriate personal having access and an inventory register being maintained.

Fuel stored on site and refuelling activities undertaken will be in line with the following:

- Only suitably double-skinned fuel bowser(s) or tank(s) in line with the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) will be utilised onsite.
- Fuel bowser(s) and/or tanks(s) must be stored away from water as far as practically possible and away from being struck by plant and machinery.
- All distribution and fuelling nozzles will be fitted with a shut-off valve.
- All refuelling activities are to be undertaken in a designated area onsite with a drip tray positioned underneath the nozzles when not in use.
- All fuel containers and nozzles are to be secured, for example with a lock when not in use.
- All staff undertaking refuelling activities are to be appropriately trained and undertake these activities in line with site refuelling procedures.
- During refuelling of smaller mobile plant, a funnel and drip trays must be used.

Generators and static plant may have the potential to leak fuel and/or other hydrocarbons and must have bunding with a capacity of 110%. If these are not available, then drip trays with a capacity of 110% must be placed beneath the equipment.

Where applicable and practicable, bio-degradable hydraulic fluids and oils should be utilised in machinery.

A spillage control procedure will be in place in which all staff are to be trained. Suitable spill kits will also be available onsite with all staff to be trained in their use. All spills must be logged and reported. In the event of a spill, all works must stop, and the incident reported to the site supervisor and the BEAR Scotland Environment Team. SEPA must also be informed of any such incident as soon as possible and within 24 hours at the latest.

Where the above measures are implemented, no significant impact in relation to fuel, oils and chemical storage or spillage are anticipated.

RISK OF MAJOR ACCIDENTS OR DISASTERS:

The nature of the works along the shoreline of Loch Linnie and between the A82 has no potential to give rise to major accidents or disasters given its small scale. However, the works will protect the

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A82 Trunk Road asset from further sea erosion and collapse, hence, is considered a positive impact on the risk of accidents.

CUMULATIVE EFFECTS:

Review of The Highland Council E-Planning website (The Highland Council, 2020) identified several planning applications within 1 km of the works that were granted over a year until the 1st of September 2020. However, all planning applications relate to residential property improvements such as conversion of a garage and construction of an extension. Given the minor nature of these residential projects, no terrestrial cumulative impacts are anticipated.

Information on marine projects at different stages (Pre-application, Application and Decision) published by Marine Scotland (Marine Scotland, 2020) were reviewed. No applications at any stage were identified within vicinity of the proposed works, hence, no cumulative impacts are anticipated. Cumulative impacts with other marine developments located further afield are also not expected considering the location, construction methods and scale of this proposed development.

Extent of EIA work undertaken and details of consultation:

The following environmental parameters have been considered within this Record of Determination:

- Air and Climate
- Cultural Heritage and Material Assets
- Biodiversity
- Landscape
- Land
- Noise
- Population and Human Health
- Water
- Soils and Geology
- Waste, Materials and Use of Natural Resources
- Risk of Major Accidents or Disasters
- Cumulative Effects

Consultation with relevant statutory consultees was deemed necessary because there are potential impacts on the environmental parameters above. However, this RoD scope only covers consultation conducted with environmental agencies. SEPA were consulted early in the process of this project with a consultation response received on the 4th of February 2020, detailing they wish to make no comments regarding the proposed works. NatureScot were also consulted early on during the project design with a response received on the 7th of February 2020, detailing "*We can advise that this proposal will not any designated sites and can confirm that any impacts on natural heritage interests would be very limited.*". Further consultation with NatureScot in relation to other activity on site and presence of Japanese knotweed was also undertaken. NatureScot advised that a Japanese knotweed Management Plan be presented that details measures to prevent the spread of the INNS beyond the scheme footprint. The Japanese knotweed Management Plan will form part of the SEMP. Marine Scotland were consulted as part of the Marine License Exemption Application process, hence, their response is not included in this document. Consultation with The Highland Council and Community Council were undertaken by the BEAR Scotland Network Team.

Appendix C provides a list of NatureScot and SEPA consultation.

Statement of case in support of a Determination that a formal EIA and EIA Report is not required:

The A82 Croit Anna to Caledonia Seawall Repair terrestrial works are deemed a relevant project under the Roads (Scotland) Act 1984 as amended by the Roads (Scotland) Act 1984

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(Environmental Impact Assessment) Regulations 2017 that:

- Working area (including traffic management) exceeds 1 ha.

Screening of this project in line with Annex III of the EU Directive 2009/31/EC as amended by EU Directive 2014/52/EU to determine whether a formal Environmental Impact Assessment (EIA) is required under the Roads (Scotland) Act 1984, amended by the Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017 was undertaken. Screening using Annex III criteria, reference to consultations undertaken, and review of available information has not identified the need for a full EIA.

The project will not have significant effects on the terrestrial environment by virtue of factors such as:

Characteristics of the scheme:

- The works will be temporary and short-term (less than 1 year in duration).
- The proposed works replace a storm damaged seawall with an improved seawall design to increase its durability.
- The scheme will have a minimal intrusion into MHWS, reducing its potential to impact flora and fauna of the marine environment.
- Works run along the shoreline of Loch Linne, meaning they by nature will not create a barrier effect or cause habitat fragmentation of the marine environment.

Location of the scheme:

- Land use will not change as a result of the works.
- Most of the proposed works are located on the existing footprint of the storm damaged seawall.
- The scheme has no ecological connectivity with any ecological designated sites.
- The scheme footprint experiences high anthropogenic disturbance in the form of walkers and the A82 Trunk Road to the south in immediate vicinity, reducing the suitability of the habitat for protective species.

Characteristics of potential impacts of the scheme:

- Any potential impacts of the works are expected to be temporary, short-term, reversible, and limited to the construction phase.
- Mitigation measures and licences will be in place to ensure no short-term or long-term significant negative impacts on biodiversity.
- Measures will be in place to ensure no short-term or long-term significant negative impact on local residents and road users.
- Measures will be in place to ensure appropriate removal and disposal of waste.
- The SEMP will include plans to address environmental incidents.
- No impacts on the environment are expected during the operational phase as a result of works.
- The scheme is designed to maintain/improve the safety of the A82 Trunk Road, which is considered to be a positive impact on human receptors.

Mitigation measures detailed above and, in the SEMP, will ensure no significant negative impacts on sensitive receptors

BEAR Scotland is also seeking a formal Screening Opinion from Marine Scotland under regulation 10(1) of The Marine Works (Environmental Impact Assessment (EIA)) Regulations 2017 to determine the requirement of an EIA to support the Marine Licence application for the proposed A82 Croit Anna to Caledonia Seawall Repair for works below MHWS.

This Screening Request Report provides information requested under Section 10 of The Marine Works (Environmental Impact Assessment (EIA)) Regulations 2017 to assist in the consideration of the screening opinion.

File references of supporting documentation: N/A

Document:

I have determined, following discussions with the Project Manager, that an EIA Report is not required for this project.

SIGNATURE: (Transport Scotland Environmental Advisor)

PRINT NAME:.....

DATE:

Authorisation to publish Notice of Determination

SIGNATURE: (Director, Trunk Road and Bus Operations)

PRINT NAME:.....

DATE:

Document:

ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION: SUMMARY

Issue	Baseline Conditions	Impact	Mitigation
Air and Climate			
Dust Emissions	<p>A review of the Air Quality in Scotland website determined that the proposed works do not lie within an Air Quality Management Area. The proposed seawall repairs are in immediate vicinity and run diagonally to the A82 Trunk Road. The A82 is a key road, connecting the north-east and south-west of the Scottish Highlands. As it is utilised by motorised and non-motorised users, itself is a human sensitivity that is an air quality influencing factor.</p> <p>The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west, opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels.</p>	<p>Earthworks – No significant effect anticipated where mitigation measures are implemented.</p> <p>Trackout – No significant effect anticipated where mitigation measures are implemented.</p> <p>Construction - No significant effect anticipated where mitigation measures are implemented.</p>	Dust
			All delivery vehicles carrying material with dust potential will be covered when traveling to or leaving the site, preventing the spread of dust beyond the work area.
			All vehicles should stick to surfaced areas and avoid encroaching on land as far as reasonably practical to limit trackout.
			Good housekeeping must be employed across the site throughout construction to prevent dust.
			Dust generated from construction activities such as rock installation and backfilling will minimised by damping down material.
			The movement of dusty material will be minimised by appropriatly planning material movements.
			Throughout the construction period qualitative monitoring of visible dust emissions and surface soiling will be conducted once each working day within the vicinity of the site boundary, by the site supervisor, all inspection results being recorded.
			The site supervisor will take note of weather forecasts to ensure that measures are in place prior to period of dry or windy weather.
			Where deemed necessary road sweepers will be employed to minimise the spread of dust/mud across the A82 Trunk Road.
			Greenhouse Gas Emissions
Cultural Heritage and Material Assets			
Disturbance, Damage and Destruction of Cultural Heritage Features	<p>Within 300m of the construction footprint multiple cultural heritage features of local value are located. These include Canmores and Historic Environment Records (Appendix B Figure B1 and Appendix B Table 1), none of which are located within the footprint of the proposed seawall repairs.</p>	<p>The desktop study identified several cultural heritage features within 300m of the proposed seawall works as discussed in the Cultural Heritage baseline section. None of these features are related to the proposed working area, as detailed in Appendix B Figure B1. As works will be limited to shoreline, no significant effects on cultural heritage receptors are anticipated. Nonetheless, a protocol for archaeological discoveries will be implemented as part of the SEMP.</p>	All works will be strictly limited to the shoreline of the new seawall.
			A protocol for archaeological discoveries will be implemented as part of the SEMP.
Biodiversity			
Biodiversity – Designated Sites	<p>Designated statutory ecological sites including Natura 2000 (including potential sites), SSSI and MPAs in the wider area of the proposed seawall repairs are detailed in Table 1.The proposed seawall repair works will be limited to the A82 shoreline and will not encourage on any designated sites listed in Table 1, hence, significant impacts on terrestrial ecological designated sites are not expected. Similarly, significant impacts on terrestrial ecological designated sites are not expected. Similarly,</p>	<p>Designated statutory ecological sites including Natura 2000 (including potential sites), SSSI and MPAs in the wider area of the proposed seawall repairs are detailed in Table 1.The proposed seawall repair works will be limited to the A82 shoreline and will not encourage on any designated sites listed in Table 1, hence, significant impacts on terrestrial ecological designated sites are not expected. Similarly, impacts on ecological marine designated sites or those with marine features are not anticipated given the large distance between the designated sites and the work site, the closest designated site being 28.4 km south-west of the development site.</p>	<p>No additional mitigation measures are required.</p>

Issue	Baseline Conditions	Impact	Mitigation
	impacts on ecological marine designated sites or those with marine features are not anticipated given the large distance between the designated sites and the work site, the closest designated site being 28.4 km south-west of the development site.		
Biodiversity – Underwater Noise from Construction	<p>Loch Linnie is likely to support habitat and migration route for several diadromous species given its wider connection to the marine environment and several freshwater systems.</p> <p>Waters along the west coast of Scotland are utilised by several marine mammal species. Loch Linnie are known to be occasionally frequented by harbour seals. Cetaceans are not anticipated to occur within the waters near the proposed seawall works given the narrow mouth of Loch Linnie at the village of Corran. Although cetaceans may occur in wider Loch Linnhe which directly connects to the wider Inner Seas off the West Coast of Scotland.</p>	<p>It is likely that if seals are present in the immediate vicinity of the works they may leave and avoid the local area of the works. This would result in a localised loss of resting and foraging habitat. Given the size of Loch Linnhe and the mobile nature of seals, they will be able to avoid and navigate passed areas with elevated noise levels. Therefore, disturbance to seals from underwater noise is not considered to be significant.</p> <p>Underwater noise impacts on cetaceans are not anticipated as the large marine mammals are unlikely to occur in the shallow waters near the proposed works. The narrow mouth to upper Loch Linnie at the village of Corran further reduces the likelihood of cetaceans being able to move into waters near the proposed works.</p> <p>The swim bladder in Atlantic salmon, European eel and sea trout is not related to the species hearing, meaning the species are less susceptible to underwater noise than those species whose swim bladder is connected to the hearing. Given the size of Loch Linnie and the mobile nature of diadromous fish, diadromous fish will also be able to avoid the waters immediately of the works and travel along the opposite shoreline of the loch. Therefore, underwater noise impact as a result of the proposed works on diadromous fish is not anticipated to give rise to a significant effect.</p>	<p>Rock to be installed below MHWS is not to be dropped but placed to reduce the kinetic impact energy.</p>
			<p>See Noise Section in this Table for further noise mitigation measures.</p>
Biodiversity – Loss of Containment	<p>The proposed works will require several materials with pollution potential, notably of which include:</p> <ul style="list-style-type: none"> Concrete; Cement wash; and Fuel, oils and chemicals including hydraulic fluid associated with construction plant and machinery. 	<p>Accidental loss of hazardous substances like hydrocarbons (e.g. fuel and oils) has the potential to result in direct and indirect negative effects on fauna and flora, impacts being able to be acute or chronic.</p> <p>However, the accidental release of pollutants is an extreme unlikely event as pollution prevention measures will be strictly enforced on site and the relevant PPGs and GPGs will be strictly adhered to, significantly minimizing the risk of a pollution event capable of affecting fauna or flora. Therefore, the effect of loss of containment on fauna or flora is not anticipated to give rise to a significant effect.</p>	<p>See Waste, Materials and Use of Natural Resources Mitigation Section in this Table.</p>
<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>
<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>

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Issue	Baseline Conditions	Impact	Mitigation
Ornithology – Disturbance from Construction Noise and Human Presence		An avoidance response at localised scale from ornithological species that are present in the immediate vicinity of the works is anticipated due to the construction activities and arising noise. This would result in a localised loss of nesting and foraging habitat. However, the wider loch provides good foraging and ground nesting habitat, meaning the lost area would be negligible in proportion to the wider Loch Linnie. The resting and foraging habitat loss will also be temporary with the site returning to pre-storm damage seawall baseline conditions following completion of works, meaning ornithological species are likely to return upon completion of the works.	exclusion zone, which may vary in size depending on the species of bird until an appropriate removal license is sought and granted by NatureScot.
		The A82 is an active road which experiences moderate to high volumes of traffic, with summer months seeing a significant traffic increase due to an influx of tourists. Walkers with dogs also frequently utilise the shoreline of Loch Linnie within the boundaries of the proposed works for leisure purposes. Subsequently, the presence of construction operative will not significantly deviate from the current baseline, meaning additional human presence is unlikely to cause significant disturbance to ornithological species present in the vicinity of the works that will already experience a high level of anthropogenic disturbance.	See Noise Section in this Table for noise mitigation measures.
Ornithology – Light Pollution		Impacts on ecological designated sites as detailed in Table 1 with ornithological qualifying features will not occur, as all works will be limited to the shoreline of Loch Linnie and all sites with ornithological qualifying features over 1 km from the works boundary.	
		Artificial lightning on the worksite along the shore of Loch Linnie may be required to facilitate safe working during winter months. However, the overall use of artificial lighting should be limited as construction hours are limited 7am to 7pm. Where lighting is required, the site lightning layout will be positioned and angled to only illuminate the localised active working areas and be temporary in nature, not shining onto the waters of Loch Linnie. Where it is identified that lightning spreads beyond the immediate construction boundary, screening will be installed to prevent light leaving the site boundary. Subsequently, artificial lightning impacts on ornithological species are not anticipated.	Lightning layout will be positioned and angled to only illuminate the localised active working area. Illuminating natural habitat must be minimised as far as reasonably possible. Where required, screens will be installed to prevent the spread of light beyond the working area.
Benthic Ecology – Habitat Loss	No information about benthic ecology could be identified. Therefore, benthic ecology within the area of intrusion was considered as a sensitivity within this report.	Whilst there will be a loss of benthic flora, fauna, and habitat in the development footprint, it is not expected that this will have population level, ecosystem function or services effect on the wider Loch Linnie benthic communities, as the habitat loss is relatively small in relation to the overall area of the Loch Linnie. Therefore, the works are not anticipated to result in significant effects on the benthic habitat or ecology. The nature of the works will also not result in benthic habitat fragmentation, which could potentially affect ecological processes, as the works are along the shoreline and not create a barrier across Loch Linnie.	No additional mitigation measures are required.
Invasive Non-Native Species – Unintentional Spread of Japanese Knotweed	The ecological survey also identified extensive spread of invasive Japanese knotweed (<i>Fallopia japonica</i>) along the entire length of the scheme footprint. Roots and stumps with visible buds were recorded throughout the remaining seawall and down the shore, almost to the water's edge. Rhizomes were visible in the sand extending lengthways along the beach. Old dead plants were also present in more sheltered areas	Site visits along the 860m project footprint identified extensive spread of invasive non-native species (INNS) Japanese knotweed along the entire length of the scheme footprint. Roots and stumps with visible buds were recorded throughout the remaining seawall and down the shore, almost to the water's edge. Rhizomes were visible in the sand extending lengthways along the beach. Given the urgency of constructing the rock armour revetment to prevent undercutting of the A82 through erosion and delays to the project as a result of the coronavirus pandemic, make long-term measures to eradicate the INNS impossible. Therefore, instead of elimination of the INNS onsite, INNS	Sections identified during the site visit must be treated with herbicide prior to works commencing. All herbicide treatment must be in line with SEPA Technical Guidance Note - On-site management of Japanese Knotweed and associated contaminated soils. Disturbance of soils and vegetation onsite, particularly Japanese knotweed itself, will be minimised as far as reasonably practicable. Vehicles leaving the site must be cleaned thoroughly at a designated point with run off to be maintained on site. Following cleaning of the vehicle it must be inspected by the site supervisor to ensure it is adequately cleaned to minimise the risk of spreading the INNS beyond the site boundary. Site operatives must clean their boots thoroughly using a brush and water every

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Issue	Baseline Conditions	Impact	Mitigation
		reduction and strict biosecurity measures to prevent its spread beyond the site boundary will be implemented. Where the measures detailed in this document are implemented, the risk of spreading the INNS beyond the site boundary is reduced.	time they leave the site. All site operatives must be given a toolbox talk on Japanese knotweed prior to commencing works as part of the site induction.
Landscape			
Landscape Change	The landscape surrounding the proposed seawall repairs is characterised by open views across Loch Linnie from south-west to north-east. Residential properties and commercial woodland plantations on high ground are located to the south. The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels.	During the construction phase there will be a temporary visual impact as a result of the works on the shoreline of Loch Linnie requiring earth moving vehicles (<5), traffic management, machinery and plant. However, plant, machinery and equipment will be stored onsite only temporary with works intended to be completed within 6 months, making changes to the existing baseline temporary. Throughout all stages of the works, the site will also be kept clean and tidy, with materials, equipment and wastes appropriately stored, minimising the landscape and visual effects. Any lifting plant such as cranes will lower their arm when not in use. Thus, the visual impact associated with the construction phase is not anticipated to be significant and any visual effects will be temporary in nature. The proposed construction of Option 1 and 2 will have different visual landscape effects due to different engineering actions and different viewpoints along the 860m scheme length. Removal and reconstruction of the footway and vehicle restraint system will be like-for-like resulting in no visual baseline change. Similarly, placement of backfill and installation of concrete modular blocks will be covered by rock armour and topsoil, making them un-visible from pedestrians using the walkway, traffic along the A82 and residential properties located to the south-east of the shoreline. Installation of the rock armour will not result in a significant deviation of the baseline as the 860m shoreline contained rock armour prior to its destruction by Storm Brendan. Natural topography of the A82 and residential/commercial properties blocked the view onto the pre-storm rock armour. This topography will also block the majority of the view from the A82 and residential/commercial properties along the scheme extends. There is potential of sections of the rock armour that intrude into MHWS will be visible, however, these sections are small and are not anticipated to impact the visual ascetics of the area since the rock armour blends into the natural geology of the area.	Throughout all stages of the works, the site must be kept clean and tidy, with materials, equipment, plant and wastes appropriately stored, minimising the landscape and visual effects. Works are to avoid encroaching on land and areas where work is not required or does not have permission to do so. This includes general works, storage of equipment/containers and parking. Mitigation detailed in the Waste, Materials and Use of Natural Resources will be strictly adhered to. Where applicable, when not in use, any crane arm should be lowered, reducing the associated landscape effect.
Land Use			
Land Use Change	The proposed works area is situated on the coastline between the A82 and Loch Linnie on the site that contained the pre-storm damaged seawall. The land comprises of rocky foreshore with rock ranging in size from small pebbles to boulders. To the north-west of the works area lies the wider Loch Linnie and to the south-east lie individual residential properties that line the A82.	Given the nature of the works and these being limited to an area of shoreline that previously comprised of a seawall, no change to land use of the local area will occur.	No additional mitigation measures are required.
Noise			
Noise – Construction Noise	Anthropogenic noise within the vicinity of the proposed works is limited to the A82 Trunk Road which carries commercial and public traffic and is a popular tourist route and residential properties located within 15m to 20m to the south-east. During periods of low to no traffic, the baseline noise in the vicinity of the works likely occurs from natural sources such as wave action and wind. Sensitive receptors to noise and vibration associated to the proposed works	While works along the 860m by virtue will result in in-air noise emissions, the majority of the works comprises of earthworks, concrete pours and controlled lifting operations to install rock armour, all of which are operations that generate relatively low levels of noise. The nature of the works and spatial limitations mean less than 5 heavy vehicles will be operating on site at any given time. The worst-case scenario would be that all heavy plant are operating concurrently in full operational mode within the closest areas to each receptor (15m). However, in reality only a proportion of machinery will be operating at any given time, reducing noise emissions. Due to the risks involved with open excavations and tidal working, our operatives will only be	The best practice means, as defined in Section 72 of the Control of Pollution Act 1974 and BS5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites will always be employed to reduce noise to a minimum. Works are only permitted to be conducted between 7am and 7pm. Where possible a one-way system will be implemented on site which will limit the number of reversing movements and the subsequent noise from any reversing alarms. All construction operatives will be briefed through toolbox talks prior to works commencing using the 'Being a Good Neighbour' toolbox talk template.

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Issue	Baseline Conditions	Impact	Mitigation
	are several residential and commercial properties bordering the A82 Trunk Road to the south-east, opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts.	<p>working from 7am to 7pm, during daylight hours. Percussive noise generating operations such as saw cutting and jackhammering at times throughout the works will be required, however, these would not commence before 8am.</p> <p>Where the measures detailed in this document are implemented, no significant impact on residential or commercial properties are anticipated.</p> <p>Similarly, with these mitigation measures no impacts on Non-vehicular and vehicular travellers transiting along the A82 during works are expected.</p>	<p>Plant, machinery and equipment are to be fitted with effective silencers. Where fitted, and where permitted under Health and Safety requirements, white noise reversing alarms should be utilised during construction.</p> <p>Where possible, inherently quiet plant should be selected for construction works. Where appropriate, pumps and generators will be sound-reduced models with fitted lined and sealed acoustic covers.</p> <p>Where percussive tools are utilised on site, these will be fitted with mufflers or/and silencers as recommended by tool manufacturer.</p> <p>All plant, machinery and tools will be well maintained, including parts relating to noise minimisation.</p> <p>All plant will be operated in such a way that minimises noise emissions and be switched off when not in use.</p> <p>All ancillary plant such as generators will be positioned so to cause minimum noise disturbance.</p> <p>Where deemed necessary, acoustic screens will be utilised.</p> <p>Percussive noise generating operations such as saw cutting and jackhammering are not permitted to be used before to 8am.</p> <p>Good communication with local residents is to be maintained, informing them of the proposed work schedule and times and durations of any abnormal noisy activity that may arise throughout the works.</p> <p>Haulage vehicles are only permitted to arrive and leave site between 7am and 7pm.</p> <p>All machinery when not in use should be shut down or throttled down.</p> <p>Vehicles should be loaded carefully, and the drop height is to be minimised to reduce kinetic impact energy.</p>
Population and Human Health			
Vehicular and Non-Vehicular Traffic	<p>The proposed seawall repairs are in immediate vicinity and run diagonally to A82 Trunk Road. The Trunk Road is a key road connecting the north-east and south-west of the Scottish Highlands. As it is utilised by motorised and non-motorised users itself is a human sensitivity.</p> <p>The proposed seawall repairs are situated within the outskirts of Fort William with several residential and commercial properties bordering the A82 Trunk Road to the west opposite of the proposed seawall repairs. Along the scheme's footprint all residential and commercial properties are located approximately a minimum of 15m to 20m from the proposed works. Commercial properties include several Bed & Breakfasts and Hotels.</p> <p>No National Cycle Network Route is located on the section of the A82 Trunk Road to which the seawall repairs relate.</p>	<p>The very nature of the works that are intended to maintain the safety of the public and A82 Trunk Road assets are considered a significant positive impact on public safety, vehicular and non-vehicular traffic upon completion of the works.</p> <p>Taking account of the transiting time through road works up to 300m in length and average annual daily vehicle flow, low to low-moderate traffic build up is anticipated. The low traffic build up is anticipated during winter months of the scheme, and the low-moderate during the spring and summer months. Considering the above, no significant impacts on public traffic on the A82 along the works location is anticipated, with traffic management measures being temporary.</p> <p>Although no formally recognised cycle routes run through this section of the A82, cyclists are known to cycle along the route, especially during daylight hours in summer months, using the pavement that runs along the A82. Implementation of traffic management provisions will require blocking the pavement as this needs to be reconstructed due to undercutting by the sea which will impact pedestrians and cyclists. Equestrians, however, are unlikely to use the section given the high speeds of the A82. While closure of the pavement will reduce the mobility of pedestrians, cyclists and equestrians, measures in line with Traffic Signs Manual, Chapter 8, Part 1, dated 2009 will be implemented to create an appropriate diversion around the section of the pavement to be closed. Therefore, no significant impacts on pedestrians, cyclists and equestrians through closure of the pavement are anticipated.</p>	No additional mitigation measures are required.
Water			
Loss of Containment	The proposed works run diagonally to Loch Linnie. Loch Linnie is a long coastal loch that covers approximately 25.3 km ² . Several small	All material will be appropriately stored and handled in line with industry best practice and pollution prevention measures as discussed in the Waste, Materials and Use of Natural Resources Section to reduce the likelihood of a	See Waste, Materials and Use of Natural Resources Mitigation Section in this Table.

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Issue	Baseline Conditions	Impact	Mitigation
	freshwater systems drain into Loch Linnie from higher grounds. The SEPA categorised Loch Linnie as having an overall good status and chemical pass in 2018.	pollution event. Therefore, a loss of containment with potential to reduce water quality is very unlikely to occur.	
Increased Sediment Loading	No designated bathing are located within vicinity of the proposed works. The closest is located on the shores of Oban, approximately 44 km south-south-west by sea from the proposed works.	Installation of the rock armour could give rise to increased sediment loading of the water column by introducing sediment stuck to rocks or through remobilisation of seabed sediment. However, all rocks to be installed will be clean and free of fines, preventing an introduction of fines into the water environment. The rocks will also be placed and not dropped, reducing impact energy on the seabed and associated resuspension of sediments. As Loch Linnie is a large tidal marine loch any remobilised/introduced sediment will quickly resettle and disperse. Considering the above, negative impacts relating to increased sediment loading of the water column are not anticipated.	All rocks to be installed are to be clean and free of fines, preventing an introduction of fines into the water environment. Rock to be installed below MHWS is not to be dropped but placed.
Coastal Processes	Loch Eil contains a protected shellfish water area, approximately 5.7km (by sea) north-west of the proposed works. A further protected shellfish water is situated 32.8 km south-west in located in Loch Leven.	The proposed rock armour will be installed along the shoreline with only 75m ² intruding into below MHWS with a maximum penetration of 1.6m. Given the small area of land take below MHWS within a shallow marine loch and limited vertical intrusion below MHWS, compared to the wider Loch Linnie, no significant effects on coastal process are anticipated.	No additional mitigation measures are required.
Soils and Geology			
Soils and Geology Disturbance and Loss	The proposed works run along the shore of Loch Linnie and are largely confined to the previous seawall structure that got destroyed by Storm Brendan and consisted of imported rock. Significant sea-swell resulting from Storm Brendon eroded and washed away much of the existing soils and geology along the scheme extends, hence, soil and geology data from the British Geological Survey is deemed to be no longer applicable. No statutorily designated geological sites were identified within vicinity of the proposed works. Seabed geology within the works footprint below MHWS is unknown.	Given the relatively small footprint of organic soils on site and vegetation, impacts are not anticipated to be significant nor will ecosystem services be affected to a scale that has adverse ecological or human consequences.	No additional mitigation measures are required.
Waste, Materials and Use of Natural Resources			
Waste	Part of the remains of the damaged seawall require demolition to facilitate the construction of the proposed works. The volume of demolished material will be minimised through design and using existing revetment debris to fill voids in the existing face via compaction as part of Option 1. Due to extensive Japanese knotweed colonisation throughout the scheme footprint, no demolished material (rock only), soils or vegetation will be taken from site, preventing spread of the invasive plant species beyond the site boundary. Removal of the old VRS will also result in moderate quantities of metal waste. Materials used to facilitate the construction predominantly consist of rock armour, concrete, road surfacing to reinstate the footpath and metal for installation of new VRSs.	The proposed project will give rise to a variety of wastes including plastics, metals and other miscellaneous material like packaging associated with both construction and welfare facilities. Earthworks that give rise to soil and vegetation material are not considered as waste since it will not be taken off site due to the heavy colonisation of Japanese knotweed, discussed in Biodiversity Section. Where the measures detailed in this document are implemented, no significant impact in relation to waste is anticipated.	Throughout the works the waste hierarchy (Reduce, Reuse, Recycle and Dispose) will be employed to minimise waste production and improve reuse and recycling rates where possible. Reusable cutlery, crockery and water bottles will be provided within welfare facilities where possible. Care will be taken to only order the correct quantity of required materials, preventing disposal of unused materials. Suppliers will be requested to minimise all packaging of materials utilised on site where possible. Facilities on site will be provided in a designated area to enable the correct segregation of waste, maximising recycling on site. These are to be clearly marked and labelled. All waste stored on site will be adequately protected against elements and vermin. Wastes not suitable for recycling will be sent to landfill or special waste treatment facilities, depending on the nature of the waste. All wastes and unused materials will be removed from site in a safe manner by a licensed waste carrier upon completion of the works. The appointed waste carrier will have a valid SEPA waste carrier registration. A copy of which will be retained by BEAR Scotland. A copy of the waste transfer

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Issue	Baseline Conditions	Impact	Mitigation
			<p>note is also to be provided to BEAR Scotland as early as practicably feasible and retained.</p> <p>During the site induction all staff are to be informed that littering will not be tolerated.</p> <p>Staff are encouraged to collect any litter seen on site.</p> <p>All concrete washing will be undertaken in a designated area with full containment, preventing cement wash entering the natural surroundings. Cement washings will be captured and appropriately treated (settled out and pH corrected where required) prior to disposal off site.</p> <p>All wheel washing operations related to Japanese knotweed spread prevention will be undertaken in a fully contained designated area in line with Guidance for Pollution Prevention (GPP) 13: Vehicle washing and cleaning. The arising wastewaters will be captured and be disposed off site as liquid waste.</p>
Fuel, Oils and Chemicals		<p>As discussed in the Water – Loss of Containment Section, a number of pollution sources will be onsite, including fuels, oils and chemicals associated with construction works, machinery, equipment and plant. Works run directly diagonal, and in parts are below MHWS of Loch Linnie. If a loss of containment at the site were to occur, there is a risk of loss of containment entering the Loch Linnie. However, standard industry mitigation measures and pollution prevention measures will be strictly adhered to throughout the construction works, reducing the likelihood of pollutants entering Loch Linnie.</p> <p>Where the measures detailed in this document are implemented, no significant impact in relation to fuel, oils and chemical storage or spillage are anticipated.</p>	<p>All on-site activities will be in accordance with relevant Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs). Specific documents relevant to works include:</p> <ul style="list-style-type: none"> • PPG 1: Understanding your environmental responsibilities – good environmental practices. • GPP 4: Treatment and disposal of wastewater where there is no connection to the public sewer. • GPP 5: Works and maintenance in or near water. • PPG 6: working at construction and demolition sites. • GPP 8: Safe storage and disposal of used oils. • PPG 18: Managing firewater and major spillages. • GPP 21: Pollution incident response planning. • GPP 22: Dealing with spills. • GPP 26: Safe storage – drums and intermediate bulk containers. <p>All hazardous materials will be stored in accordance with the Control of Substances Hazardous to Health (COSHH) data.</p> <p>Any hazardous material to be utilised on site is also required to undergo assessment under the COSHH Regulations 2002. These assessments will contain a section on environment which highlights any precaution and mitigation requirements.</p> <p>All hazardous material on site will be stored in a designated storage area with oils and chemical stored in appropriately bunded storage cabinets.</p> <p>The COSHH store(s) will be locked with only appropriate personal having access and an inventory register being maintained.</p> <p>Fuel stored on site and refuelling activities undertaken will be in line with the following:</p> <ul style="list-style-type: none"> • Only suitably double-skinned fuel bowser(s) or tank(s) in line with the CAR Regulations will be utilised on site. • Fuel bowser(s) and/or tanks(s) must be stored away from water as far as practically possible and away from being struck by plant and machinery. • All distribution and fuelling nozzles will be fitted with a shut-off valve. • All refuelling activities are to be undertaken in a designated site with a drip tray positioned underneath the nozzles when not in use. • All fuel containers and nozzles are to be secured, for example with a lock when not in use. • All staff undertaking refuelling activities are to be appropriately trained and undertake these activities in line with site refuelling procedures.

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			<ul style="list-style-type: none"> During refuelling of smaller mobile plant, a funnel and drip trays must be used. <p>Generators and static plant may have the potential to leak fuel and/or other hydrocarbons and must have bunding with a capacity of 110%. If these are not available, then trip trays with a capacity of 110% must be placed beneath the equipment.</p> <p>Where applicable and practicable, bio-degradable hydraulic fluids and oils should be utilising in machinery.</p> <p>A spillage control procedure will be in place in which all staff are to be trained.</p> <p>Suitable pill kits will also be available on site with all staff to be trained in their use.</p> <p>All spills must be logged and reported.</p> <p>In the event of a spill into the water environment, all works must stop, and the incident must be reported to the site supervisor and the BEAR Scotland Environment Team. SEPA must be informed of any such incident as soon as possible and within 24 hours at the latest.</p>
Risk of Major Accidents or Disasters			
Risk of Major Accidents or Disasters		The nature of the works along the shoreline of Loch Linnie and between the A82 has no potential to give rise to major accidents or disasters given its small scale. However, the works will protect the A82 Trunk Road asset from further sea erosion and collapse, hence, is considered a positive impact on the risk of accidents.	No additional mitigation measures are required.
Cumulative Effects			
Cumulative Effects	<p>Review of The Highland Council E-Planning website identified several planning applications within 1 km of the works that where granted over a year till the 1st of September 2020. However, all planning applications relate to residential property improvements such as conversion of a garage and construction of an extension. Given the minor nature of these residential projects, no terrestrial cumulative impacts are anticipated.</p> <p>Information on marine projects at different stages published by Marine Scotland were reviewed. No applications at any stage were identified within vicinity of the proposed works, hence, no cumulative impacts are anticipated. Cumulative impacts with other marine developments located further afield are also not expected considering the location, construction methods and scale of this proposed development.</p>		No additional mitigation measures are required.

Transport Scotland

Trunk Road and Bus Operations

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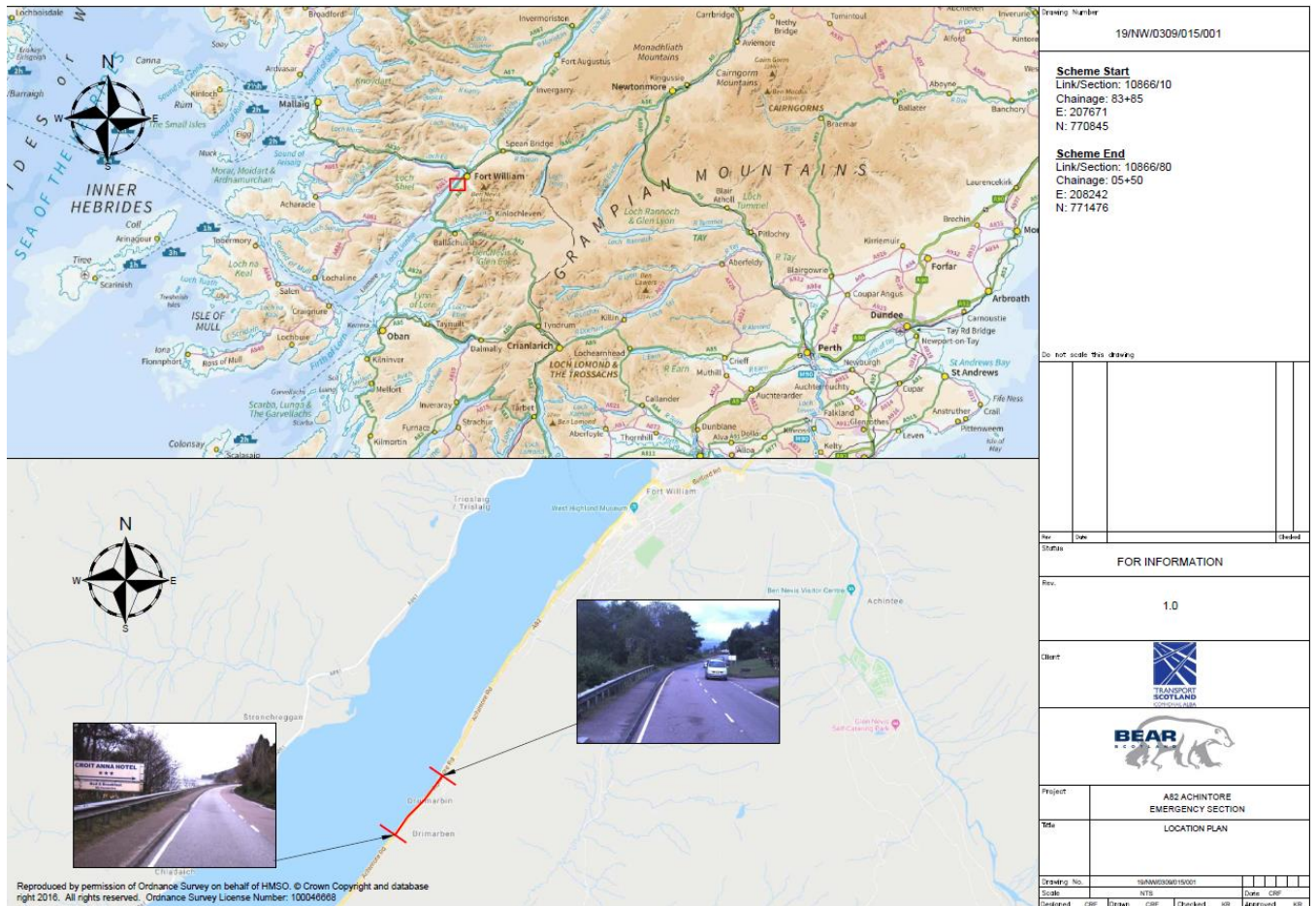
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APPENDIX A: SCHEME DRAWINGS

Figure A1: Location of scheme.

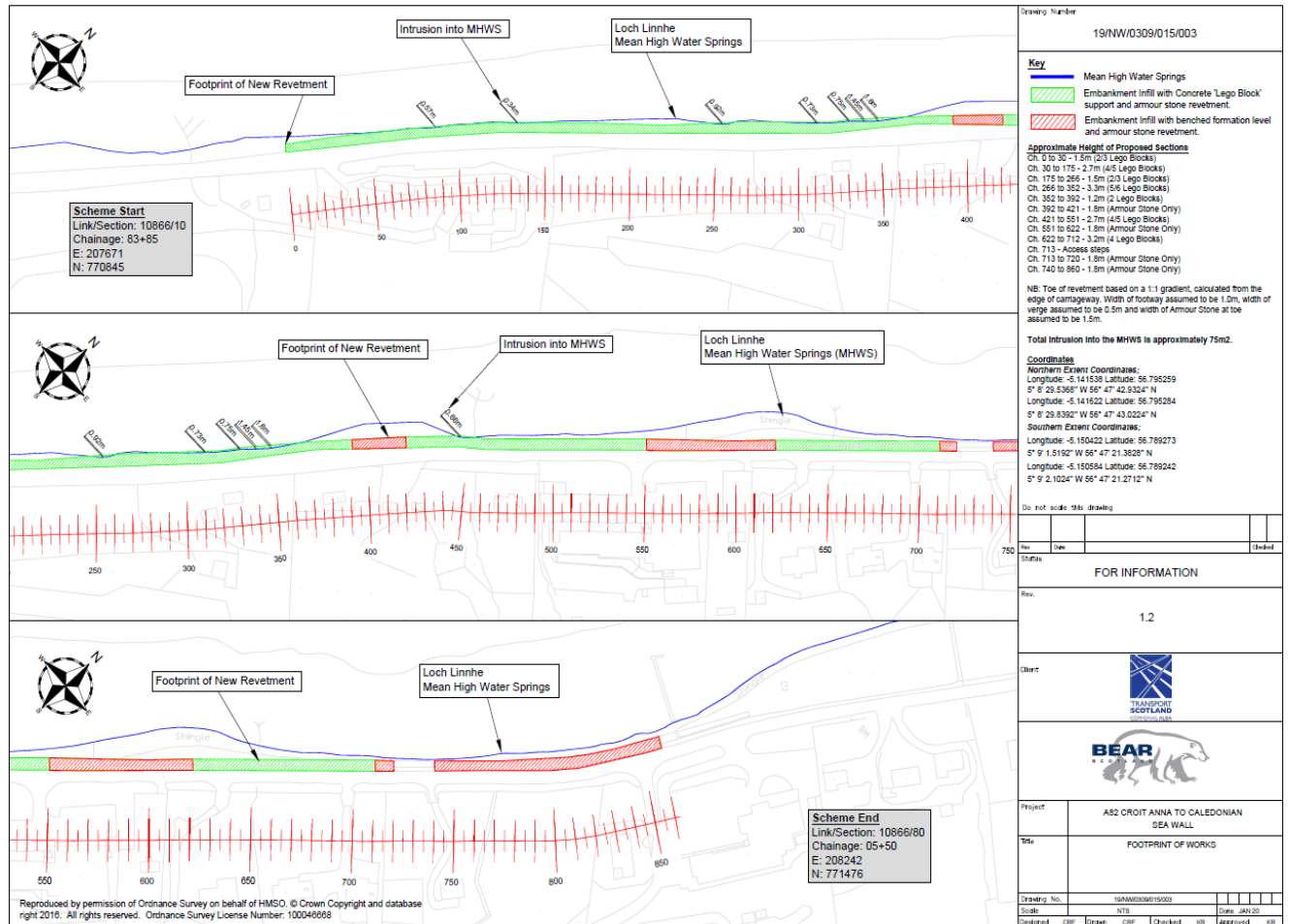


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Figure A2: Scheme plan.

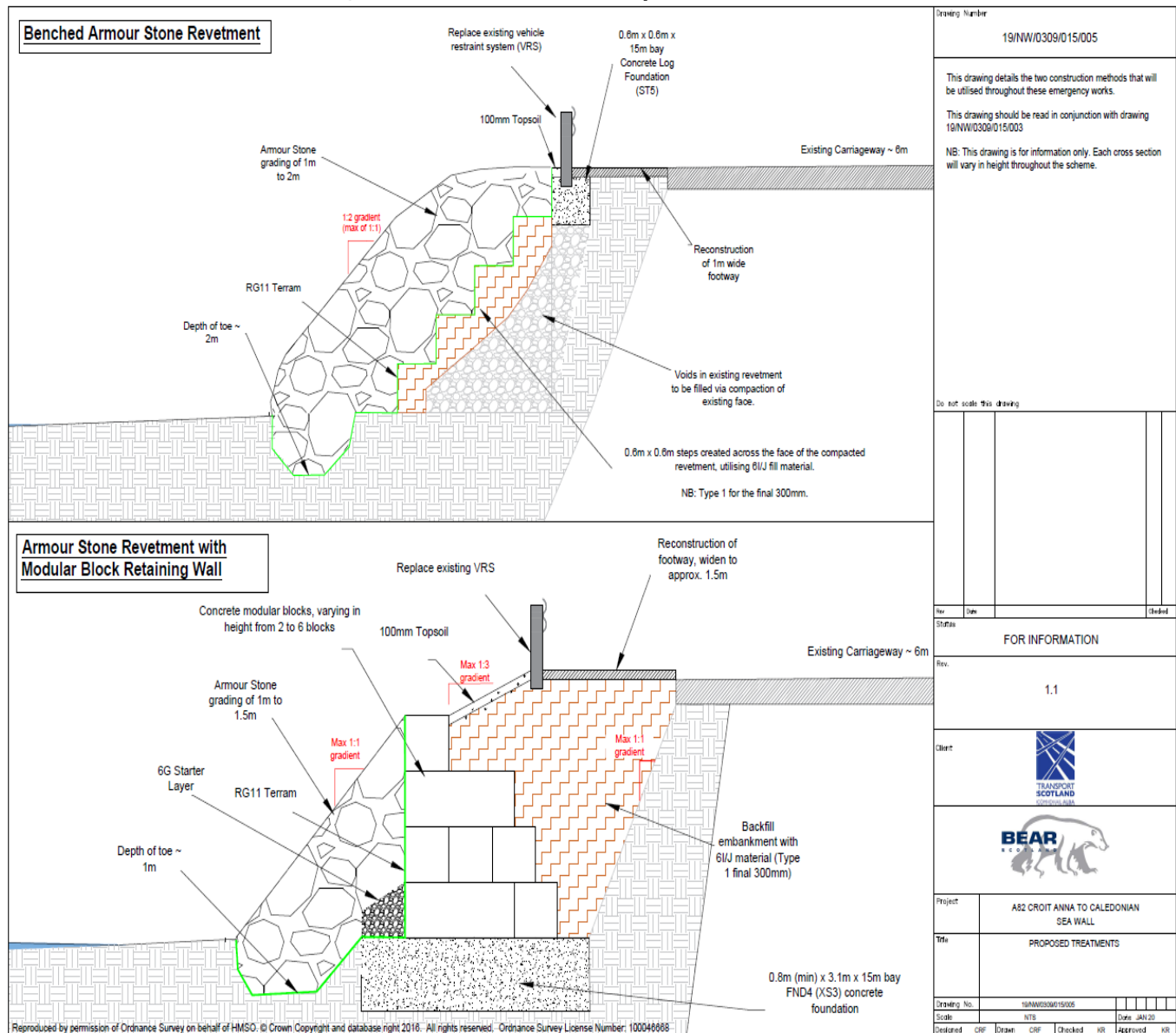


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Figure A3: Cross-section of Option 1 and 2.



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APPENDIX B: CULTURAL HERITAGE AND MATERIAL ASSETS

Figure B1: Sites of cultural heritage interest recorded within 300 m of scheme.

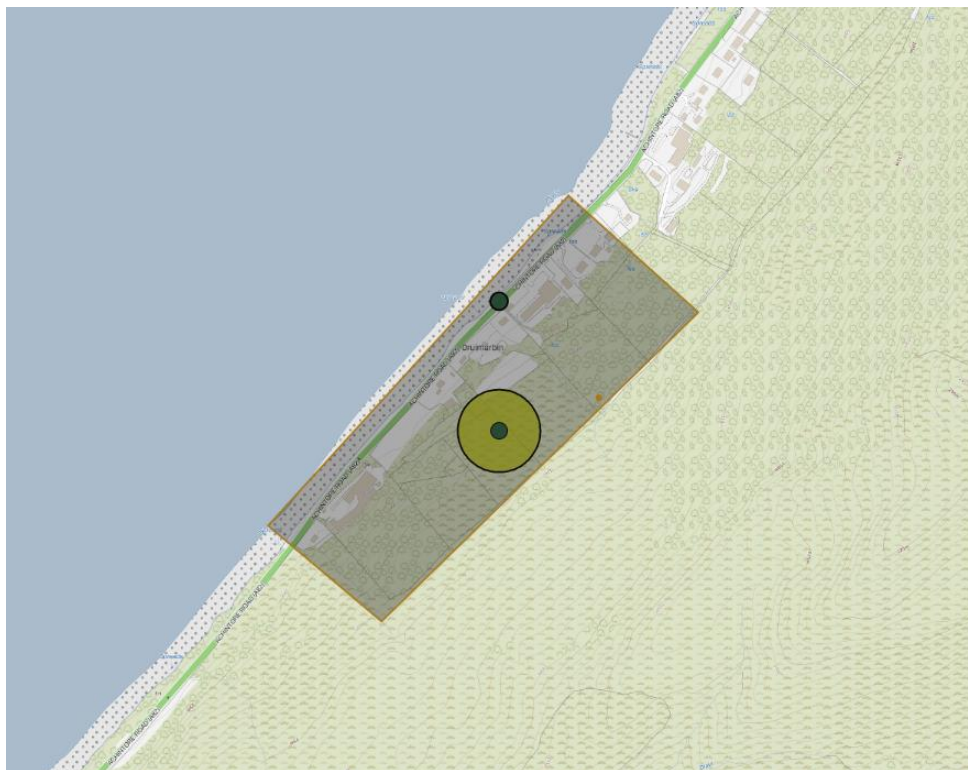


Table 1: Location of cultural heritage features within 300m of the proposed works.





Feature	Description	Location
Druimarbin	Historic Environment Record (crofting township)	NN 08000 71000
Fort William To Glencoe Military Road	Historic Environment Record (military road)	NN 08000 71220
Druimarbin	Canmore (township, period unassigned)	NN 08000 71000
Fort William - Glencoe Military Road	Canmore (military road, 18 th century)	NN 08000 71220

Document:

Appendix C: Consultation
NatureScot Consultation

RE: A82 Croit Anna to Caledonia Seawall Repair

[Redacted]
[Redacted]

 Reply  Reply All  Forward 

Mon 21/09/2020 09:27

[Redacted]

Your email to [Redacted] has found its way to me to respond.

We're pleased to see the proposed actions following your ongoing consultations and surveys. We're satisfied with your assessment on impacts to otter, and the licensing procedure will manage these impacts as described.

We note the presence of Japanese knotweed on site and immediately surrounding, and your proposals for dealing with it. We advise that an adequate knotweed plan be presented to mitigate the risks of spread and re-invasion, for the short, medium and longer terms, with an adequate ongoing monitoring system put in place. Any work should follow best practice in both the implementation and monitoring phases. Information can be found on SEPA's webpages https://www.sepa.org.uk/media/154142/onsite_mangaement_of_-japanese_knotweed_associated_soils.pdf

If you require any further information or have any queries, please get back in touch.

Le deagh dhùrachd

[Redacted]

Transport Scotland
Trunk Road and Bus Operations

Document:

[REDACTED]
Sent: 01 September 2020 15:51

[REDACTED]
Subject: RE: A82 Croit Anna to Caledonia Seawall Repair

Good Afternoon Corrina,
I hope you are well.

BEAR Scotland are currently in the process of competing the Record of Determination (RoD)/EIA screening Request for the A82 Croit Anna to Caledonia Seawall Repair scheme. We previously consulted yourself early in February 2020. Unfortunately due to the coronavirus pandemic the scheme got paused. However, it is now intended to progress with a construction start in January 2021. I note that you previously highlighted that:

"We can advise that this proposal will not any designated sites and can confirm that any impacts on natural heritage interests would be very limited."

The RoD/EIA Screening Request concurs with that view [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The survey also identified extensive Japanese knotweed growth along the entire shoreline, with section where the species has outcompeted native vegetation. Our design for the works will ensure no soil or plant material will leave the site. Instead a mixture of herbicide treatment for section where no excavations are required and cover it with rock armour, and burying using infill in others is proposed. All plant, machinery and equipment will also be thoroughly washed prior to leaving the site. While these options will not remove the invasive species from site, they will hopefully manage it a little and prevent spreading it beyond the site boundary. Herbicide treatment over several years would be the preferred option, however, inaction during the coronavirus pandemic resulted in further undercutting of the A82 and pavements running diagonally to it. Indeed, during the site visit, a section of the pavement collapsed. Therefore, long-term treatment prior to works commencing would place the A82 Trunk Road at significant risk of collapse.


Considering the new information, do you have any comments to make ? The full RoD/EIA screening will also be submitted to NatureScot for comment.

Kind regards Cornelius

Document:

FW: A82 Croit Anna to Caledonia Seawall Repair

[Redacted]

 You replied to this message on 01/09/2020 15:50.

[Redacted]

Thank you for consulting us on the above proposal. We can advise that this proposal will not any designated sites and can confirm that any impacts on natural heritage interests would be very limited.

Therefore we do not need to be consulted again on this proposal

Regards

[Redacted]

From 1 May 2020, SNH will be rebranding and changing its name to NatureScot.

[Redacted]

Transport Scotland

Trunk Road and Bus Operations

Document:

Good Afternoon Madam/Sir,

I hope you are well.

On the 15th of January 2020 BEAR Scotland Operations Team received information of a serious seawall failure as a result of Storm Brendan that raged across parts of the United Kingdom (UK), affecting England, Scotland and Wales with significant sea-swell and gusts of wind up to 80 miles per hour recorded. The seawall failure spanning 850m along the A82 Achintore Road in Fort William (see attached Drawing 19/NW/0309/015/001) poses potential danger of compromising the A82 Trunk Road asset and resulting in closure of the major road.

As an interim measure to protect the sheer face, A82 Trunk Road and the wider public utilising the asset, collapsed material was pulled back into the seaward side of the existing barrier via excavators. These works were undertaken via a Marine License Exemption from Marine Scotland under provision 21 (1)(c) of The Marine Licensing (Exempt Activities) (Scottish Inshore Region) Order 2011 that was granted on the 16th of January 2020 and provisions under the Roads (Scotland) Act 1984 (as amended).

Following emergency measures to protect the A82 and the public, BEAR Scotland intend to repair the seawall failure with a more sustainable design that includes the creation of a benched armour stone revetment (Option 1) for areas that do not intrude into mean high water springs (MHWS) and an armour stone revetment with modular block retaining wall (Option 2) for areas intruding into MHWS. The attached drawing 19/NW/0309/015/005 and 19/NW/0309/015/003 detail a cross-section of Option 1 and 2 and their constructional distribution along the 850m seawall failure respectively. The maximum MHWS intrusion of Option 2 will be 75m².

The proposed Option 1 and 2 of the A82 Croit Anna to Caledonia Seawall Repair consist of the following key components (Drawing 19/NW/0309/015/005):

Option 1:

- Filling of existing voids in revetment via compaction of existing face;
- Creation of 0.6m X 0.6m steps across the face of compacted revetment using 6I/J fill material (Type 1);
- Installation of armor stone grading of 1m to 2m with a rock armor toe depth of 2m;
- Reconstruction of 1m wide footpath; and
- Replacement of existing vehicle restraint system (VRS) via 0.6m x 0.6m x 15m concrete log foundation.

Option 2:

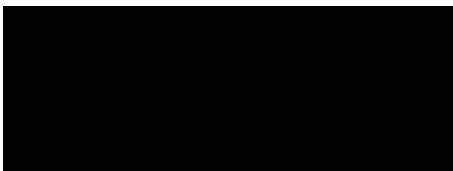
- Backfill embankment with 6I/J fill material (Type 1);
- Installation of a 0.8m (min) x 3.1m x 15m concrete foundation;
- Installation of concrete modular blocks, varying in height from 2 to 6 blocks;
- Placement of rock armor grading of 1m to 1.5m;
- Reconstruction of footpath of approximately 1.5m width; and
- Replacement of VRS.

In line with the consenting process, BEAR Scotland is in the process of seeking a formal screening opinion from Marine Scotland under regulation 10(1) of The Marine Works (Environmental Impact Assessment (EIA)) Regulations 2017 for works beneath MHWS to determine the requirement of an EIA to support the Marine Licence application for the proposed A82 Croit Anna to Caledonia Seawall Repair. Works above MHWS are will be covered by the Roads (Scotland) Act 1984 (as amended).

To ensure effectiveness of stakeholder engagement, I wanted to contact yourself to invite any comments or queries you may have on the proposed works during the early stages of the project design.

Should you require any further information please don't hesitate to contact me.

Kind regards Cornelius



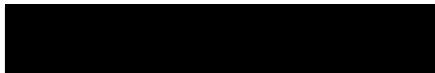
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SEPA Consultation

RE: A82 Croit Anna to Caledonia Seawall Repair



CB Argyll Hebrides & South Highland <AHSH@sepa.org.uk>



 You forwarded this message on 25/02/2020 09:22.

Thanks you for your consultation re the proposed repairs to the seawall protection on the A82 between Croit Anna and Caledonian Hotels. I can confirm that I have no comments re the proposed works.

Regards



Environment Protection Officer

(I don't work Mondays)

Scottish Environment Protection Agency
Fort William Office
Carrs Corner Industrial Estate
Lochybridge
Fort William
PH33 6TL



Transport Scotland

Trunk Road and Bus Operations

Document:

Sent: 03 February 2020 14:50

To: Admin Support Highland <AdminSupportHighland@sepa.org.uk>

Subject: A82 Croit Anna to Caledonia Seawall Repair

Good Afternoon Madam/Sir,

On the 15th of January 2020 BEAR Scotland Operations Team received information of a serious seawall failure as a result of Storm Brendan that raged across parts of the United Kingdom (UK), affecting England, Scotland and Wales with significant sea-swell and gusts of wind up to 80 miles per hour recorded. The seawall failure spanning 850m along the A82 Achintore Road in Fort William (see attached Drawing 19/NW/0309/015/001) poses potential danger of compromising the A82 Trunk Road asset and resulting in closure of the major road.

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