**Transport Scotland**
Trunk Road and Bus Operations

**Document:**

**EC DIRECTIVE 97/11 (as amended)**
**ROADS (SCOTLAND) ACT 1984 (as amended) (Environmental Impact Assessment) Regulations 2017**

**RECORD OF DETERMINATION**

| **Name of Project:** | **Location:** |
|---|---|
| A82 Meeting of Three Waters | The Meeting of Three Waters is located on the A82 Trunk Road and involves three rockfaces. These are referred to as western site (NN 18348 56242), middle site (NN 18459 56334) and eastern site (NN 18535 56400). |

**Description of Project:**

BEAR Scotland with assistance from JACOBS undertook inspections of the three rockfaces running from west to east of the Meeting of Three Waters attractions on the A82 (referred to as western, middle and eastern site from here on) following reports of debris falling onto the A82 Trunk Road, one being a rock mass of 1.2m x 1.2m x 0.5m.

To maintain the safety of the public using the A82 Trunk Road, BEAR Scotland is proposing to secure the three rockfaces via engineering options and reduce the risk of further rock fall. The engineering options for the three sites will comprise of the following:

- Western Rock face – Complete vegetation removal, including tree stump treatment to prevent re-growth, scaling by hand to remove all loose rock over an area of approximately 208m$^2$, giving rise to approximately 5m$^3$. Following scaling, 75 concealed dowels will be installed by drilling into the rock face. All turf and grasses will be reinstated.

- Middle Rock face – Removal of 325m$^3$ rock mass by rock breaking followed by reinstatement of turf and grasses.

- Eastern Rock face – Complete vegetation removal, tree stump treatment to prevent regrowth, scaling by hand to remove all lose rock over an approximate area of 464m$^2$.

BEAR Scotland is intending to progress the works in April 2021. Works would be undertaken during weekdays within daylight hours. No overnight works are proposed.

**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 (2020) contains centralised air quality data for Scotland was reviewed to establish the baseline air quality parameters in the vicinity of the proposed Meeting of Three Water works. 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 19.6 km (straight line) north-west of the proposed works. Given the location of the monitoring site and notably different land use between the sites, the results from the monitoring station are not deemed relevant to the Meeting of Three Waters works.

As the scheme is situated in a rural setting with no commercial or residential properties within 700m, air quality is anticipated to be relatively good. Due to the rural locality of the scheme the main air quality influencing factors are traffic using the A82 Trunk Road and natural land emissions.

Based on a climate model with approximately 30 km spatial resolution, the location of the rockfaces results in prevailing winds mostly occurring from west, west-south-west, south-west and south-south-west directions, with wind speeds mostly of > 17 mph for approximately 73 h/year, 94 h/year, 94 h/year and 68 h/year respectively occurring from these directions (Metoblue, 2020).

**CULTURAL HERITAGE AND MATERIAL ASSETS:**
The Historic Environment Scotland (HES) Interactive Map PastMap (2020) was utilised to establish the cultural heritage baseline within the vicinity of the proposed development. Within 300m of the proposed works no listed buildings, scheduled monuments or world heritage sites were identified. However, HES holds records of several Historic Environment Records and Canmores within 300m of the three rockfaces, none of which are related to the proposed working areas.

**BIODIVERSITY:**
**Ecological Statutory Designated Sites**
The proposed works are located in Glen Coe which contains several ecological statutory designated sites (Appendix A). Works on the western rock face are located within the boundaries the Glen Coe Special Area of Conservation (SAC) designated under the Conservation (Natural Habitats, &c) Regulations 1994. The western rock face is also situated within the Glen Coe Site of Special Scientific Interest (SSSI) designated under the Nature Conservation (Scotland) Act 2004. All three sites are located within the Glen Etive and Glen Fyne Special Protection Area (SPA) which is also designated under the Conservation (Natural Habitats, &c) Regulations 1994. Additionally, all three sites are located within the boundaries of the Glencore National Nature Reserve (NNR) (SNH, 2020a).

The Glencoe SAC covers approximately 2,967 Ha and is designated for:

- Acidic scree – unfavourable, no change (2015).
- Alpine and subalpine calcareous grasslands – unfavourable, no change (2009).
- Alpine and subalpine heaths – unfavourable recovering (2016).
- Base-rich fens – favourably maintained (2015).
- Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels – favourably maintained (2009).
- Dry heaths – unfavourably declining (2014).
- High-altitude plant communities associated with areas of water seepage – unfavourable, no change (2009).
- Montane acid grasslands – unfavourably recovering (2003).
- Mountain willow scrub – unfavourably recovering (2016).
- Plants in crevices on acid rocks – favourable maintained (2009).
- Plants in crevices on base-rich rocks – favourable maintained (2009).
- Species-rich grassland with mat-grass in upland areas - unfavourable, no change (2012).

- Tall herb communities' – favourable maintained (2014).

The Glencoe SSSI covers approximately 3,182 Ha and is designated for:

- Bryophyte assemblage – favourably maintained (2014).
- Caledonian Igneous – favourably maintained (2006).
- Fluvial Geomorphology of Scotland – favourably maintained (2006).
- Mass movement – favourably maintained (2006).
- Upland assemblage – unfavourably maintained (2009).
- Vascular plant assemblage – favourably maintained (2014).
- Wet woodland – favourably maintained (2010).

No ecological connectivity to other ecological statutory designated sites were identified (SNH, 2020a).

**Diadromous Fish**

River Coe forms part of the migratory route for multiple diadromous fish species to and from several river catchments (Baum and Smith, 2008). Diadromous fish species considered below include Atlantic salmon *(Salmo salar),* European eel *(Anguilla angeuilla)* and sea trout *(Salmo* trutta morpha *trutta).*

Atlantic salmon are widely distributed in northern Scotland. The fish are anadromous (migrate from sea but spawn in freshwater), living in freshwater systems as smolts before migrating to sea as post-smolts where they mature. Upon reaching sexual maturity at the sea, salmon return to their native rivers to spawn (Godfrey *et al*, 2014). Migratory return routes of Scottish salmon are poorly understood due to returns occurring from multiple directions. However, it is believed that the greatest returns occur from northernly and westerly marine waters.

Post-smolt runs occur from late April to late June, peaking in May (Cromarty Firth Fishery Board, 2009; Malcom *et al,* 2010). Studies by Finstad *et al* (2005) in Norwegian fjords concluded that smolts migrate at relatively shallow depth (<10m). A further sturdy undertaken in Norwegian fjords supports the findings and indicates that 49-99% of post-smolt swimming time was at 1-3m depth during daylight, suggesting light intensity may dictate swimming depth (Davidson *et al,* 2008). No data on post-smolt or grilse (salmon returning to freshwater after only one year at sea) preferred swimming depth in Scottish waters currently exists (Malcom *et al,* 2010). However, consultation undertaken by Affric Limited with the Cromarty Firth Fishery Board for the Port of Cromarty Firth Phase 3 and 4 Development identified grilse runs in the Cromarty Firth generally occur between mid-July to the end of September (Affric Limited, 2018).

Sea trout are an anadromous form of brown trout *(Salmo trutta).* Like Atlantic salmon, juvenile sea trout may spend variable number of years in freshwater catchments prior to migrating to the marine habitat. Post-smolts may also remain within estuaries for extended periods prior moving to the wider marine habitat (Malcolm *et al*, 2010). Research by Pemberton (1976) found that post-smolt migration from rivers to sea lochs/estuaries between April and early June before moving to the wider marine environment in June to July. Returning in August and September. However, the study was very localised with overall knowledge of sea trout post-smolt migration limited. Similarly, a localised study in Loch Ewe of sea trout preferred swimming depth concluded a preference of swimming within 10m of the surface, although dives up to 20m have been recorded (Malcom *et al,* 2010).

Sexually immature sea trout, nationally called finnock, are young sea trout that return to freshwater catchments after only a single year at sea. Their migration on the east coast of Scotland are well documented and generally occur between April to June (Scottish Government, 2017). Migrated

finnock remain within freshwater systems until river levels rise before moving back to sea. Subsequently, the movement back to sea by finnock is very weather depended, but generally occurs in autumn (Malcom *et al,* 2010). Swimming preferences in Scottish waters are unknown but are estimated to be <3m (Malcom *et al,* 2010).

Sexually mature sea trout migrating to river catchments must come through the Loch Linnhe to gain access to the wider River Coe as this is the only sea access. On the east coast runs generally occur from April to June (Scottish Government, 2017). Information relating to runs on the west coast could not be identified. Sea trout frequently remain within freshwater catchments until autumn, awaiting increased river levels before returning to sea (Malcom *et al*, 2010). Migratory movement of sexually mature sea trout is expected to occur during high-tide and returns during periods of ebb tide (Malcom *et al,* 2010). Sea trout swimming depth preference is influenced by seasonal variation of water temperature and light intensity, potentially also habitat (Malcom *et al*, 2010). Research in Norwegian fjords identified a mean swimming depth of 1.7m of mature sea trout with lower swimming depth preference during night-time (Eldøy *et al*, 2017). Knowledge of swimming depth preference in Scottish waters is limited but estimated to be <3m (Malcom *et al,* 2010). Similarly, migratory routes in Scottish waters are poorly understood (Malcom *et al,* 2010).

**Terrestrial Mammals**

Records on the National Biodiversity Network (NBN) over a 10-year period within 2 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.

The review of NBN identified no records of protected mammalian species within 2 km of the proposed works over a 10-year period.

**Ornithology**

Records on the National Biodiversity Network (NBN) over a 10-year period within 2 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.

Within 2 km of the proposed works 32 ornithological species records were found on the NBN network. All wild birds and their nests are protected under the Wildlife and Countryside Act 1981.

**LANDSCAPE:**

The three rockfaces are situated within the Ben Nevis and Glen Coe National Scenic Area (NSA) which covers approximately 101,600 Ha and is designated under the Planning etc. (Scotland) Act 2006. All sites provide open views all round and over vast mountain ranges. The wider area of Glen Coe experiences high volumes of tourism throughout the year, peaking in summer due to the landscape and its cultural heritage.

**LAND:**

Limited anthropogenic land use occurs within the vicinity of the proposed works and is limited to upland sheep farming, deer management for stalking and tourism. No residential or commercial properties are located within 700m of the proposed works. The closest residential property is located approximately 710m west of the western rock face (HES, 2020).

**NOISE AND VIBRATION:**

Anthropogenic noise within the vicinity of the Meeting of Three Waters scheme is limited to the A82 Trunk Road which carries commercial and public traffic. During periods of low to no traffic, the baseline noise in the vicinity of the scheme occurs from natural sources such as wind. Sensitive receptors to noise and vibration associated to the proposed works are limited uses of the A82 Trunk Road and biodiversity discussed above.

**POPULATION AND HUMAN HEALTH:**
The A82 Trunk Road that runs along the three rockfaces is an important connection for commercial, domestic and tourist traffic, providing a connection from Fort William to Glasgow. The A82 Trunk Road section near the three rockfaces particularly has high tourist traffic flow during summer months due to the historical importance of Glencoe. Transport Scotland traffic count in 2018 recorded Average Annual Daily Flow (AADF) of 3,283 vehicles in close proximity of the three sites on the A82, prominently consisting of cars (Department of Transport, 2018).

No formally recognised cycle routes run along the A82 Trunk Road through Glencoe (Ordnance Survey, 2018). However, it is known that cyclists do use the A82 through Glencoe. Equestrians are unlikely to use the section of the A82 within vicinity of the proposed works due to the high speeds, volume of traffic and rural location.

**WATER:**
River Coe is the only surface waterbody in vicinity of the western rock face. The river is located approximately 10m south of the western rock face. River Coe flows from an easterly to westerly direction and is fed by several small streams running from the mountain ranges to the north and south. The Scottish Environment Protection Agency (SEPA) categorised River Coe (ID:20325) as having an overall high status and chemical pass in 2018 (SEPA, 2019). A small unnamed stream runs approximately 15m to the north of the middle and eastern rockfaces. No water quality information for the stream could be identified.

All three sites are located within the Upper Glen Coe groundwater body (ID:150693) which covers approximately 1,394 $km^2$ and was categorised by SEPA as having an overall good status and chemical pass in 2018 (SEPA, 2019).

No surface water protected areas or private water supplies are located within vicinity of the proposed works (Dwqr, 2019).

**SOILS AND GEOLOGY:**
There are no statutorily designated geological sites within the vicinity of the proposed works. However, the western rock face is situated within the Glen Coe SSSI (Appendix A) which contains three features of geological importance. These comprise of:

- Caledonian Igneous – favourable maintained (assessed in 2006).
- Fluvial Geomorphology of Scotland – favourable maintained (assessed in 2006).
- Mass movement – favourable maintained (assessed in 2006).

The western rock face geology also supports two qualifying features of the Glen Coe SAC (Appendix A), plants in cervices on acid rocks and dry heaths. Plants in crevices on acid rocks were assessed as favourable maintained in 2009 whilst dry heaths as unfavourable declining in 2014. In the Glen Coe SAC, there is approximately 415 Ha and 282 Ha of plants in crevices on acid rocks and dry heaths habitat respectively (SNH, 2020b).

The three rockfaces are located within a complex geological area that comprises of several types of bedrock including etive dyke swarm – microdiorite, rhyolitic lava and rhyolitic tuff bedrock formations (British Geological Survey, 2020). No records of superficial soils could be identified, although the rockfaces are sparsely covered by heath and grasses.

**WASTE, MATERIALS AND USE OF NATURAL RESOURCES:**
The proposed works on the three sites will require several types of material and will give rise to

moderate quantities of waste. It is estimated that rock mass removal on the middle site and scaling of the eastern and western rockfaces will give rise to approximately 341m$^3$ of rock. 464m$^2$ of Tecco G45/2 mesh netting and 50 grid anchors will be installed at the eastern site while 75 concealed dowels will be drilled into rock at the western site. Several miscellaneous materials and wastes will also be required and generated including fuels, oils relating to machinery and packaging, including those from welfare facilities.

Material GHG content and associated effects on anthropogenic climate change are discussed in the Air Quality Section above.

**Description of the main environmental impacts of the project and proposed mitigation:**
As a result of a desktop study and site visit, issues requiring consideration have been identified and potential effects and their magnitude have then been considered. Only potential effects arising from the construction phase are considered in this Record of Determination and is based on the consideration of mitigation measures discussed in each topic section. Operational impacts are not considered given the nature of the proposed works.

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 300 m in each direction from the centre of the three rockfaces.

**AIR AND CLIMATE:**
**Construction – Dust**
As detailed in the Description of Project Section, rock mass removal and scaling works will potentially give rise to dust emissions, particularly during dry and windy conditions. For simplicity and impact assessment purposes, the rock mass removal and scaling operations 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 < 2,500m$^2$ and will use less than 5 heavy earth moving vehicles 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 (out with summer months). There is potential to stockpile broken out rock for short periods prior to removal from sites by HGVs. As broken out rock is of large granular mass potential dust emissions are unlikely and the risk is anticipated to be small.

Vehicle movements during construction works has potential to result in dust/mud track out beyond the working area and onto the wider A82 Trunk Road. Considering removal of 341m$^3$ and the use of standard 20t HGVs (8m$^3$), approximately 22 two-way HGV movements will be required. As the works will be completed over approximately 42 days, daily HGV movements are anticipated to be less than 10 a day, giving rise to a potential small risk of track out as per IAQM Guidance (2016).

As there is a potential small risk of dust emissions, a dust management plan will be implemented as detailed in the of Site Environmental Management Plan (SEMP). These 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 practical to limit track out.
- Stockpiling of broken out rock will be minimised where practicable and removed from site as soon as possible.
- Any broken-out rock material with dust potential will be kept moist, avoiding dust arising. For this a mobile water bowsers or water sprays may be required during dry weather to

dampen down the material.

- Good housekeeping must be employed across the site throughout construction to prevent dust.
- Dust generated from construction activities such as rock breaking or drilling will be minimised by damping down.
- The movement of dusty material will be minimised by appropriately 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.

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

**Construction – Greenhouse Gas Emissions**

The uses of construction material, plant, machinery and equipment for the construction 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 (packaging) required for the Meeting of Three Waters 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 martial 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 such as minibuses, 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, provided health and safety permits.

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 and Damage to Cultural Heritage Features**

The desktop study identified several cultural heritage features within 300m of the proposed Meeting of Three Waters works as discussed in the Cultural Heritage baseline section. None of these features are related to the proposed working area. As works will be limited to the three rockfaces, no significant effects on cultural heritage receptors are anticipated. Nonetheless, a protocol for archaeological discoveries will be implemented as part of the SEMP.

**BIODIVERSITY:**

The proposed works on the three rockfaces has 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 scaling (eastern and western site), removal of rock mass by rock breaking (middle site) and installation of rock fall netting on eastern site.
- Loss of containment of hazardous material stored onsite.
- Disturbance of biodiversity through construction noise, lighting and human presence.

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

**Ecological Statutory Designated Sites – Habitat Loss**

The proposed vegetation removal and hand scaling of lose material operations on the western rock face are situated within the boundaries of the Glen Coe SAC and SSSI. Vegetation removal, treatment of tree stumps to prevent regrowth and scaling by hand of lose material will be undertaken over approximately 208$m^2$ (0.0208 Ha), resulting in approximately 5$m^3$ of removed material. Consultation with Scottish Natural Heritage (SNH) concluded that the vegetation and scaling works could significantly affect two designated features of the SAC, dry heaths and plants in crevices on acid rocks (SNH, 2020b). Within the Glen Coe SAC currently there is 281.9 Ha and 415.4 Ha of dry heaths habitat and plants in crevices on acid rocks habitat respectively.

Impacts on dry heaths would be direct as a result of loss of rock through the scaling. The rock removed permanently within the SAC is situated within a polygon of 0.01 Ha of the dry heath habitat or 2%. It is estimated rock removal operations at the western site will result in approximately 0.0004 Ha loss of dry heath habitat, equating to approximately 0.0001% of dry heath habitat loss across the Glen Coe SAC. Rock removal on the western site would also directly affect the qualifying feature plants in crevices on acid rocks. The rock removal operations are situated within a polygon of 0.22 Ha of this habitat or 38%. Rock scaling and associated vegetation removal is anticipated to result in approximately 0.0079 Ha, equating to approximately 0.002% of plants in crevices on acid rocks habitat loss across the Glen Coe SAC (SNH, 2020b). Removed vegetation will be reinstated (excluding trees to avoid root penetration into the rock) within rock crevices following completion of the works, thus allowing the qualifying features to re-establish. Considering the Glen Coe SAC conservation objectives for the qualifying features, the small habitat loss resulting from the western rock face works and reinstatement of vegetation, no significant effects on the Glen Coe SAC and its qualifying features are expected. Any effects on the qualifying features is likely to be temporary until vegetation has recolonised.

Habitat loss impacts on the Glen Coe SSSI due to the works on the western rock face are similar to those on the SAC, directly affecting its qualifying features, bryophyte assemblage, upland assemblage and vascular plant assemblage. As with the Glen Coe SAC features, the habitat loss will be very small and vegetation will be reinstated, hence, effects are likely to be temporary and not impairing the sites objectives. Therefore, no significant effect on the Glen Coe SSSI is anticipated.

As the project has potential to affect several Natura 2000 sites a Habitats Regulation Appraisal (HRA) will be undertaken to support the Appropriate Assessment undertaken by the competent authority separately from this RoD in line with the Conservation (Natural Habitats, &c.) Regulations 1994.

**Diadromous Fish – Loss of Containment**

Accidental release of a hazardous substance during the construction works may enter the River Coe, resulting in contamination, potentially affecting diadromous fish (Limburg & Waldman, 2009). Impacts associated to pollution can be acute; high concentrations or substances particular hazardous to aquatic features may result in increased mortality rates over short periods (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 thought the ecosystem via prey and predator relationships (Hamilton *et al,* 2015). Effects including behavioural changes, reduced fertility rates and lethality have also been reported after both short and long-term pollution exposure in fish (Moiseenko, 2010; Hamilton *et al*, 2016).

The magnitude of impact on fish is dependent on the quantity and nature of the hazardous substance entering River Coe. Any material with pollution potential will be stored away from surface waters, hence, minimising the likelihood of it entering the watercourse. Additionally, adaption of standard industry pollution prevention measures as discussed in Section 8.11: Waste, Materials & Material Use significantly minimizes the risk of a pollution event capable of affecting fish receptors. As such, it is considered extremely unlikely for a loss of containment event to negatively impact fish receptors within or migrating through the River Coe.

**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, particularly during rock breaking to remove the protruding rock mass at the middle site. It is known that construction noise and increased human presences can adversely affect wild birds, impacting physiology and behaviour of birds (Bottalico, 2016).

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 on the three rockfaces are also not anticipated to occur simultaneously and will be temporary (approximately 42 days). Subsequently, noise and vibration impacts associated with the works are not anticipated to significantly affect ornithological species.

The A82 is an active road which experiences moderate volumes of traffic, particularly the area of proposed works given is proximity to the tourist attraction Meeting of Three Waters. 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.

**Ornithology – Light Pollution**

Excessive or misdirected artificial light at night can adversely affect ornithological species,

particularly migratory (Cabrera-Cruz, Smolinsky & Buler, 2018). Known effects on birds include phototaxis, disorientation (profoundly in migrating birds), alterations to reproductive physiology and selection of nesting sites (Cabrera-Cruz, Smolinsky & Buler, 2018).

Artificial lightning at the three rockfaces is likely required to facilitate safe working during darker months. The site lightning layout will be positioned and angled to only illuminate the localised active working areas and be temporary in nature (worse case approximately 42 days). In addition, 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.

**Ornithology - Loss of Containment**

Hazardous substances like hydrocarbons (e.g. fuel and oils) have the potential to result in direct and indirect negative effects on birds. Pending on the nature and quantity of the released hazardous substance, impacts on birds can be short-term and long-term, larger pollution events generally resulting in both short and long-term effects. Direct effects include reduced feather waterproofing and displacing of air between feathers, affecting individual specimens' buoyancy and thermoregulation. This can cause death through hypothermia, the inability to fly, dive and forage (Troisi, Barton & Bexton, 2016). High concentrations in water or bioaccumulation in prey (particularly fish) leading to ingestion or inhalation of the contaminants, causing sicknesses or death (Troisi, Barton & Bexton, 2016).

However, the accidental release of pollutants is an extremely unlikely event during the proposed works along the three rockfaces, given the nature of the works requiring limited sources with pollution potential and mitigation laid out in the Water and Waste, Materials and use of Natural Resources Section being implemented. Therefore, significant impacts on birds as a result of loss of containment are not expected.

**LANDSCAPE:**

**Landscape Change**

The proposed works on the three rockfaces will have different visual landscape effects due to different engineering actions between sites being undertaken. Operations on the western rock face will result in approximately 208$m^2$ of vegetation and loose rock removed, constituting to approximately 5$m^3$ of material. Removed vegetation will be reinstated and allowed to establish. The installed concealed dowels will not result in visual changes by virtue. Considering the small area of the works and vegetation being reinstated, landscape effects due to works on the western rock face are not anticipated to be significant. Works on the western rock face are also not anticipated to significantly affect the wider Ben Nevis and Glen Coe NSA considering the above.

On the eastern site it is proposed to undertake vegetation removal scaling by hand and installation of 464$m^2$ of rock fall netting and associated 50 rock netting anchors. The installation of the rock fall netting will result in a change of baseline. However, the landscape change is not anticipated to be significant as the rock netting will be moulded to the rock face utilising the anchors and only cover an area of approximately 464$m^2$. Similarly, impacts on the Ben Nevis and Glen Coe NSA are also not expected to be significant.

Excavation of 325$m^3$ of the 4m to 6m high protruding rock mass will result in a direct localised visual landscape impact. Following completion of the rock mass removal, the affected area will be landscaped to ensure it blends into the wider landscape. All removed vegetation and topsoil's will also be reinstated, allowing vegetation to recolonise. Considering the small area of the works and reinstatement of vegetation, a small localised visual landscape impact is anticipated, however, this is not deemed significant. The small non-significant effect from rock removal is assessed as

permanent whilst visual effects relating to vegetation removal temporary, gradually reducing as vegetation recolonises. Similarly, considering the above a small but non-significant impact on the Ben Nevis and Glen Coe NSA is anticipated.

There will also be a temporary visual impact as a result of the works requiring, traffic management, machinery and plant. However, plant, machinery and equipment will be only be onsite temporary (approximately 42 days), making changes to the existing baseline temporarily. Throughout all stages of the works, the site will 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 presence of traffic management, machinery and plant is not anticipated to be significant and any visual effects will be temporary in nature.

**LAND USE:**

**Land Use Change**

Given the nature of the works and these being limited to the three rockfaces, no change to land use of the local area will occur.

**NOISE:**

**Construction Noise**

The proposed works will utilise a range of plant, machinery and equipment, including percussive tools causing noise and vibrations, particularly during rock breaking to remove the protruding rock mass at the middle site. Elevated noise over prolonged periods can cause annoyance and in extreme circumstances pose a risk to human health (European Commission, 2015).

As the scheme is situated within a very rural setting with no residential or commercial properties within 700m, significant noise and vibration impacts on residential or commercial properties are not anticipated. In addition, local topography also acts as natural noise barriers, further reducing the spread of noise from the works.

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 three rockfaces, 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 will also always be employed to reduce noise to a minimum. Noisy activities on the three rockfaces are also not anticipated to occur simultaneously. 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:**

**Vehicular and Non-Vehicular Traffic**

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 a series of lane closures supported by a two-way traffic light system. BEAR Scotland is not intending to target all three slopes under one set up, and will target each slope under progressive traffic management set ups, reducing the length of required lane closures at any one time. As traffic management is required for each rock face, approximately 42 days of traffic management will be required to complete all three

rockfaces.

Traffic count in Glen Coe on the A82 in vicinity of the proposed works identified an average vehicle flow of 3,283 vehicles in 2018 (Department of Transport, 2018). Considering the cultural importance and aesthetic views of Glen Coe, traffic volume during summer months is anticipated to be higher due to influx of tourists compared to winter months.

Review of restrictions on the A82 identified that daytime lane closures are not permitted between the 1st of July and the 31st of August. Lane closure will also require the closure of the laybys near the popular Meeting of Three Water landmark that may negatively affect tourism, especially tourist travel operators through loss of access to the site. Subsequently, BEAR Scotland are intending to undertake works out with summer months to minimise traffic or tourism disruption. Taking account of the transiting time through road works and average annual daily vehicle flow of 3,283, the lane closure could result in low to low-moderate traffic build up. However, the average annual daily vehicle flow figure likely includes extremes from high vehicle movement during tourist season in summer months (Department of Transport, 2018). Considering the above, minor significant impacts on public traffic on the A82 along the works location is anticipated, although these will be temporary. It must be noted that works cannot commence without traffic management and the works are essential to ensure continued safety of the A82 asset and public. Impacts on tourism through loss of access to the Meeting of Three Waters is also not anticipated to be significant as works are conducted out with summer months and the layby closure is temporary.

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, and will also likely impacted by traffic management provisions. Pedestrians and Equestrians, however, are unlikely to use the section of the A82 given the rural location and any urban areas are located a significant distance away. The likelihood of their presence is also further reduced by works being undertaken out with summer months. Although were pedestrians and equestrians to use the A82 section during the construction phase, traffic management would reduce their mobility, though this is not anticipated to be significant.

**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 fuel, oils and chemicals including hydraulic fluid associated with construction plant, machinery and equipment.

If a spill were to occur at the western rock face, the spill could migrate into River Coe due to its close proximity. The environmental impact posed by a pollutant is dependent on the type of material and quantity entering the environment. Spills at the other two rockfaces are unlikely to enter surfaces waters given their absence and lack of potential pollution pathways.

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.

**SOILS AND GEOLOGY:**

**Soil and Geology Disturbance and Loss**

The proposed vegetation removal and hand scaling of lose material on the western rock face are situated within the boundaries of the Glen Coe SAC and SSSI. Vegetation removal, treatment to prevent regrowth and scaling by hand will be undertaken over approximately 208$m^2$ (0.0208 Ha), resulting in approximately 5$m^3$ of material. Consultation with Scottish Natural Heritage (SNH) concluded that the vegetation and scaling works could significantly affect two designated features of the SAC, dry heaths and plants in crevices on acid rocks (SNH, 2020b). Within the Glen Coe SAC currently there is 281.9 Ha and 415.4 Ha of dry heaths habitat and plants in crevices on acid rocks habitat respectively.

Impacts on dry heaths would be direct as a result of loss of rock through the scaling. The rock removed permanently within the SAC is situated within a polygon of 0.01 Ha of the dry heath habitat or 2%. It is estimated rock removal operations at the western site will result in approximately 0.0004 Ha loss of dry heath habitat, equating to approximately 0.0001% of dry heath habitat loss across the Glen Coe SAC. Rock removal on the western site would also directly affect the qualifying feature plants in crevices on acid rocks. The rock removal operations are situated within a polygon of 0.22 Ha of this habitat or 38%. Rock scaling and associated vegetation removal is anticipated to result in approximately 0.0079 Ha, equating to approximately 0.002% of plants in crevices on acid rocks habitat loss across the Glen Coe SAC (SNH, 2020b). Removed vegetation (excluding trees to avoid root penetration into the rock) will be reinstated within rock crevices following completion of the works, allowing the qualifying features to re-establish. Considering the Glen Coe SAC conservation objectives for the qualifying features, the small habitat loss resulting from the western rock face works and reinstatement of vegetation, no significant effects on the Glen Coe SAC and its qualifying features are expected. Any effects on the qualifying features is likely to be temporary until vegetation has recolonised.

Habitat loss impacts on the Glen Coe SSSI due to the works on the western rock face are similar to those on the SAC, directly affecting its qualifying features. As with the Glen Coe SAC features, the habitat loss will be very small and vegetation being reinstated, hence, effects are likely to be temporary and not impairing the sites objectives. Therefore, no significant effects on the Glen Coe SSSI is anticipated.

**WASTE, MATERIALS AND USE OF NATURAL RESOURCES:**

**Waste**

The Meeting of Three Waters project will give rise to a variety of wastes including rock, metals and other miscellaneous material like packaging associated with both construction and welfare facilities. Works across the three sites are anticipated to give rise of approximately 341$m^3$ of rock waste. Vegetation and topsoil's is not considered as waste due to being reinstated.

All waste will be removed from site and disposed of safely in line will all relevant waste regulations. Rock waste will be transported off-site and reused, either at other projects or at a local quarry. If broken out rock is to be reused at other schemes, a Paragraph 19 Waste Exemption would be sought under the Waste Management Licensing Amendment (Scotland) Regulations 2004.

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. Where required, litter picking of the work area will be undertaken prior to work commencing and following completion of works. Staff are also encouraged to collect any litter seen on site.

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

**Fuel, Oils and Chemicals**

As discussed in the Water Section, a number of pollution sources will be onsite, including fuels, oils and chemicals associated with construction works, machinery, equipment and plant. Works at the western rock face are in close proximity of River Coe. If a loss of containment at the site were to occur, there is a risk of loss of containment entering the watercourse. However, standard industry mitigation measures and pollution prevention measures will be strictly adhered to throughout the construction works, reducing the likelihood of pollutants entering River Coe. Spills at the other two rock faces are unlikely to enter surfaces waters given their absence and lack of potential pollution pathways.

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:

- 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 COSSH Regulations 2002. These assessments will contain a section on 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 sored 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 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 trip trays with a capacity of 110% must be placed beneath the equipment.

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

A spillage control procedure will be in place in which all staff are to be trained. Suitable pill 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 into the water environment, 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 on the three rock faces along the A82 has no potential to give rise to major accidents or disasters given its small scale. However, the works will reduce the risk of rock fall onto the A82 Trunk Road, 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 no proposed developments within 1 km of the three rock faces that could give rise to cumulative impacts.

**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. Scottish Natural Heritage were consulted and actively involved the design process to minimise environmental impacts. SEPA was not consulted as works do not involve activities that exceed General Binding Rules of the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) and, works not involving any surface waters. Consultation with The Highland Council and Community Council were undertaken by the BEAR Scotland Network Team.

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

The Meeting of Three Waters project is required to reduce the risk of rock fall onto the A82 to ensure continued safety of the public while preventing damage of the A82 Trunk Road asset. Works along the three rock faces include vegetation removal, treatment of tree stumps, scaling of loose rock by hand, installation of rock fall netting (eastern site only), installation of concealed dowels (western site only) and removal of a protruding rock mass (middle site only).

During construction, there is potential to have significant effects, however adaption of standard environmental good practice mitigation will effectively minimise these. BEAR Scotland will ensure that contactors will comply with the produced construction environmental management plan to ensure appropriate mitigation is implemented. Besides the intended mitigation, the RoD identified a potential localised minor significant effect on traffic through the intended lane closure. However, this effect will be temporary (approximately 42 days) and following completion of the works traffic flow will return to baseline levels.

The Meeting of Three Waters works is deemed a relevant project under the Roads (Scotland) Act 1984 as amended by the Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017 in that:

- Is in a sensitive location being located within the Glen Coe SAC, Glen Etive and Glen Fyne SPA, Glen Coe SSSI and Ben Nevis and Glen Coe NSA.
- Working area (including traffic management) exceeds 1 ha.

Screening of this project in line Annex 3 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 environment by virtue of factors such as:

*Characteristics of the scheme:*

- The works will be temporary and short-term (less than 6 months in duration).
- The scheme is limited to the A82 Trunk Road and the three rock faces.

*Location of the scheme:*

- Land use will not change as a result of the works.
- The scheme is not located within a densely populated area.

- The scheme has limited ecological connectivity habitats of conservation concern.
- Works are limited to three rockfaces that are unlikely to support protected species.

*Characteristics of potential impacts of the scheme:*

- The scheme will have no adverse effects on the Glen Coe SAC, Glen Etive and Glen Fyne SPA, Glen Coe SSSI and Ben Nevis and Glen Coe NSA. The Statement to Inform the Appropriate Assessment and NatureScot concur that the scheme will have no adverse impact on the Glen Coe SAC, Glen Etive and Glen Fyne SPA.
- Any potential impacts of the works are expected to be temporary, short-term, 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.

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

## Apppendix A: Ecoloigcal Statutory Designated Sites