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**EC DIRECTIVE 97/11
ROADS (SCOTLAND) ACT 1984**

RECORD OF DETERMINATION

Name of Project:

A83 Rest and Be Thankful Phases 5&6

Location:

A83 Rest and be Thankful
Watercourse 5 NN23980660
Watercourse 6 NN24010656

Description of project:

BEAR Scotland has been commissioned by Transport Scotland to carry out a suite of works to address landslide risk on the A83 trunk road at Rest and be Thankful between Tarbet and Cairndow, which has been identified as an area of high risk for landslides. The proposed works form part of an overall strategy for landslide mitigation on this section of the A83 and will be constructed in line with previous phases of works in the area. See Location Plans in Appendix A.

The selected approach for Phases 5 and 6 will involve construction of two new catch pits to intercept debris flows and replacement of two existing trunk road culverts. The pits will be constructed by excavating the soil and bedrock to push back the existing road cut rock face and excavating down to make the pit. The excavated faces will be finished in a way to make them look naturally occurring and the route of the affected watercourse will be sculpted from rock to maintain the original alignment. Where not formed in bedrock, erosion protection measures comprising of natural stone pitching in mass concrete bedding will be installed. Shotcrete will be employed on the walls of the pit where necessary to ensure its structural integrity. The trunk road culverts will be replaced with larger capacity box culverts to facilitate the flow of two unnamed tributaries of the Croe Water. A new open channel will be provided on the north side of catch pit 5 and the existing culvert for a nearby watercourse will be blocked off to direct this flow into catch pit 5. A new open channel will also be constructed linking catch pits 5 & 6 which will provide an overflow facility in the event of a landslide and any blockage of the culvert under the road. Downslope of the A83, slope reinforcement works shall be undertaken comprising of soil nails and vegetated flexible surfacing. The outfall from the new culverts will take the form of a stepped cascade of natural stone set in mass concrete. Resurfacing of the trunk road will take place on completion of the catch pitch and culvert installation.

Replacement catch fencing will be installed above the cut line and soil stabilisation measures will be introduced along with rock support where necessary.

Catch pit and culvert dimensions are given below.

Catch Pit 5 - Approximately 26040m long x 12m across base of pit (Culvert 1.5m x 2.4m x 16m long)

Catch Pit 6 - Approximately 270m long x 12 across base of pit (Culvert 1.5m x 2.4m x 16m long)

Site compounds may be set up at the Butterbridge carpark and/or the location of the existing site compound in a small quarry immediately south of the proposed works for the Phase 1 works at Rest and Be Thankful.

Traffic management will be via two-way traffic lights with a 30mph speed restriction in place. The traffic management area is estimated at 0.09hectare with a working area of 0.39 hectare.

The works are planned to commence in January 2021 to follow on from the Phase 1, Glen Kinglas Bunds and Phase 3B landslide remediation works which are planned or on-going in the area. Works are expected to take approximately 4 months to complete and will be completed by the end of April 2021. 24-hour working may be required to ensure works are completed in the timeframes specified.

Project Procurement:

The scheme is executed by the operating company as site operations – ‘As of Right’ scheme

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Description of Local Environment: The following baseline descriptions have been sequenced to follow the appropriate Design Manual for Roads and Bridges (DMRB) chapters for environmental assessment and do not reflect a ranking of sensitivity.

AIR AND CLIMATE:

There are no air quality monitoring sites near the scheme location¹; the closest monitoring site is at Greenock² which lies approximately 35km south of the scheme location. Air quality was recorded as Low (Index 1) on 11th of November 2020. The site does not lie within an Air Quality Management Area (AQMA)³.

Local air quality in the area is likely to be reasonable due to its rural location, although the trunk road corridor itself will be affected to some degree by vehicle emissions. There are no residential properties or businesses within the scheme extents. Sensitive receptors in the area include visitors utilising the nearby car parks at Rest and be Thankful viewpoint and Butterbridge.

The Phase 5 and 6 works lie within Glen Croe between Cairndow and Tarbet. The climate in Tarbet is recorded as warm and temperate. There is a great deal of rainfall in Tarbet, even in the driest month. According to Köppen and Geiger, this climate is classified as a temperate oceanic climate (Cfb). The average annual temperature is 8.4 °C in Tarbet. The rainfall here averages 1,625 mm⁴. Cairndow also has a warm and temperate climate. The rainfall in Cairndow is significant, with precipitation even during the driest month. This location is classified as Cfb and the annual temperature is 8.6 °C with about 1,730 mm of precipitation falls annually⁵. The climate at Phase 5 and 6 is expected to be similar to Cairndow and Tarbet with high volumes of rainfall throughout the year. The prevailing wind direction is from the southwest with 408 hours per year where wind speeds are at or above 12mph⁶ which is generally considered capable of mobilising and transporting dust⁷.

CULTURAL HERITAGE AND MATERIAL ASSETS:

According to Pastmap⁸, there are no Listed Buildings, Scheduled Monuments, Conservation Areas or Battlefields within 300m of the scheme extent.

The following sites of local cultural heritage interest recorded on Canmore and/or Historic Environment Record (HER) are located within 300m of the proposed works; none lie within the works footprint:

- Glen Croe, structure (possible)⁹
- Glen Croe, Quarry¹⁰
- Desk-Based Assessment And Walkover Survey: Old Military Road, Rest And Be Thankful, Argyll, Archaeological Event Record¹¹
- Mid Glen Croe, Sheepfolds; Buildings; Field-systems; Hut-circles (possible); Cairn (possible)¹²
- Walkover Survey: Rest and be Thankful, Argyll, Archaeological Event Record^{13,14}
- Dumbarton - Tarbet - Inveraray - Tyndrum Military Road, Military Road¹⁵

A few other local/regional sites of cultural heritage interest are present in the wider area; however, all lie more than 300m distant from the proposed works.

¹ <http://www.scottishairquality.scot/latest/> (Accessed 11/11/2020)

² http://www.scottishairquality.scot/latest/site-info?site_id=INC2 (Accessed 11/11/2020)

³ <https://uk-air.defra.gov.uk/aqma/maps> (Accessed 11/11/2020)

⁴ <https://en.climate-data.org/europe/united-kingdom/scotland/tarbet-64617/> (11/11/2020)

⁵ <https://en.climate-data.org/europe/united-kingdom/scotland/cairndow-484294/> (11/11/2020)

⁶ https://www.meteoblue.com/en/weather/forecast/modelclimate/cairndow_united-kingdom_2654069 (11/11/2020)

⁷ https://iaqm.co.uk/text/guidance/mineralsguidance_2016.pdf

⁸ <https://pastmap.org.uk/map> (Accessed 10/11/2020)

⁹ http://www.wosas.net/wosas_site.php?id=68815 (Accessed 10/11/2020)

¹⁰ http://www.wosas.net/wosas_site.php?id=68823 (Accessed 10/11/2020)

¹¹ http://www.wosas.net/wosas_event.php?id=4845 (Accessed 10/11/2020)

¹² http://www.wosas.net/wosas_site.php?id=44649 (Accessed 10/11/2020)

¹³ <https://canmore.org.uk/site/363452/rest-and-be-thankful> (Accessed 10/11/2020)

¹⁴ http://www.wosas.net/wosas_event.php?id=6350 (Accessed 10/11/2020)

¹⁵ http://www.wosas.net/wosas_site.php?id=21653 (Accessed 10/11/2020)

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BIODIVERSITY:

A site visit was carried out in August 2020 by Highland Ecology and Development Ltd. Results of the desk study and site visit are detailed below under the relevant headings.

Designated Sites: The southern boundary of the SPA lies approximately 3km north of the scheme location. The Beinn an Lochain Site of Special Scientific Interest (SSSI)¹⁶ lies 1.2km northwest of the proposed works at the closest point. The SSSI is notified for the following upland habitats:

- siliceous scree (includes boulder fields);
- tall herb ledge; and
- upland assemblage.

The following invasive non-native species (INNS) were also recorded in the same search criteria

- Eastern grey squirrel (*Sciurus carolinensis*)
- Japanese knotweed (*Fallopia japonica*)

There are small areas of broadleaved woodland below the site that provide some foraging habitat for bats. However, the survey area was generally open and exposed and none of the trees provided any suitable roost features.

While there are areas of suitable habitat in the wider Glen Croe area, there was no evidence of any protected species or INNS recorded within the survey area.

Habitats: Habitats in the surrounding area are primarily recorded as acid alpine, subalpine and extensive grassland with coniferous and deciduous woodland, coppice and early-stage plantations, temperate shrub heathland and montane vegetation in surrounding areas¹⁷. The slopes immediately within the scheme extents and adjacent to the trunk road are steep and covered in extensive areas of bracken (*Pteridium aquilinum*). The habitat on the south side of Glen Croe primarily comprises coniferous plantation woodlands with montane habitat above the tree line. The north side of Glen Croe comprises steep, treeless montane habitat that is grazed by sheep. No vegetative INNS were observed in the scheme footprint during survey.

Birds: Areas of scrub surrounding the scheme provide some habitat suitable for nesting birds, but no evidence of bird breeding was identified during the site visit. Works will primarily be completed outside of the key breeding bird season as works will likely commence in January 2021 and be completed by April 2021.

Fish: A fish habitat assessment survey was carried out in August 2020 following standard principles and guidelines¹⁸. The survey area encompassed 200m upstream and downstream of working areas where suitable habitat was present and where it was safe to take access. Previous consultation with the Argyll Fisheries Trust has confirmed that migratory fish cannot pass a barrier presented by the A83 trunk road on the Croe Water at NN 25400 04300; therefore, they will not be present in the headwaters upstream.

The steep nature of the slopes within and below the proposed Phases 5 and 6 work area and presence of culverts will restrict movement of fish into the area from the Croe Water below. Both unnamed watercourses within the scheme extent fan out below the site with a broken and diffuse spread across a 10-20m width over boulders and alluvial deposits. For a large section below Phases 5 and 6, there is no clearly defined channel on either watercourse. In addition, very steep drops (5-8m) below the road on both watercourses will further restrict movement of fish from the Croe Water below the site.

The main stem of the Croe Water below the site provides significant lengths of juvenile fish habitat and fast-flowing riffles, pools and glide sections.

Consultation with the Argyll Fisheries Trust advised that their fish surveys suggested that patches of the habitat in tributary streams close to the main river were utilised for spawning and nursery habitat for sea trout. Their habitat surveys also suggested that the supply of gravel and other substrates via these tributaries into the main

¹⁶ <https://sitelink.nature.scot/site/163> (Accessed 09/09/2020)

¹⁷ <https://map.environment.gov.scot/sewebmap/> [EUNIS] (Accessed 10/11/2020)

¹⁸ <https://www.sepa.org.uk/media/34306/guidance-for-applicants-on-supporting-information-requirements-for-hydropower-applications.pdf> (Accessed 18/11/2020)

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river was essential to the supply of suitable materials for spawning in the Croe Water. They highlighted the importance of culvert design in allowing some substrates to pass downstream in the longer-term to maintain spawning habitat in the lower reaches of the tributaries and in the main river.

LANDSCAPE:

The works lie within the Loch Lomond and the Trossachs National Park (LLTNP)¹⁹. The dramatic landscape is characterised by the steep mountainsides of Beinn Luibhean to the north-east and partially forested slopes of Ben Donich to the south. The immediate surrounding landscape comprises open views across Glen Croe to Ben Donich. There are areas of landslide netting in place along the A83 corridor as well as a number of fully constructed catch pits with further catch pits currently being installed.

Land surrounding the scheme location is predominantly composed of steep bracken slopes with coniferous and deciduous woodland in the wider area²⁰.

Recent works to install catch pits along the A83 at the Rest and be Thankful are ongoing at the time of writing and detailed consultation has been carried out with the LLTNP to ensure that they are satisfied with the measures in place and design adaptations to reduce landscape impacts.

LAND:

Land surrounding the scheme location is predominantly composed of steep grassland and bracken-covered slopes with coniferous and deciduous woodland in the wider area. According to the Macaulay System, the land is of limited agricultural value, falling within Land Capability for Agriculture Classes 6.1 to 7²¹: land capable of supporting only rough grazing. Land use in the wider area is primarily estate land within the LLTNP, rough grazing and coniferous forestry plantation.

The A83 is a key route for commuter, local and tourist traffic in the area and there are a number of laybys and viewpoints along the A83.

POPULATION AND HUMAN HEALTH:

The scheme passes through a rural area and there are no residential properties or businesses within the scheme extents. There are a few laybys along the A83 trunk road to the north and south of the scheme extents. Other sensitive receptors are as detailed in the Air and Climate section.

There are no National Cycle Networks (NCN) Routes²², Core Paths²³ or paths recorded on WalkHighlands²⁴ within the scheme extents. Nevertheless, long distance cyclists may use the trunk road. Equestrians are unlikely to use the A83 at this location, due to the high-speed nature of the traffic and the availability of more appropriate trails and bridleways in the wider surrounding countryside. There is a single path recorded on WalkHighlands, Beinn Luibhean²⁵, which originates at a small car park approximately 670m south along the A83 trunk road, where the Croe Water passes under the road. This car park will remain open for the duration of the proposed works and access to this walking route will not be restricted.

The A83 provides the main link between Tarbet and Campbeltown. It is frequently affected by landslide events, necessitating a diversion route along the Old Military Road through Glen Croe when the A83 is impassable. There is a car park at Rest and Be Thankful which provides a parking area and viewpoint for visitors to the area.

¹⁹ <https://sitelink.nature.scot/site/8621> (Accessed 18/11/2020)

²⁰ <https://map.environment.gov.scot/sewebmap/> [EUNIS] (Accessed 18/11/2020)

²¹ http://www.hutton.ac.uk/sites/default/files/files/soils/lca_leaflet_hutton.pdf

²² <https://osmaps.ordnancesurvey.co.uk/ncn/56.23951,-4.91441,12> (Accessed 11/11/2020)

²³ <https://www.argyll-bute.gov.uk/where-go-outdoors> (Accessed 11/11/2020)

²⁴ <https://www.walkhighlands.co.uk/lochlomond/arrochar.shtml> (Accessed 11/11/2020)

²⁵ <https://www.walkhighlands.co.uk/lochlomond/beinn-luibhean.shtml> (Accessed 11/11/2020)

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WATER:

The scheme falls within the Cowal and Lomond groundwater body²⁶, which was classified by SEPA in 2018 as having 'Good' overall condition. It is also within Ground and Surface Drinking Water Protected Areas²⁷.

The main hydrological feature in proximity to the proposed works is the Croe Water²⁸, 300m south-west of the A83 trunk road. Croe Water was classified by SEPA in 2018 as having an overall condition of 'Moderate'. The two watercourses around which works are proposed are tributaries of the Croe Water and are not recorded by SEPA. They will both be re-sectioned to form the catch pits and existing culverts carrying these watercourses under the trunk road will be replaced as part of the proposed works.

Detailed consultation has been carried out with SEPA and a variation to Controlled Activities Regulations (CAR) licence CAR/S/1187572 has been made to authorise the proposed culverting and re-sectioning works. This CAR licence was originally granted for Phase 1 works and in agreement with SEPA has been varied to include Glen Kinglas Bunds and Phases 5 and 6.

GEOLOGY AND SOILS:

There are no Geological Conservation Review Sites (GCRS) within 300m of the scheme extents. The Cobbler (Beinn Artair) GCRS is located approximately 2km southeast of the proposed works²⁹.

Soils within the scheme extent are recorded as peaty podzols³⁰. Superficial deposits within the scheme extent are recorded as Till - Diamicton³¹. Bedrock within the scheme extent is Beinn Bheula Schist Formation - Pelite, Semipelite And Psammite, which is a metamorphic bedrock³².

WASTE, MATERIALS AND USE OF NATURAL RESOURCES:

Waste materials will comprise rock and soil excavated to construct catch pits and waste concrete from the old culverts. The final destination for these materials is yet to be confirmed; however, all relevant SEPA exemptions and consents will be in place to ensure the material is suitable for its given purpose and that all appropriate regulatory processes have been followed.

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, their magnitude and overall significance (based on the sensitivity of receptor) have then been considered. Effects have been split into construction and operational effects and the magnitude of effect is based on consideration of mitigation measures noted in Table 1: Environmental Impacts and Proposed Mitigation Summary.

The following headings have been set out to follow DMRB chapters for environmental assessment and do not reflect a ranking of impact severity. '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 centre of the road.

²⁶ <https://map.environment.gov.scot/sewebmap/> [Groundwater Classification] (Accessed 09/09/2020)

²⁷ <https://map.environment.gov.scot/sewebmap/> [DWPA Ground/Surface] (Accessed 09/09/2020)

²⁸ <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> (Accessed 18/11/2020)

²⁹ <https://map.environment.gov.scot/sewebmap/> [GCRS] (Accessed 09/09/2020)

³⁰ <http://mapapps2.bgs.ac.uk/ukso/home.html> [Soils of Scotland] (Accessed 18/11/2020)

³¹ <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Superficial] (Accessed 09/09/2020)

³² <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> [Bedrock] (Accessed 09/09/2020)

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AIR AND CLIMATE:

There is potential for temporary impacts on air quality during construction as a result of activities such as excavation of catch pits, transportation of materials, the presence of construction traffic and vehicles idling on site.

Provided the following mitigation measures are adhered to during the works, impacts on air quality during construction are not anticipated to be significant.

- A designated laydown area will be established on level ground away from the excavation and works.
- All materials will be stored in the laydown area and only moved to site when they are required.
- Prolonged storage of debris on site exposed to wind should be avoided. Materials should be wetted down or covered when exposed to wind for lengthy periods of time.
- All delivery vehicles carrying material with dust potential will be covered when traveling to or leaving site, preventing the spread of dust beyond the work area.
- Material stockpiles will be reduced as much as reasonably practicable by using a 'just in time' delivery system. All material will also be stored on made ground (e.g. within the A83 carriageway boundary) and 10m away from potential pollution pathways such as drains and watercourses where feasible.
- Materials should be removed from site as soon as is practical.
- Vehicles removing excavation materials must have their loads effectively covered.
- All plant, machinery and vehicles associated with the scheme must be maintained to the appropriate standards and must switch their engines off when not in use.
- Where possible, materials are to be sourced locally to reduce greenhouse gas emissions associated with materials movement.
- Cement bags will remain closed when not in use to prevent cast off to the surrounding environment.
- The movement of dusty material will be minimised by appropriately planning material movements.
- Any stockpiled material on site, such as rock, will be monitored daily to ensure no risks of dust emissions exists. Where a risk of dust emissions exists from stockpiles, these are to be dampened down. This is likely to require the use of mobile water bowsers.
- Good housekeeping will be employed throughout the works.

The proposed works are not expected to affect air quality during the operation phase as there will be no significant change in traffic levels or dynamics at this location.

CULTURAL HERITAGE AND MATERIAL ASSETS:

The working area will be confined to the hillside adjacent to the trunk road boundary. There are no sites of cultural heritage interest recorded within the footprint of the works area. Provided the following mitigation measures are adhered to, potential impacts on cultural heritage during construction are not anticipated to be significant.

- If there are any unexpected archaeological finds, works will stop temporarily in the vicinity, the area will be cordoned off and a member of the BEAR Environment team will be contacted for advice.
- Laydown area will be sensitively located to avoid areas of cultural heritage interest.
- There will be no storage of plant, materials or equipment against buildings, bridges, walls or fences.

The works are not anticipated to result in significant impacts on cultural heritage interests during the construction or operational phase.

BIODIVERSITY:

Designated Sites:

The works lie 3km distant from the Glen Etive and Glen Fyne SPA. Consultation with NatureScot (formerly SNH) in August 2020 has confirmed no LSE on the Glen Etive and Glen Fyne SPA..

Beinn an Lochain SSSI is 1.2km distant from the works at the closest point. The site is notified for upland habitats. Due to the nature of the proposed works, their proximity to the trunk road, and the non-motile nature of the notified features, no impacts on the SSSI are expected.

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Provided that the following mitigation measures are followed during construction, impacts on designated sites are not anticipated to be significant.

- Artificial lighting used during hours of darkness should be restricted to the immediate working area and should be directed away from areas of suitable habitat (e.g. watercourses, woodland, shrubs) as far as is safe and reasonably practicable.
- There will be no blasting or use of cranes for the duration of construction.

During the operation phase, no significant impacts on designated sites are expected.

Terrestrial mammals:

There are small areas of broadleaved woodland below the site that provide some foraging habitat for bats. However, the survey area was generally open and exposed and none of the trees provided any suitable roost features.

While there are areas of suitable habitat in the wider Glen Croe area, there was no evidence of any protected species or INNS recorded within the survey area.

Provided that the following mitigation measures are followed during construction, impacts on terrestrial mammals are not anticipated to be significant.

- An Environmental Clerk of Works (ECoW), provided by the contractor, will attend site during set up of the site compounds and will attend site fortnightly for the first three months of construction and monthly thereafter, as a minimum. More frequent visits may be required during sensitive site activities (e.g. culvert installation, reinstatement, concrete pouring). The ECoW will advise on the suitability and effectiveness of pollution prevention measures. If required, the ECoW will have the power to conduct audits of the site at any time and stop works should any breach of the Construction Environmental Management Plan (CEMP) or CAR licence conditions be identified. The ECoW will carry out pre-construction surveys as required in advance of works. The ECoW will provide advice and recommendations to the contractor and will produce an ECoW report for submission to BEAR Scotland on a monthly basis.
- Encroachment onto terrestrial or aquatic areas will not be tolerated.
- Site personnel are instructed not to approach or touch any animals seen on site.
- Site personnel should remain vigilant for the presence of protected species and nesting birds over the works period.
- Measures to be implemented to protect the aquatic environment are detailed in Section 10: Road Drainage and Water Environment.
- Tracking of machinery through watercourses will not be permitted.
- No discharges into any watercourses or drainage systems are permitted.
- All construction operatives are to be briefed through toolbox talks prior to works commencing using the toolbox talks. The talks are to specifically cover ecology, field signs of protected species, and legislation. Briefings are to be clear and unambiguous, with all staff informed to stop works where a concern is raised. Works may not commence until advice from an appropriately qualified ecologist is sought and appropriate mitigation is in place, where required.
- Where protected mammals are encountered or move within 50m of the active works, works will cease until the animal(s) move further away than 50m from the construction site or until the contractor's ECoW can provide advice.
- All material, machinery and equipment will be subject to checks for resting mammals daily prior to any works commencing to prevent entrapment or injury of any mammals.
- A 'soft start' will be implemented on site each day. This will involve switching on vehicles and checking under/around vehicles and the immediate works area for mammals prior to works commencing to ensure none are present and that there is a gradual increase in noise.
- Any excavations, exposed pipes/drains, or areas where an animal could become trapped (e.g. storage containers) will be covered over when not in use, at the end of each shift, and following completion of the works to avoid animals falling in and becoming trapped
- If fencing is utilised at any point during the works, a gap of 200mm from ground level must be provided, allowing free passage for mammals and preventing entrapment.

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- Artificial lighting used during hours of darkness should be restricted to the immediate working area and should be directed away from areas of suitable habitat (e.g. watercourses, woodland, shrubs) as far as is safe and reasonably practicable.
- If any vegetation clearance or tree trimming is necessary during the breeding bird season, a nesting bird check will be carried out by the ECoW prior to vegetation clearance.
- If an active bird nest is found in the vicinity of works, all works within 30m of the nest must stop until the contractor's ECoW can provide advice.

During the operational phase, impacts on terrestrial mammals are considered to be non-significant due to the lack of suitable habitat within the vicinity of the works.

Habitats:

Habitats in the surrounding area are primarily recorded as acid alpine, subalpine and extensive grassland with coniferous and deciduous woodland, coppice and early-stage plantations, temperate shrub heathland and montane vegetation in surrounding areas. The slopes immediately within the scheme extents and adjacent to the trunk road are steep and covered in extensive areas of bracken.

The proposed works will result in some loss of habitats which are ubiquitous in the wider area. Therefore, the loss of small areas of these habitats compared to the wider area is not expected to be significant.

Provided that the following mitigation measures are followed during construction, impacts on habitats are not anticipated to be significant.

- Construction methods will take place sensitively to reduce as far as possible encroachment of plant and machinery on habitats outside of the work footprint.
- All culvert and drainage construction will be as per the design to avoid altering water flows into or out of surrounding habitats.
- Material storage areas and site compound will be sited sensitively to avoid requirement for further land take. Where practical, this will be in existing hardstanding areas on level ground.
- An ECoW, provided by the contractor, will attend site during set up of the site compounds and will attend site fortnightly for the first three months of construction and monthly thereafter, as a minimum. More frequent visits may be required during sensitive site activities (e.g. culvert installation, reinstatement, concrete pouring). The ECoW will advise on the suitability and effectiveness of pollution prevention measures. If required, the ECoW will have the power to conduct audits of the site at any time and stop works should any breach of the CEMP or CAR licence conditions be identified. The ECoW will provide advice and recommendations for any measures which they deem necessary to protect habitats surrounding the working area, including but not limited to exclusion zones. The ECoW will produce an ECoW report for submission to BEAR Scotland on a monthly basis.
- Mitigation measures described in the Landscape Section will be followed to reinstate habitat.
- Mitigation measures described in the Water Section will be followed to minimise potential impacts on the water environment.
- Mitigation measures described in the Geology and Soils Section will be followed to minimise potential impacts on habitats.

During the operational phase, the works are not expected to significantly impact surrounding habitats as no on-going activities or maintenance of the catch pits is expected except following a landslide event.

Birds:

There are areas of scrub within the scheme extents which are considered to provide some habitat suitable for nesting birds. Additionally, there is potential for ground-nesting birds to be present within the scheme footprint. Works are due to start in January 2021 and will take 4 months to complete. As works are starting in winter (i.e. outwith the bird breeding season), it is not expected that any birds will be nesting within the scheme extents when works commence. As works will be ongoing when the bird breeding season begins (typically in March), it is unlikely that any birds moving into the area will begin nesting within the scheme extents due to the existing noise and disturbance. The bird breeding season is generally considered to run from March to August, inclusive.

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Providing the following mitigation is adhered to during the works, significant impacts are not anticipated during the construction phase.

- If works are postponed and begin between March to August inclusive, these will be preceded by a nesting bird check to be carried out by the ECoW.
- Artificial lighting used during hours of darkness should be restricted to the immediate working area and should be directed away from areas of suitable habitat (e.g. watercourses, woodland, shrubs) as far as is safe and reasonably practicable.
- There will be no blasting or use of cranes for the duration of construction.

During the operation phase, no significant impacts are anticipated on birds.

Fish:

The steep nature of the slopes within and below the proposed Phases 5 and 6 work area and presence of culverts will restrict movement of fish into the area from the Croe Water below. Both unnamed watercourses within the scheme extent fan out below the site with a broken and diffuse spread across a 10-20m width over boulders and alluvial deposits. For a large section below Phases 5 and 6, there is no clearly defined channel on either watercourse. In addition, very steep drops (5-8m) below the road on both watercourses will further restrict movement of fish from the main Croe Water below the site.

The watercourses within the immediate working area do not provide any habitat for spawning salmonids; however, there is suitable habitat for spawning salmonids in the main stem of the Croe Water downstream of the working area.

Consultation with the Argyll Fisheries Trust highlighted the importance of culvert design in allowing some substrates to pass downstream in the longer-term to maintain spawning habitat in the lower reaches of the tributaries and in the main river. All of the culverts being installed have been designed so that they exceed the capacity of current trunk road culverts to provide future-proofing against increasingly frequent high-water events. Therefore, installation of the new culverts is not expected to impede the movement of gravels and substrates downstream.

There is potential for temporary, indirect impacts on fish during construction due to mobilisation of sediment as a result of construction works, particularly as the works are being carried out during the most sensitive period for salmonids. With the following mitigation in place, impacts are not anticipated to be significant.

- Mitigation measures described in the Water Section will be followed to minimise potential impacts on the water environment.
- Pollution prevention measures will be in place for the duration of construction.
- An ECoW, provided by the contractor, will attend site during set up of the site compound and will attend site fortnightly for the first three months of construction and monthly thereafter, as a minimum. More frequent visits may be required during sensitive site activities (e.g. culvert re-sectioning, concrete pouring). The ECoW will advise on the suitability and effectiveness of pollution prevention measures. If required, the ECoW will have the power to conduct audits of the site at any time and stop works should any breach of the CEMP or CAR licence conditions be identified. The ECoW will provide advice and recommendations to the contractor and will produce an ECoW report for submission to BEAR Scotland on a monthly basis.

No significant impacts are anticipated on fisheries during operation as there will be no loss of spawning or feeding habitat for diadromous fish species.

LANDSCAPE:

The works lie within LLTNP. The LLTNP have advised that overall they are content with the design and have recommended that where possible, uniformity of slopes and catch pits should be avoided to create a more natural look. This also would provide better opportunity for colonisation of vegetation.

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During the construction phase, there will be a temporary visual impact due to the presence of vehicles and plant in the vicinity of the works. During the operational phase, the new catch pits will partially blend into the existing landscape. The finished catch pits will be similar to those already in place at this location.

There will be no significant impacts on landscape effects during operation, provided that the following mitigation measures are implemented:

- 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 measures described in the Biodiversity: Habitats Section will be followed to reduce potential impacts on the landscape.
- Where possible, uniformity of catch pits and steps should be avoided.
- There will be creation of rough surfaces on the rear and side walls of the catch pits to allow colonisation by mosses, lichens, grasses and scrub.
- The colour palette for the shotcrete will be chosen to blend into the surrounding landscape.
- Spillways should be landscaped with a degree of roughness and unevenness to allow scrub to colonise

LAND:

Land surrounding the scheme location is predominantly composed of steep grassland and bracken-covered slopes with coniferous and deciduous woodland in the wider area. The slopes currently provide rough grazing for livestock. No properties or communities in the immediate area will be affected by the development.

The excavation of the catch pits will result in a permanent loss of land with limited agricultural value adjacent to the A83 carriageway. No significant impacts on land use are anticipated during the construction or operational phases.

POPULATION AND HUMAN HEALTH:

During construction, there is the potential for a temporary impact on non-motorised road users, but impacts are unlikely to be significant as non-motorised road user numbers are likely to be low. Pedestrians at the Rest and Be Thankful viewpoint will be unaffected due to the distance of the viewpoint from the works. The Butterbridge carpark may be used as a site compound and as temporary storage of materials. Construction activities are being timed to avoid the key tourist period to avoid significant impacts on visitors and the travelling public.

Similarly, impacts during construction on equestrians are unlikely to be significant as the road is not likely to be heavily used by equestrians.

- An appropriate traffic management plan taking into account the needs of non-motorised travellers will be designed in accordance with Volume 8, Chapter 4 of the DMRB.

During operation, there will be a slight to moderate beneficial impact on safety for non-motorised users of the trunk road at this location with infrastructure in place to reduce the risk of impact from landslide events.

There will be a temporary impact during construction on vehicle travellers and local communities that rely on this key infrastructure route. This will be managed with appropriate traffic management, which is anticipated to be a single lane closure with traffic signal control. With the following mitigation in place during the works, impacts on vehicle users is not anticipated to be significant.

- An appropriate traffic management plan will be designed in accordance with Volume 8, Chapter 4 of the DMRB.

During operation, there will be a slight to moderate beneficial impact on safety for motorised road users of the trunk road at this location with infrastructure in place to reduce the risk of impact from landslide events.

Document:

During construction, there will be a temporary impact from noise and vibration. There are no nearby residential receptors. Due to the general openness and lack of natural screening in the area, the noise is likely to be audible to visitors in the nearby area. To some extent, it may also be audible to hillwalkers and cyclists in the wider area; however, works are programmed to take place outwith the main tourist season (i.e. summer months) and at a time when visitors to the area are likely to be reduced.

With the implementation of the following mitigation, noise and vibration impacts during the construction phase are not predicted to be significant.

- 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.
- All construction operatives will be briefed through toolbox talks prior to works commencing using the Being a Good Neighbour toolbox talk template.
- Where possible, inherently quiet plant should be selected for construction works.
- All plant, machinery and tools will be well maintained, including parts relating to noise minimisation.
- All plant, machinery, and vehicles will be switched off when not in use.
- Where ancillary plant such as generators are required, they will be positioned so to cause minimum noise disturbance. Where deemed necessary, acoustic screens will be utilised.
- Movement of plant onto and around the site will have regard to minimising noise and will not be left running if not required for immediate use.
- All plant must be operated in a mode that minimises noise emissions and must have been maintained regularly to comply with relevant national and international standards.
- Where possible all car parks will still remain open for the travelling public and visitors.

Traffic dynamics will remain unchanged during the operational phase and will not result in significant impacts caused by noise and vibration.

WATER:

There is potential for an impact on water quality during construction as a result of potential spillage of fuels, oils and mobilisation of silt.

Detailed consultation has been carried out with SEPA and a variation to CAR licence CAR/S/1187572 has been made to authorise the proposed culverting and re-sectioning works. This CAR licence was originally granted for Phase 1 works and in agreement with SEPA has been varied to include Glen Kinglas Bunds and Phases 5 and 6.

Provided the following mitigation measures are adhered to throughout the works, impacts during the construction phase are not predicted to be significant.

- All conditions of the CAR Simple Licence CAR/S/1187572 are to be complied with, a copy of which will be supplied to the successful contractor.
- A copy of the CAR Simple Licence must also be kept on-site at all times.
- No discharges into any watercourses or drainage systems are permitted.
- All plant and equipment must be regularly inspected for any signs of damage and leaks. A checklist will be present to make sure that the checks have been carried out.
- All on-site activities should operate in accordance with relevant SEPA Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs).
- All hazardous material will be stored in accordance with Control of Substance Hazardous to Health (COSHH) data in a designated storage area at least 10m away from any watercourses, drains and / or waterbodies.
- The designated storage area must be on impermeable ground and fully bunded.
- All hazardous material utilised on site is required to undergo assessment under the COSHH Regulations 2002. These assessment(s) will contain a section on environment which highlights any precautions and mitigation requirements.
- All hazardous material will be stored in line with COSHH data within a designated COSHH storage area. Oils and chemicals will be stored in appropriately bunded storage cabinets. The COSHH store will be locked with only appropriate personal having access and an inventory register being maintained.

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- Where applicable and practicable, bio-degradable hydraulic fluids and oils should be utilised in machinery.
- Where fuel is stored on site and refuelling activities are undertaken, the following will apply:
 - Only suitably double-skinned fuel bowser(s) or tank(s) in line with General Binding Rules the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) will be utilised on site.
 - The fuel bowser(s) and/or tank(s) must be stored at least 10m away from any watercourses, waterbodies or drains 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.
- During refuelling of smaller mobile plant, a funnel and drip trays must be used.
- Spill kits must be quickly accessible to capture any spills should they occur.
- The ground / stone around the site of a spill must be removed, double-bagged and taken off site as special contaminated waste.
- 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% should be placed beneath the equipment.
- A spillage control procedure will be in place in which all staff are to be trained.
- Suitable spill kits are to be available on site with all staff to be trained in their use.
- All spills must be logged and reported. In the event of any spills into the water environment, all works must stop, and the incident reported to the project manager and the BEAR Scotland Environment Team. SEPA must be informed of any such incident as soon as possible using the SEPA Pollution Hotline.
- Mitigation detailed in Biodiversity Section will be strictly adhered to.
- The Water Pollution – Silt toolbox talk will be delivered to all site personal as part of the site induction prior to works commencing.
- Pollution prevention measures will be installed to prevent sediments from reaching the Croe Water.
- Pollution prevention measures will be checked daily and more regularly during period of heavy rainfall.
- An ECoW, provided by the contractor, will attend site during set up of the site compound and will attend site fortnightly for the first three months of construction and monthly thereafter, as a minimum. More frequent visits may be required during sensitive site activities (e.g. culvert installation, concrete pouring). The ECoW will advise on the suitability and effectiveness of pollution prevention measures. If required, the ECoW will have the power to conduct audits of the site at any time and stop works should any breach of the CEMP or CAR licence conditions be identified. The ECoW will provide advice and recommendations to the contractor and will produce an ECoW report for submission to BEAR Scotland on a monthly basis.

During operation, there will be a slight beneficial impact on the water environment during a landslide event, as catch pits will reduce the likelihood of sediments entering watercourses.

GEOLOGY AND SOILS:

There are no GCRS within the work footprint; the closest is over 2km distant. There is the potential to disturb surrounding ground during construction of the debris pits.

Provided the following mitigation measures are followed during works, impacts during construction are not anticipated to be significant.

- Excavated soil and rock will be stored in a designated area on level ground where practicable.
- If the soil is to be re-used on site, then it will be wetted (if necessary) during periods of dry weather to prevent drying out.
- Upon completion of the works, any damage to the local landscape (i.e. damage to grass verges) should be reinstated as much as is practicable.
- Mitigation measures to prevent contamination of soils through loss of containment are discussed in the Water Section.
- Mitigation measures described in the Biodiversity: Habitats Section will be followed to reduce potential impacts on soils.

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The works will not result in significant impacts to geology and soils during the operation phase as the works do not lie within any site designated for geology and soils.

WASTE, MATERIALS AND USE OF NATURAL RESOURCES:

During construction, there will be a temporary impact as a result of materials and waste. Topsoil will be re-used as far as possible on site.

Provided the following mitigation measures are followed during works, impacts during construction are not anticipated to be significant.

- 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 provision of reusable cutlery, crockery and water bottles to all on-site staff is strongly encouraged.
- Bulk material will be delivered to site without packaging where possible.
- Supplies are to be requested to minimise all packaging where possible.
- Care is to be taken to only order the correct quantity of required materials, preventing disposal of unused materials.
- Materials should be reutilised 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.
- Wastes not suitable for recycling will be sent to landfill or special waste treatment facilities, depending on the nature of the waste.
- All waste stored on site will be adequately protected against the elements and vermin.
- All appropriate waste documentation must be present on-site and be available for inspection.
- 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 is also to be provided to BEAR Scotland as early as practicably feasible and retained.
- If required, an exemption from SEPA will be secured to allow for the reuse of materials.
- 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.
- Where applicable, all temporary signage will be removed from site on completion of the works.
- All hazardous material will be stored in line with Water Section.
- A copy of the duty of care paperwork should be provided and filed appropriately in accordance with the Code of Practice (as made under Section 34 of Environmental Protection Act 1990 as amended).
- Any contaminated ground as a result of the works should be removed and transferred off site as special waste.
- Any COSHH waste and special waste should be removed from site by a specialised waste carrier. COSHH waste should NOT be mixed with general waste and/or other recyclables.

The main materials associated with the works along with approximate values are provided below:

Phase 5 Basin:

Total volume = circa 2390m³
Of which rock = circa 956m³
Soil = circa 1434m³

Phase 6 Basin:

Total volume = circa 1969m³
Of which rock = circa 984m³
Soil = circa 985m³

In addition the culverts will require an excavation volume of circa 150m³ each, so 300m³ total, all in soils.

Document:

All waste will be disposed of safely and legally with regard to Duty of Care. No significant impacts are anticipated during the operation phase.

RISK OF MAJOR ACCIDENTS OR DISASTERS:

A CEMP has been produced by BEAR Scotland which sets out a framework to reduce the risk of adverse impacts from construction activities on sensitive environmental receptors. It describes a basis for recording environmental risks, commitments, and other environmental constraints and identifies the processes and measures that will be used to manage and control these aspects. In addition, it seeks to ensure compliance with relevant environmental legislation, government policy objectives, and scheme-specific environmental objectives. It also provides a mechanism for monitoring, reviewing, and auditing environmental performance and compliance. The subcontractor will comply with all conditions of the CEMP during works and may be subject to audit throughout the contract.

A Designer's Risk Register will be prepared by BEAR Scotland which addresses potential environmental risks. Activity-specific Method Statements will be produced by the subcontractor and will recognise and highlight the environmental risks and detail how these will be addressed, as well as the contingency plans to be in place to deal with environmental incidents. These must be approved by BEAR Scotland prior to works commencing.

With the above measures in place, the risk of major accidents or disasters as a result of the works is considered to be low.

CUMULATIVE EFFECTS:

Works are currently underway at Rest and Be Thankful Phases 1 and 3B. Works were recently completed at Rest and Be Thankful Phase 7 and works are planned nearby at Glen Kinglas to install roadside bunds. However, standard good practice measures will be in place during these works to avoid environmental impacts. Aside from these forthcoming schemes, there are no known projects currently planned or recently completed that have the potential to contribute to in-combination or cumulative effects on the nearby designated sites or protected species in the vicinity of Glen Croe.

The proposed works will improve the condition of the road and protect against future landslides. Consequently, carrying out these works now will reduce the risk that additional major works will be required in the future. This in turn will reduce the amount of work required at this location. Therefore, it is not expected that the works will contribute to long-term significant cumulative effects on the environment in the vicinity of Glen Croe.

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
- Population and Human Health
- Water
- Geology and Soils
- Waste Material and use of Natural Resources

Consultation with statutory consultees was deemed necessary because there are potential nature conservation parameters which could be affected during the works. Below is a list of consultees.

- Loch Lomond and the Trossachs National Park

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Extent of EIA work undertaken and details of consultation:

- Scottish Environment Protection Agency
- NatureScot (formerly SNH)
- Argyll Fisheries Trust and Board
- Argyll and Bute Council

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

This is a relevant project falling within Annex II that:

- Lies within the Loch Lomond and the Trossachs National Park.

The project has been subject to screening using the Annex III criteria to determine whether a formal EIA is required under the Roads (Scotland) Act 1984 (Environmental Impact Assessment) Regulations 2017.

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 development is approximately 0.48 ha including all traffic management.
- Previous phases of works have been carried out and further phases of works have been proposed. This programme of works is being carried out to reduce the risk of landslide events in the area.
- Works are scheduled to take 4 months in an area where there are few sensitive receptors.
- The installation of debris basins will help to reduce the effects of landslides on the water environment and human population including the travelling public.

Location of the scheme:

- Current land use in the area is primarily that of rough grazing for livestock.
- The scheme does not lie within a densely populated area.
- The scheme does not lie within any sites of historical, cultural or archaeological significance.
- The scheme does not lie within any sites designated for their geology or soils.
- The scheme lies within the LLTNP.

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Characteristics of potential impacts of the scheme:

- No impacts on any features of cultural heritage interest are anticipated.
- Any impacts on air quality or noise levels are temporary during the construction period. Due to the distance of the works from sensitive receptors and with mitigation measures in place, impacts are minor and not significant.
- Minor short-term impacts are anticipated for vehicle travellers, pedestrians, cyclists, and equestrians. however, these are reduced due to works being completed outside of the key tourist period.
- There will be a minor loss of some habitats which are ubiquitous in the wider area.
- There is potential for an impact on water quality during construction as a result of potential spillage of fuels, oils and mobilisation of silt. However, with pollution prevention measures in place, this risk is considered to be negligible.
- Liaison has been carried out with the LLTNP to ensure that the final design is one that does not compromise the surrounding landscape.
- No impacts on biodiversity are expected due to lack of protected species in proximity of the works.
- No impacts on breeding birds are anticipated due to works commencing prior to the bird breeding season (March to August inclusive).
- NatureScot (formerly SNH) agree with the view that there will be no LSE on the Glen Etive and Glen Fyne SPA due to the nature of the proposed works.
- With pollution prevention measures in place, there are no risks to human health from water contamination or air pollution.
- No change in land use is anticipated, but a minor loss of habitats of low agricultural quality, ubiquitous to the wider area, is expected.
- No impacts on geology and soils are anticipated.
- During construction, there will be a temporary impact as a result of materials and waste.

APPENDIX A: SCHEME LOCATION AND EXTENTS



Figure A1: Location of scheme

Document:

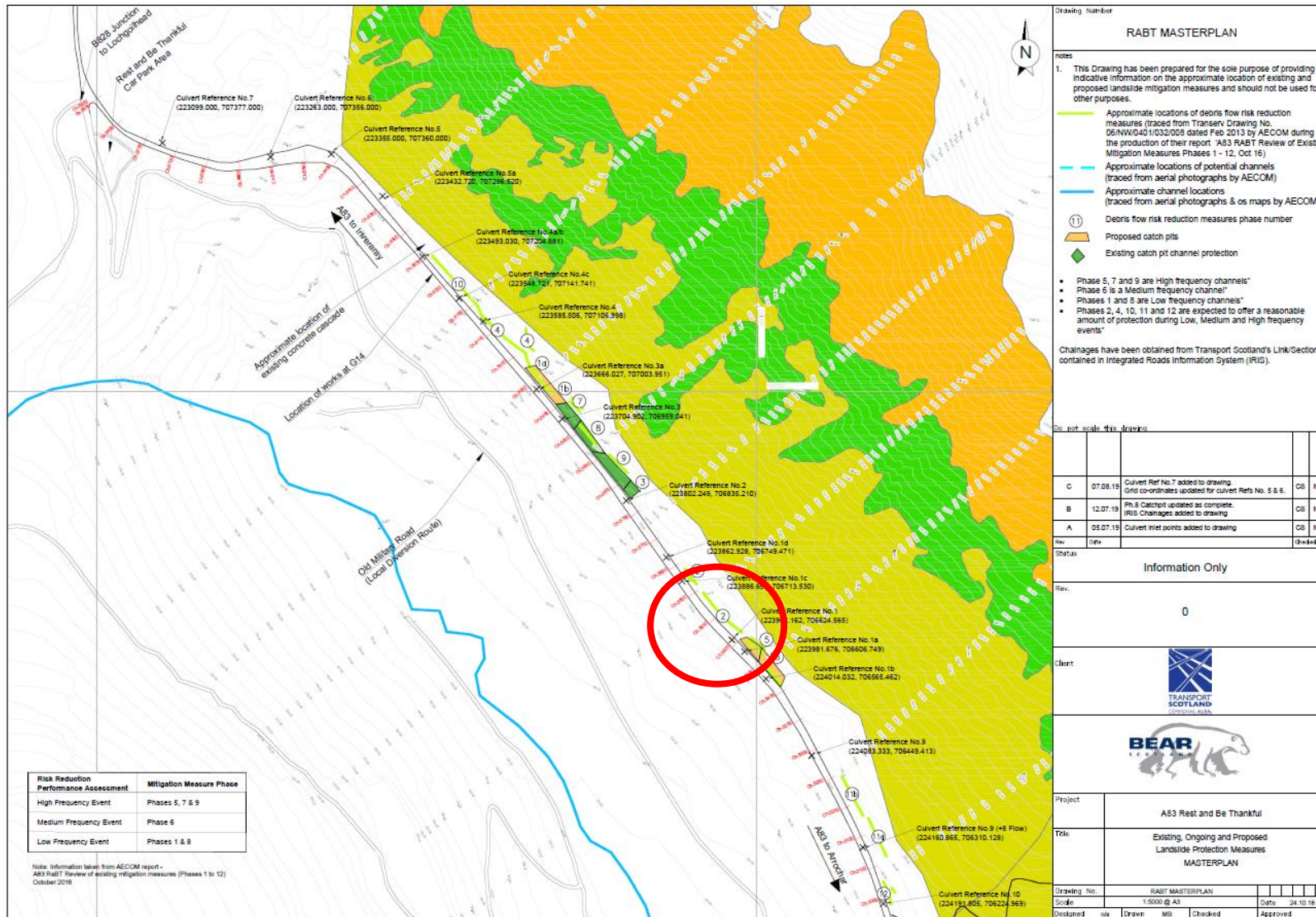


Figure A2: Scheme overview showing location of Phases 5&6 (red circle)