

Appendix C: Biodiversity - Detailed Baseline and Assessment

5. Biodiversity

5.1 Introduction

- 5.1.1 Biodiversity is a common measure of the variety of living organisms and ecosystems and is often used to assess ecosystem health. Biodiversity provides the ecosystem services that are the basis of life, including the regulation of air and water, soil formation, nutrient cycling, flood regulation and pollination.
- 5.1.2 This chapter presents the Strategic Environmental Assessment (SEA) of the corridor in relation to biodiversity. Five possible route options (Green, Yellow, Purple, Pink and Brown Route Options) within the corridor are also considered (refer to Chapter 5: Project Description for more details).
- 5.1.3 The assessment will be carried out in consideration of the SEA objective for the biodiversity, which is to *'Protect, maintain and enhance biodiversity and ecosystem services, avoiding damage to or loss of designated and undesignated wildlife or geological sites.'*

5.2 Methodology

- 5.2.1 A desk-based assessment for the corridor was conducted within a 2km buffer of the existing A83 centreline. This study area contains all five possible route options identified in Chapter 5 (Project Description).
- 5.2.2 The assessment has been undertaken using professional judgement in relation to the SEA objectives for Biodiversity, the assessment criteria set out in Chapter 6 (SEA Approach and Methods) and with cognisance of the following guidance:
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM 2018);
 - DMRB LD 118 (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure 2020a);
 - DMRB LA 104 (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure 2020b); and
 - DMRB LA 108 (Highways England, Transport Scotland, Welsh Government, Department for Infrastructure 2020c).
- 5.2.3 The desk-based assessment was informed by information obtained from the following resources:
- A search of NBN Atlas Scotland (NBN Atlas Partnership 2021) for species records within the corridor between 1989 and 2019. Only records held under an Open Government Licence, Creative Commons Zero (CC0) or Creative Commons Attribution 4.0 International (CC BY 4.0) licence were used.
 - NatureScot Sitelink (NatureScot 2021a).
 - Confidential golden eagle and freshwater pearl mussel data provided by NatureScot (data received on 06 January 2021) (NatureScot 2021b).
 - Scotland's Environment website (Scotland's Environment Web Partnership 2021), which includes the Scottish Natural Heritage Carbon and Peatland Map (SNH 2016) and National Vegetation Classification data (SNH 2017).
 - Scottish Environment Protection Agency (SEPA) website (SEPA 2021).
 - Ordnance Survey maps and aerial imagery.

- 5.2.4 Potential effects on biodiversity have been assessed using the criteria defined in Table C5.1. The potential impacts and effects on biodiversity are presented in Table C5.3.
- 5.2.5 It is acknowledged that the duration of effects is relative to the typical lifespan of specific receptors. However, for the purposes of this assessment, the duration of effects is defined as follows:
- Short-term: less than one year.
 - Medium-term: one to five years.
 - Long-term: more than five years.

Table C5.1: Assessment Criteria for Potential Effects on Biodiversity

Score	Description	Colour Coding and Symbol
Minor positive effect	The corridor has potential for a positive effect on biodiversity, for example providing opportunities for enhancement.	+
Minor negative or uncertain effect	The corridor has potential for a minor negative or uncertain effect on biodiversity.	-
Significant negative effect	The corridor has potential for significant negative effects on biodiversity.	--

Limitations

- 5.2.6 It is recognised that biodiversity within the corridor is likely to be under-recorded due to its remote location and the health and safety restrictions of surveying in the vicinity of an area which is subject to landslides.

Detailed Baseline

Legislation, Policy and Plans

- 5.2.7 Legislation and policies relating to biodiversity are implemented from international to local level to protect the natural environment. European legislation has been retained in UK law upon the UK's exit from the EU, where practical and appropriate. The Environmental Impact Assessment (Transport) (EU Exit) (Scotland) (Amendment) Regulations 2019 make technical and minor changes relevant to retained EU law to ensure the continued and proper operation of Environmental Impact Assessment legislation in the fields of road and transport works (Scottish Government 2019a). The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 ensures that the UK will continue to meet its international commitments, particularly under the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) (Scottish Government 2019b).
- 5.2.8 The network of European sites¹ is protected in Scotland under the Conservation (Natural Habitats, &c.) as amended, most recently by the 2019 amendment regulations described above. This network includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); these will be assessed as part of the Habitats Regulations Appraisal (HRA) for the Access to Argyll and Bute (A83) project. Further ecological sites protected by UK legislation and policy include Ramsar wetlands, Marine Protected Areas (MPAs), Sites of Special Scientific Interest (SSSI) and woodland identified on the Ancient Woodland Inventory (AWI). Additional details of ecological sites recorded within the corridor are presented in Table C5.2.

¹ As of 1 January 2021, upon the UK's exit from the EU, Natura 2000 sites are now referred to as European sites (NatureScot 2021c).

- 5.2.9 Biodiversity is a key focus of current Scottish Government policy. The Edinburgh Declaration was published by the Scottish Government in August 2020 (Scottish Government 2020) and both of Scotland's National Parks (Loch Lomond and The Trossachs, and Cairngorms) have signed up to this. The Declaration is a statement of intent outlining how subnational governments and local authorities will work together to deliver transformative actions to tackle the loss of biodiversity. Commitments include, but are not limited to: recognising the overall value of nature and integrating it into local planning, management and governance; aligning biodiversity strategies and actions; strengthening capacity building in order to implement nature-based solutions and green and blue infrastructure; and sharing best practice.
- 5.2.10 Additional key plans, policies and strategies (PPS) relevant to biodiversity are set out in Appendix B (PPS Review), and include:
- Delivering Scotland's Ambition to Secure Positive Effects for Biodiversity' (NatureScot 2020), which supports delivery of the new statutory requirement for the National Planning Framework (NPF) outcome to secure positive effects for biodiversity.
 - Scotland's National Marine Plan (Scottish Government 2015), which sets out objectives and marine planning policies in relation to sea fisheries, aquaculture and wild salmon and diadromous fish.
 - The Scottish Biodiversity Strategy (Scottish Executive 2004; Scottish Government 2013a), which places a duty of care on every public body to further the conservation of biodiversity in Scotland and it is implemented through Local Biodiversity Action Plans (LBAPs).
 - The Scottish Biodiversity Strategy comprising 'Scotland's Biodiversity: It's in Your Hands' (Scottish Executive 2004) and '2020 Challenge for Scotland's Biodiversity - A Strategy for the conservation and enhancement of biodiversity in Scotland' (Scottish Government 2013a). The 2020 Challenge document provides greater detail in some areas, responds to the revised international targets, and updates some elements of the 2004 document.
 - The Scottish Biodiversity List (SBL) (Scottish Government 2013b), which was developed to meet the requirements of Section 2 (4) of the Nature Conservation (Scotland) 2004 Act for the conservation of biodiversity.
 - Argyll and Bute Council's Woodland and Forestry Strategy (2011), which sets out strategic priorities in relation to Argyll and Bute's woodland habitats and biodiversity (Argyll and Bute Council 2011). Further details are presented in Appendix C (Section 9: Landscape and Visual Amenity).

Biodiversity Action Plans

- 5.2.11 The corridor falls within Argyll and Bute Council and also within Loch Lomond and The Trossachs National Park planning authority. Both authorities have identified specific actions in their LBAPs in line with the local development plan (LDP) policies, discussed in Appendix B (PPS Review). The most recent iterations of the LBAPs are listed below:
- Argyll and Bute Local Biodiversity Action Plan 2010 – 2015 (Argyll and Bute Council 2010); and
 - Wild Park National Park Biodiversity Action Programme 2018-2023 (Loch Lomond and The Trossachs National Park 2018).

Designated Sites

- 5.2.12 The corridor passes through or runs directly adjacent to the following statutory designated sites, shown on Figure C5.1 (Internationally and Nationally Designated Sites):
- Glen Etive and Glen Fyne SPA (NatureScot 2021d); and
 - Beinn an Lochain SSSI (NatureScot 2021e).

- 5.2.13 Additionally, most of the corridor falls within the Loch Lomond and The Trossachs National Park (LLTNP). Further information relating to these statutory designated sites and the LLTNP is presented in Table C5.2.

Habitats

- 5.2.14 The existing A83 within the corridor runs through a glen between the mountains of Beinn an Lochain and Ben Donich on the west, and Beinn Luibhean and The Cobbler on the east. Much of the surrounding habitat is managed for sheep farming or plantation woodland.
- 5.2.15 Coniferous plantation woodland covers large areas of the corridor: notably south of the B828 road, west side of the Old Military Road and on the east of the A83, adjacent to The Cobbler.
- 5.2.16 Parcels of woodland listed on the AWI, which is identified in Scottish Planning Policy as an '*important and irreplaceable national resource that should be protected and enhanced*' (Scottish Government 2014), are located in the wider vicinity of the A83. However, there are no parcels of AWI within the corridor.
- 5.2.17 There are six habitat parcels within the corridor that were categorised as part of the Native Woodland Survey of Scotland (NWSS) (Patterson, Nelson, Robertson and Tullis 2014). There is one area listed on the Woodland and Forestry Strategy (Argyll and Bute Council 2011) that falls within the corridor and most of the corridor falls within the LLTNPA Trees and Woodland Strategy boundary (LLTNPA 2019). Further information on the woodland strategies is provided in Appendix C (Section 9: Landscape and Visual Amenity).
- 5.2.18 The Carbon and Peatland 2016 Map (SNH 2016) identified two areas of Class 1 habitat within the corridor (Figure C7.2: Peat Classification). Class 1 habitat is defined as '*nationally important carbon-rich soils, deep peat and priority peatland habitat... likely to be of high conservation value*' (NatureScot 2021f). Some areas of heathland were also identified in the vicinity of Beinn Luibhean and The Cobbler on the east of the A83. National Vegetation Classification (NVC) data identified calcifugous grassland and montane communities (U4 *Festuca ovina*–*Agrostis capillaris*–*Galium saxatile* grassland, U5 *Nardus stricta*–*Galium saxatile* grassland, U20 *Pteridium aquilinum*–*Galium saxatile* community) and mire habitats (M6 *Carex echinata*–*Sphagnum recurvum/auriculatum* mire, M25 *Molinia caerulea*–*Potentilla erecta* mire) on the east side of the A83 between the large parcels of woodland (SNH 2017). M6 and M25 habitats can be indicative of Groundwater Dependent Terrestrial Ecosystems (GWDEs).
- 5.2.19 Within the corridor, there are a number of freshwater features that could support biodiversity. Loch Restil is located adjacent to the A83 at the eastern side of Beinn an Lochain. Kinglas Water falls just within the north east corner of the corridor, Croe Water runs adjacent to the A83 for most of the corridor. There are also approximately 30 to 40 minor unnamed watercourses within the corridor, 27 of which are crossed by the existing A83.
- 5.2.20 Further information on terrestrial and aquatic habitats within the corridor is presented in Table C5.2.

Species of Conservation Interest

- 5.2.21 Within the corridor, the following species of conservation interest have been recorded between 1989 and 2019 (NBN Atlas Partnership 2021; Austin, Fielding and Haworth 2015; Haworth, Fielding and Austin 2013):
- Birds: black grouse *Tetrao tetrix*, cuckoo *Cuculus canorus*, golden eagle *Aquila chrysaetos*, kestrel *Falco tinnunculus*, peregrine *Falco peregrinus*, ring ouzel *Turdus torquatus*, song thrush *Turdus philomelos* twite *Linaria flavirostris* and white-tailed eagle *Haliaeetus albicilla*.
 - Mammals: Eurasian badger *Meles meles*, mountain hare *Lepus timidus*, pine marten *Martes martes*, and red squirrel *Sciurus vulgaris*.

- Fish: Atlantic salmon *Salmo salar*

5.2.22 No records of plants of conservation interest were identified within the corridor during the search of NBN Atlas (NBN Atlas Partnership 2021). There were no records of freshwater pearl mussel within the corridor in data received from NatureScot (NatureScot 2021b).

5.2.23 Further information on species of conservation interest within the corridor is presented in Table C5.2.

Table C5.2: Baseline Information for Biodiversity Resources of Conservation Interest Identified within the Corridor.

Biodiversity Resource	Legal/BAP Status	Baseline
Designated Sites		
Glen Etive and Glen Fyne SPA (SNH site code: 10113, EU site code: UK9020307)	European site under Conservation (Natural Habitats & c.) Regulations 1994 (as amended in Scotland). Golden eagles are: <ul style="list-style-type: none"> Listed on Schedule 1 of the Wildlife and Countryside Act (WCA). Listed on the SBL. A priority species in the Argyll and Bute LBAP for Upland Ecosystem Work Programme. 	<p>The SPA is a large (81,372.90ha), predominantly upland site, which encompasses a diverse range of habitats including heather moorland, rough grassland, blanket bog, native woodland, montane heaths and exposed rock and scree (SNH 2010). The SPA is designated for golden eagle (breeding). The Latest Assessed Condition of the qualifying feature was Favourable Maintained on 31 July 2015. Recreation/disturbance is listed as a negative pressure (NatureScot 2021d).</p> <p>Six golden eagle territories have been identified that include habitat within the SPA (NatureScot 2021b). Two golden eagle observations were recorded within the corridor: in 2013 and 2017 (NBN Atlas Partnership 2020). Data received from NatureScot identified that the corridor falls within one golden eagle territory and is adjacent to one other territory (Austin, Fielding and Haworth 2015; Haworth, Fielding and Austin 2013).</p> <p>Golden eagles utilise a range of habitats which include montane areas, moorland, open coniferous forest, pasture and coastal areas. Adult golden eagle home ranges generally encompass both their hunting range and nesting territory and are occupied all year round. Nest sites (eyries) are typically on cliff edges (Hardy, Crick, Wernham, Riley, Etheridge and Thompson 2013).</p> <p>At the nearest point, the site is located 0.06km north of the corridor.</p>
Beinn an Lochain SSSI (SNH site code: 163, EU site code: 135092)	Designated under Nature Conservation (Scotland) Act 2004	<p>The SSSI is located near the head of Loch Fyne and spans 1369.23ha. It supports a range of vegetation types and '<i>provides one of the best representations of upland habitats in Scotland</i>' (SNH 2011).</p> <p>The site is designated for:</p> <ul style="list-style-type: none"> siliceous scree (includes boulder fields); tall herb ledge; and upland assemblage. <p>The Latest Assessed Condition for siliceous scree and upland assemblage was Favourable Maintained on 07 November 2005. The Latest Assessed Condition for tall herb ledge was Favourable Recovered on 10 September 2013. There are no negative pressures listed for siliceous scree (includes boulder fields) or tall herb ledge. Grazing is listed as a negative pressure for upland assemblage (NatureScot 2021e).</p> <p>There is 209.40ha of the SSSI within the corridor.</p>
Loch Lomond and The Trossachs National Park	National Parks (Scotland) Act 2000 The Loch Lomond and The Trossachs National Park Designation, Transitional and Consequential Provisions (Scotland) Order 2002	<p>The LLTNP spans 18,650ha and is split into four distinct areas: Cowal peninsula, Loch Lomond, The Trossachs and Breadalbane. The park includes a diverse range of habitats including farmland, moorland, mountains, lochs, rivers, forests and woodlands.</p> <p>It contains one of the UK's largest National Nature Reserves, The Great Trossachs Forest, and two forest parks (Argyll in Cowal and Queen Elizabeth in the Trossachs).</p> <p>The LLTNP BAP states that aquatic habitats within the park support protected species including Atlantic salmon, river lamprey, otter and water vole.</p> <p>The majority of the corridor falls within the National Park boundaries, specifically within the Cowal peninsula area.</p>
Habitats		
Acid grassland	Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas are listed on Annex 1 of the Habitats Directive	<p>NVC data identified calcifugous grassland and montane communities (U4, U5, U20) east of the A83 (SNH 2017).</p> <p>Acid grassland is widespread throughout Scotland on well-drained acid soils. It is most common in grazed uplands where it can dominate the landscape, especially where heavier grazing has reduced dwarf shrub cover to the extent that heaths have been converted to grasslands. In the uplands this is the most extensive grassland broad habitat (NatureScot 2021g).</p>

Biodiversity Resource	Legal/BAP Status	Baseline
Aquatic habitats	Kinglas Water and Croe Water are classified by SEPA under the Water Framework Directive.	Kinglas Water and Croe Water were classified by SEPA in 2018 as having Bad and Moderate ecological potential respectively (SEPA 2021). Loch Restil, which falls within Beinn an Lochain SSSI but is not included in the citation, is a freshwater loch. No scientific data on the fish species present in Loch Restil were found during the desk study. Anecdotal evidence from various angling websites and forums suggest that brown trout <i>Salmo trutta</i> are present in the loch.
Groundwater Dependent Terrestrial Ecosystems (GWDTEs)	n/a	NVC data identified mire habitats (M6, M25) on the east side of the A83 (SNH 2017). M6 is classed as highly dependent and M25 is classed as moderately dependent (SEPA 2017).
Native Woodland	Native pine woodlands, wet woodland and upland birchwoods, are listed on the SBL.	There are no parcels of woodland listed on the AWI within the corridor. There are six habitat parcels listed on the NWSS within the corridor, of which four are currently woodland: <ul style="list-style-type: none"> ▪ One parcel of native pinewood located on the east side of the existing A83 at the northern extent (54.08ha). ▪ One parcel, located east of the A83, is listed as 'Native woodland' but the dominant habitat was unidentifiable (0.89ha). ▪ Two parcels of 'Native woodland', wet woodland (0.56ha) and upland birchwood (0.78ha), which are intersected by the Old Military Road to the west of the existing A83. ▪ Two parcels of 'Open land habitat', bog and bracken (2.33ha and 0.59ha respectively), which are intersected by the Old Military Road to the west of the existing A83. Woodland can provide important habitat, such as for pine marten and red squirrel.
Plantation woodland	n/a	One area of conifer plantation (1.8ha) located south of Kinglas Water at the north east extent of the corridor is listed on the Woodland and Forestry Strategy (Argyll and Bute Council 2011). Most of the corridor falls within the LLTNP Trees and Woodland Strategy boundary, with native woodland creation opportunities identified on either side of the existing A83 and on the slopes of Beinn Luibheann, The Cobbler and Ben Donich (LLTNP 2019). Further information on the woodland strategies is provided in Appendix C (Section 9: Landscape and Visual Amenity). Plantation woodland is generally of low diversity, with a poorly developed ground flora and shrub layer. However, it can also provide important habitat for species such as pine marten and red squirrel in the area.
Peat habitats	Upland heathland, blanket bog, and mountain heaths and willow scrub are listed on the SBL. Transition mires and quaking bogs listed on Annex 1 of the Habitats Directive.	NVC data identified mire habitats (M6, M25) on the east side of the A83 (SNH 2017). The Carbon and Peatland 2016 Map (SNH 2016) identified two areas of Class 1 habitat within the corridor which totals 6.96ha: located at the north east corner between the A83 and Kinglas Water, and at the south east extent of the corridor. Further information on peat is presented in Appendix C (Section 7: Soils) and Figure 7.2 (Peat Classification).
Species of Conservation Interest		

Biodiversity Resource	Legal/BAP Status	Baseline
Atlantic salmon	Conservation (Natural Habitats & c.) Regulations 1994 (as amended in Scotland). Listed on the SBL. Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.	Three records of Atlantic salmon were recorded within the corridor in 1998 (NBN Atlas Partnership 2021). Wild Atlantic salmon populations are in decline across the entire North Atlantic region, including Scotland (Ashley 2019). The species migrates between freshwater and marine habitats during its lifecycle and requires free passage from coastal areas to upstream spawning sites. Good water quality and clean cobble and gravel substrates are necessities for Atlantic salmon in freshwater habitats.
Badger	Protection of Badgers Act 1992 (as amended).	One dead badger was recorded as a road casualty within the corridor in 2018 (NBN Atlas Partnership 2021). Badger field signs, including a sett, were recorded east of the A83 in 2018 during a protected species survey undertaken by Wild Surveys Ltd to inform proposed woodland planting (Wild Surveys Ltd 2018). The species is widespread throughout the UK and Scotland. Legal requirements to comply with animal welfare legislation would be the main driver for mitigation of impacts on this species.
Black grouse	Red-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL. Priority species in the Argyll and Bute LBAP for Woodland and Upland Ecosystem Work Programmes. LLTNP Black Grouse Action Plan.	There were 37 records of black grouse recorded between 2003 and 2011 within the corridor (NBN Atlas Partnership 2021). Black grouse require a complex mosaic of habitats and utilise mature pinewoods, heather moorland and young conifer moorland. These habitats are present within the corridor. The European black grouse has been declining in range and numbers (RSPB 2021a). The declines are due to a number of factors, including loss of important plant food sources, habitat fragmentation and human disturbance.
Cuckoo	Red-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL. Priority species in the Argyll and Bute LBAP for Lowland and Farmland, Woodland, and Upland Ecosystem Work Programmes.	Two cuckoo observations were recorded within the corridor in 2007 and 2008 (NBN Atlas Partnership 2021). Cuckoos migrate to the UK each year to breed and can be found in woodland edges and grassland. Cuckoos numbers in the UK have declined rapidly in recent years (BTO 2021a), which is linked to harsher environmental conditions experienced during migration (Hewson, Thorup, Pearce-Higgins and Atkinson 2016).
Kestrel	Amber-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL.	One kestrel was recorded in the corridor in 2018 (NBN Atlas Partnership 2021). Kestrels are found in a wide variety of habitats, including heather moorland, farmland and urban areas. They generally avoid dense forests, vast treeless wetlands and mountains. Kestrel numbers in Scotland have declined markedly in the past twenty years, the cause of which is unknown (RSPB 2021b).
Mountain hare	Listed on the SBL.	One mountain hare was recorded in the corridor in 2008 (NBN Atlas Partnership 2021). Mountain hares live in upland areas, often in heather moorland, and are native to Scotland.
Peregrine	Schedule 1 of the WCA. Listed on the SBL. Priority species in the Argyll and Bute LBAP for Upland, and Marine and Coastal Ecosystem Work Programme.	There were seven records of peregrine between 2005 and 2018 within the corridor (NBN Atlas Partnership 2021). Peregrines utilise extensive open areas for hunting and features such as cliff-ledges and quarry faces for nesting sites. The 2014 Peregrine Survey undertaken by the British Trust for Ornithology (BTO) indicates that the number of breeding pairs in Scotland are lower than previously recorded (BTO 2014a). Of the 1,082 home ranges checked, only 474 were occupied (BTO 2014b). Peregrines are faring better in urban and lowland areas than in the uplands due to an abundant food supply and a lack of persecution. Peregrines can now be more often found breeding on man-made structures in areas where natural nest sites are few and far between (BTO 2014a).

Biodiversity Resource	Legal/BAP Status	Baseline
Pine marten	Conservation (Natural Habitats & c.) Regulations 1994 (as amended in Scotland). Schedule 5 of the WCA. Listed on the SBL.	One dead pine marten was recorded as a road casualty in the corridor in 2014 (NBN Atlas Partnership 2021). Pine martens are typically found in native woodlands, but also utilise conifer plantations and rocky hillsides. The species is now established across much of Scotland north of the central belt, with outlying populations in parts of the Scottish Borders and Dumfries and Galloway. Scotland's population is estimated at 3,700 adult pine martens (NatureScot 2021h).
Ptarmigan	N/A	There were two records of ptarmigan within the corridor in 1999 and 2019 (NBN Atlas Partnership 2021). In the UK, ptarmigans are only found in the Scottish Highlands. In severe cold weather, birds may move from the highest ground to the edge of forests.
Red squirrel	Schedule 5 of the WCA. Listed on the SBL. Priority species in the Argyll and Bute LBAP for Woodland and Built Environment Ecosystem Work Programmes.	Within the corridor, 89 records of red squirrel were recorded between 1990 and 2019 (NBN Atlas Partnership 2021). Red squirrel is widespread within Scotland although there has been widespread decline in population and range.
Ring ouzel	Red-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL. Priority species in the Argyll and Bute LBAP for Upland Ecosystem Work Programme.	There were five records of ring ouzel within the corridor between 2003 and 2008 (NBN Atlas Partnership 2021). Ring ouzel are a ground nesting species which utilise open moorland. UK populations have shown a long-term decline and their range has also contracted (Massimino, et al., 2019).
Song thrush	Red-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL. Priority species in the Argyll and Bute LBAP for Built Environment Work Programme.	There were three records of song thrush within the corridor between 2007 and 2018 (NBN Atlas Partnership 2021). Song thrush is commonly found in scrub, woodland, farmland and in urban areas. In the UK, song thrush populations have undergone a long-term decline since the 1970s due to reduced survival of birds during their first winter, which is thought to be influenced by changes in farming practices (BTO 2021b).
Twite	Priority species in the Argyll and Bute LBAP for Upland Ecosystem Work Programme. Listed on the SBL. Priority species in the Argyll and Bute LBAP for Lowland and Farmland, and Upland Ecosystem Work Programme.	There were four records of twite within the corridor between 2003 and 2006 (NBN Atlas Partnership 2021). Twite are ground nesting birds found in upland moorland and grassland habitats. The results of a 2013 survey identified that Scotland is home to 98% of the UK twite population (Wilkinson <i>et al.</i> 2018). The UK populations have shown a long-term decline.
White-tailed eagle	Conservation (Natural Habitats & c.) Regulations 1994 (as amended in Scotland). Red-listed Species of Conservation Concern (Eaton et al. 2015). Listed on the SBL. Priority species in the Argyll and Bute LBAP for Marine and Coastal Work Programme.	One record of white-tailed eagle was recorded within the corridor in 1998 2008 (NBN Atlas Partnership 2021). The UK's largest bird of prey, the white-tailed eagle, became extinct in the UK in the early 20 th century as result of persecution. However, a successful reintroduction programme commenced in 1975 and the species is now primarily found on the west coast of Scotland (RSPB 2021c).

5.3 Evolution of Baseline and Trends

- 5.3.1 Biodiversity loss has been well documented over the last 50 years, and today there are a range of pressures with the potential to impact on Scotland's wildlife and biodiversity. Key ongoing issues include climate change, land use pressures (e.g. loss or damage of natural habitats from development or agricultural intensification and land use change), and the pollution of air, water, and land. Climate change and future development are the biggest drivers for the possible changes in the future baseline. The drive towards Positive Effects for Biodiversity (also known as Biodiversity Net Gain (BNG)), meeting United Nations (UN) sustainability targets in relation to biodiversity and consideration of natural capital in policy will be key to the future protection and enhancement of Scottish biodiversity and the wider natural environment.
- 5.3.2 Within the corridor, the future baseline will be influenced by the Rest and Be Thankful Woodland Creation Project, a partnership between Forestry and Land Scotland and Transport Scotland, which proposes to plant a mixed native woodland with a range of species selected to maximise slope stability, on the east side of the A83. It is expected to take 15 to 30 years for vegetation to establish and would make a significant contribution to slope stability (Winter and Corby 2012; Rayner and Nicoll 2012). The Land Management Plan (LMP) for this project, which spans 2019 – 2029, states that the *'woodland creation will complement present and future hard engineering infrastructure, which is designed to reduce debris flows reaching the road. Slope stability will be further enhanced by the removal of all stock and deer grazing from the site'* (Grant and Thomas 2018).
- 5.3.3 It is proposed that the core protection forest of the Woodland Creation Project above the A83 will be expanded to the north to connect with the Butterbridge Woodland, and also to the south along the Croe Water. These areas will follow a more standard approach to Native Woodland creation and *'will provide essential landscape and ecological linkages for the core protection forest'* (Grant and Thomas 2018). The area within the LMP covers approximately 724ha and proposed planting constitutes 162ha of this area. To assist vegetation growth, deer fencing is proposed around approximately 377ha of the total LMP area. An additional 39ha is proposed for linked woodland creation on the National Forest Estate to the South of the Croe Water (Grant and Thomas 2018).

5.4 Assessment

- 5.4.1 This section considers the potential impacts on biodiversity as a result of the corridor. The five possible route options (Green, Yellow, Purple, Pink and Brown Route Options) within the corridor are also considered. As construction methods and working areas for the possible route options have yet to be developed, a precautionary approach has been taken to the potential impacts on biodiversity. Potential construction impacts could include:
- injury or mortality of protected species as a result of vegetation removal, vehicle movements or becoming trapped in uncovered holes and pipes;
 - disturbance to protected species from noise, vibration, lighting, movement of vehicles and increased human activity;
 - temporary habitat loss and fragmentation due to disturbance;
 - sediment release and runoff from construction works; and
 - temporary hydrological changes to aquatic habitats.
- 5.4.2 Potential operational impacts could include:
- injury and mortality of protected species from vehicle collisions;
 - permanent loss of habitats under the footprint of the project, such as those used by protected species, and shading of aquatic habitats;
 - fragmentation and severance of habitats due to the footprint of the project; and

- changes in water flow conditions from runoff, or alterations to watercourses and groundwater.

5.4.3 The corridor assessment in relation to Biodiversity the considers the Biodiversity SEA objectives and guide questions is presented in Table C5.3. Where there are notable differences in effects between the five possible route options, these are stated.

Table C5.3: Biodiversity Assessment using SEA Objectives and Guide Questions

Biodiversity SEA Objective	SEA Assessment Guide Questions <i>'Does the Access to Argyll and Bute (A83) corridor...?'</i>	Corridor Assessment
Protect, maintain and enhance biodiversity and ecosystem services, avoiding damage to or loss of designated and undesignated wildlife or geological sites ²	<ul style="list-style-type: none"> ▪ protect and/or enhance the integrity of any site of biodiversity value that has been designated at international, national or local levels? (e.g. land take, fragmentation or indirect degradation) 	<p>Beinn an Lochain SSSI falls within the corridor (209.40ha) and there could be negative effects on biodiversity as a result of habitat loss or alteration and nitrogen deposition. Glen Fyne and Glen Etive SPA is located 0.06km north at the nearest point and disturbance could occur to golden eagle, the qualifying feature.</p> <p>Earthworks for the Green Route Option would encroach upon the boundary of Beinn an Lochain SSSI and works to the existing A83 for the Pink and Purple Route Options could also fall within this boundary. The Brown and Yellow Route Options would not impact the SSSI. All possible route options are located between 0.97km and 2.33km south of Glen Etive SPA, with the Pink and Purple Route Options being closest and the Brown Route Option located furthest away.</p> <p>Further project development should seek to avoid or reduce impacts to designated sites where possible. Where appropriate, enhancement opportunities for the designated sites should be considered at DMRB Stage 2 and 3 and developed in consultation with NatureScot.</p>
	<ul style="list-style-type: none"> ▪ protect and or enhance the integrity of existing habitat and green/blue networks and other wildlife corridors? (including the ecological connections between separate Natura 2000¹ sites and 'landscape-scale' corridors) 	<p>At this stage, the integrity of existing habitat connections within the road corridor cannot be confirmed based on desk-study information. The iterative design process provides opportunities to protect the integrity of existing habitat, green/blue networks and other wildlife corridors.</p> <p>Where appropriate, enhancement opportunities for biodiversity within the corridor should be considered at DMRB Stage 2 and 3 and developed in consultation with NatureScot and other consultees to ensure that these align with local and national biodiversity policies.</p>
	<ul style="list-style-type: none"> ▪ maintain or upgrade transport network to remove barriers to wildlife movement? 	<p>The existing A83 may act as a barrier to movement for wildlife and the desk-study identified records of dead badger and pine marten individuals as a result of road casualties.</p> <p>The creation of a new offline section of road (Green Purple and Pink Route Options) could increase barriers to wildlife movement during operation due to habitat fragmentation and vehicle collisions. The provision of a tunnel (Pink and Purple Route Options) or bridge (Yellow Route Option) could reduce barriers to wildlife movement during operation in the vicinity of the A83 by removing or reducing opportunity for wildlife to directly interact with vehicle traffic within or adjacent to terrestrial habitats.</p> <p>The project should seek to ensure permeability for wildlife and, where appropriate, there could be opportunities to incorporate mammal crossings or facilitate fish passage through culverts.</p>

² Geological sites are assessed within Appendix C Section 7: Soils.

Biodiversity SEA Objective	SEA Assessment Guide Questions <i>'Does the Access to Argyll and Bute (A83) corridor...?'</i>	Corridor Assessment
	<ul style="list-style-type: none"> ▪ reduce the risk of spreading invasive non-native species? 	<p>No information on invasive non-native species (INNS) within the corridor was identified during the desk-study. Offline options would increase the risk of spreading INNS through movement of people, vehicles, and soils. During construction, this risk could be mitigated through adherence to best practice measures and implementation of a Biosecurity Plan. The potential provision of new roads and enhanced parking facilities would increase access to the natural environment in the vicinity of the A83 and could increase the risk of spreading INNS from vehicles and movement of people to new areas during operation.</p>
	<ul style="list-style-type: none"> ▪ provide opportunities for habitat enhancement, habitat creation or Positive Effects for Biodiversity? 	<p>Where appropriate, enhancement opportunities for biodiversity within the corridor should be considered at DMRB Stage 2 and 3 and developed in consultation with NatureScot and other consultees to ensure that these align with local and national biodiversity policies.</p>
	<ul style="list-style-type: none"> ▪ align with the strategic goals of the Aichi Biodiversity Targets and 2020 outcomes for Scotland? 	<p>Opportunities for the corridor to align with the Aichi Biodiversity Targets are identified below:</p> <p><i>Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society</i></p> <p>There is a potential opportunity for the project to work with local and national governments to develop information campaigns on the threats to biodiversity and community engagement programmes to help address these issues in the vicinity of the A83.</p> <p><i>Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use</i></p> <p>The creation of a new offline section of road (Green Purple and Pink Route Options) would increase direct pressures on biodiversity during operation: fragmentation, loss or alteration of habitats; increased wildlife collisions with vehicles; increased pollution; and increased spread of INNS. The provision of a tunnel (Pink and Purple Options) or bridge (Yellow Option) would help reduce the direct pressure on biodiversity in the vicinity of the A83 during operation.</p> <p>As identified in Appendix C (Section 3: Population and Human Health), the corridor provides opportunities to increase active travel, by including non-motorised user (NMU) facilities and enhancing linkages to existing walking and cycling routes.</p> <p><i>Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity</i></p> <p>At this stage, there is insufficient locational data on species of conservation interest to differentiate the potential impacts of the five possible route options. However, as the Brown Option would follow the existing A83 route and the Yellow Option would include a bridge located between the existing A83 and Old Military Road, it can be surmised that these would potentially result in the least negative effects for species of conservation interest.</p> <p>Consideration of biodiversity at all stages of the project and implementation of appropriate mitigation and enhancement measures would help improve the status of biodiversity in the vicinity of the A83 by safeguarding ecosystems, species and genetic diversity.</p> <p><i>Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services</i></p> <p>Implementation of appropriate mitigation and enhancement measures would improve biodiversity and ecosystem services in the</p>

Biodiversity SEA Objective	SEA Assessment Guide Questions <i>'Does the Access to Argyll and Bute (A83) corridor...?'</i>	Corridor Assessment
		<p>vicinity of the corridor. The increased opportunities for active travel provided by the corridor would make biodiversity in the vicinity of the A83 more accessible to all.</p> <p><i>Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building</i></p> <p>The project should take cognisance of the Scottish Biodiversity Strategy (Scottish Executive 2004; Scottish Government 2013a) and the Argyll and Bute Local Biodiversity Action Plan 2010 – 2015 (Argyll and Bute Council 2010). On completion of the project, sharing biodiversity records collected during site surveys with NBN Atlas would also contribute towards this Strategic Goal. As the corridor is located in a rural area, with few residential properties, it is considered that biodiversity in the area maybe under-recorded.</p>

Inter-relationships with other SEA topics

5.4.4 Table C5.4 presents the inter-relationships identified between Biodiversity and the other SEA topics.

Table C5.4: Inter-related SEA topics

SEA Topic	Potential Interactions
Air quality	Changes to air quality within the corridor could impact the resilience of biodiversity. Nitrogen deposition due to vehicle emissions can impact on the functioning of ecosystems and growth of trees.
Climate	Changes to climate and the increasing occurrence of extreme weather events could alter available resources, environmental conditions and species life cycles within the corridor. Trees, woodlands and peatlands act as 'carbon sinks' by sequestering more carbon from the atmosphere than they release. These flora and habitats provide a useful contribution to mitigating climate change. Deforestation and degradation of peatlands results in the release of carbon into the atmosphere, which fuels further climate change.
Landscape and visual amenity	Landscape changes could alter habitats and their connectivity, which could result in negative or positive interactions with biodiversity within the corridor. Any mitigation and enhancement measures implemented for landscape and visual amenity could have biodiversity benefits, and vice versa. Therefore, any mitigation planting proposals should be developed with input from both disciplines.
Noise and vibration	An increase in noise and vibrations could cause disturbance to species of conservation interest, which could result in avoidance or abandonment of important habitats within the corridor.
Soil	Soils and peat provide habitats and support biodiversity within the corridor. Soil biodiversity is essential to most soil functions and affects the sustainability of species and habitats which rely on soils. Soil sealing would reduce the capacity of the corridor to support habitats and biodiversity and potentially affect the sustainability of species and habitats that rely on soils and soil biodiversity.
Water environment	Changes to water quality and hydromorphology, including groundwater, could impact biodiversity within the corridor.

5.5 Conclusions

- 5.5.1 All possible route options identified within the corridor have the potential for minor, moderate or significant negative effects on biodiversity. Therefore, it is considered that the project does not fully meet the SEA objective of 'Protect, maintain and enhance biodiversity and ecosystem services, avoiding damage to or loss of designated and undesignated wildlife or geological sites'.
- 5.5.2 Of the five possible route options presented, the Brown and Yellow Route Options is likely to result in the least negative effects to biodiversity as works would be in the vicinity of the existing A83 and would not impact any site designated for nature conservation. The Green Route Option would be likely to result in the most significant negative effects to biodiversity as it would require the construction of an offline road through woodland and earthworks would encroach the boundary of Beinn an Lochain SSSI.
- 5.5.3 A summary of the potential impacts and effects on biodiversity resources is provided in Table C5.5. Mitigation measures should be implemented at subsequent design and assessment stages to reduce the negative effects on biodiversity. Enhancement opportunities should be considered to help produce a net gain for biodiversity and meet the SEA objective. Further details are provided in Table C5.6.
- 5.5.4 It is considered likely that negative effects on biodiversity would reduce following the implementation of the recommendations set out in Table C5.6 and development of additional mitigation measures at subsequent DMRB stages.

Table C5.5 Summary of Effects on Biodiversity

Biodiversity Resource	Potential Impact and Effect	Effect Duration	Scoring Criteria
Construction			
Designated Sites			
Glen Etive and Glen Fyne SPA (SNH site code: 10113, EU site code: UK9020307)	Noise, vibration and light spill associated with construction related activities, could result in disturbance of golden eagle, a designated feature of the SPA.	Short- to Medium-term, temporary	Significant negative effect
Beinn an Lochain SSSI (SNH site code: 163, EU site code: 135092)	Temporary loss of SSSI habitat could result in a decline in site condition.	Medium- to Long-term, reversible	Significant negative effect
	Generation of dust and airborne pollutants from construction activities could cause degradation of SSSI habitat.	Short- to Medium-term, reversible	Significant negative effect
Loch Lomond and The Trossachs National Park	Temporary loss of habitat within the LLTNP could result in a reduction in extent of habitats used by species of conservation interest.	Medium- to Long-term, reversible	Significant negative effect
Habitats			
Acid grassland	Potential loss or alteration of this habitat to accommodate construction would result in a reduction in extent and distribution of this habitat.	Medium-term, reversible	Minor negative or uncertain effect
Aquatic habitats	Temporary loss of habitat to accommodate construction could result in physical alteration and reduced habitat quality. Effects would be localised to the construction footprint.	Medium term, reversible	Minor negative or uncertain effect
GWDTes	Changes to groundwater flows from construction works could result in potential temporary loss or alteration of habitat. This effect may not be localised to construction footprint.	Medium-term, reversible	Minor negative or uncertain effect
Native woodland	Temporary loss of habitat to accommodate construction could result in reduced habitat quality and availability, and fragmentation.	Long-term, reversible	Significant negative effect
Plantation woodland	Temporary loss of habitat to accommodate construction could result in reduced habitat quality and availability, and fragmentation.	Long-term, reversible	Significant negative effect

Biodiversity Resource	Potential Impact and Effect	Effect Duration	Scoring Criteria
Peat habitats	Potential loss or alteration of this habitat to accommodate construction would result in a reduction in extent and distribution of this habitat.	Long-term, reversible	Significant negative effect
Species of Conservation Interest			
Atlantic salmon	Construction related activities including dewatering or in-stream works could result in direct mortality or injury of individuals. This would also result in temporary loss of habitat fragmentation, preventing migration.	Short-term, temporary	Minor negative or uncertain effect
	Noise, vibration and light spill associated with construction related activities in the vicinity of watercourses could result in temporary disturbance and barrier effects to Atlantic salmon.	Short-term, temporary	Minor negative or uncertain effect
	Construction activities in the vicinity of watercourses have the potential to result in pollution or sedimentation. This decline in water quality could result in mortality or physiological damage to Atlantic salmon. In addition, this may result in avoidance of the affected area.	Short- to Medium-term, temporary	Minor negative or uncertain effect
Badger	Construction related activities including vehicle movement could result in potential direct injury or mortality of individuals moving across site from collisions or entrapment in uncovered holes, pipes or machinery. Mortality would have a permanent negative effect on an individual level but is unlikely to occur in sufficient numbers to affect the wider population.	Long-term, reversible	Minor negative or uncertain effect
	Noise, vibration and light spill associated with construction related activities could result in temporary disturbance of badgers leading to avoidance of foraging and commuting areas, habitat fragmentation, and a change in the distribution of local population(s).	Short- to Medium-term, temporary	Minor negative or uncertain effect
Black grouse	Noise and vibration associated with construction related activities could result in disturbance of black grouse during lekking. This could lead to temporary abandonment of lek sites and result in increased energy expenditure during breeding, which could result in unsuccessful breeding attempts.	Medium- to Long-term, temporary	Minor negative or uncertain effect
Breeding birds (including cuckoo, ptarmigan, ring ouzel, song thrush and twite)	Construction related activities, including vehicle movement and vegetation clearance, could cause direct mortality and disturbance during the breeding season. Mortality of individuals would be permanent, and disturbance could result in unsuccessful breeding attempts.	Long-term, reversible	Minor negative or uncertain effect
	Temporary loss of habitat to accommodate construction could cause fragmentation and displacement.	Short- to Medium term, reversible	Minor negative or uncertain effect
Kestrel Peregrine falcon White-tailed eagle	Noise and vibration associated with construction related activities could cause disturbance of birds of prey. This could influence breeding success, feeding behaviour and could lead to abandonment of nests during that season.	Medium- to Long-term, temporary	Minor negative or uncertain effect
Pine marten Red squirrel	Construction related activities, including vehicle movement, could result in potential direct injury or mortality of individuals moving	Long-term, reversible	Minor negative or uncertain effect

Biodiversity Resource	Potential Impact and Effect	Effect Duration	Scoring Criteria
Mountain hare	across site from collisions or entrapment in uncovered holes, pipes or machinery. Mortality would have a permanent negative effect on an individual level but is unlikely to occur in sufficient numbers to affect the wider population.		
	Noise, vibration and light spill associated with construction related activities could result in temporary disturbance of pine marten leading to avoidance of foraging and commuting areas, habitat fragmentation, and a change in the distribution of local population(s).	Short- to Medium-term, temporary	Minor negative or uncertain effect
Operation			
Designated Sites			
Glen Etive and Glen Fyne SPA (SNH site code: 10113, EU site code: UK9020307)	The proposed scheme could provide potential opportunities for the provision of enhanced non-motorised user facilities (NMU), and linkages to walking/ and cycling routes and core paths. Improved access for recreational activities could result in increased disturbance to breeding golden eagle during operation.	Long-term, permanent	Significant negative effect
Beinn an Lochain SSSI (SNH site code: 163, EU site code: 135092)	Loss and alteration of SSSI habitat under the footprint of the preferred route option could result in habitat fragmentation and the decline in site condition. This effect would be permanent.	Long-term, permanent	Significant negative effect
Loch Lomond and The Trossachs National Park	Loss and alteration of National Park habitat to accommodate the preferred route option could result in a reduction in habitat availability or habitat fragmentation for LLTNPA priority species and other species that rely on it for food, shelter and breeding. This effect would be permanent.	Long-term, permanent	Significant negative effect
Habitats			
Acid grassland	Potential loss or alteration of this habitat under the footprint of the preferred route option would result in a reduction in extent and distribution of this habitat. This effect could be permanent.	Long-term, permanent	Minor negative or uncertain effect
Aquatic habitats	Permanent alteration of bankside habitat under the footprint of any outfalls or scour protection structures. This effect could be permanent.	Long-term, permanent	Minor negative or uncertain effect
GWDTEs	Changes to groundwater flows under the footprint of the preferred route option could result in potential loss or alteration of habitat. This effect may not be localised to construction footprint and would be permanent.	Long-term, permanent	Significant negative effect
Native woodland	Potential loss of native woodland habitat under the footprint of the preferred route option could result in a reduction in habitat availability or habitat fragmentation. This effect could be permanent.	Long-term, permanent	Significant negative effect
Plantation woodland	Potential loss of plantation woodland habitat under the footprint of the preferred route option could result in a reduction in habitat availability or habitat fragmentation. This effect could be permanent.	Long-term, permanent	Minor negative or uncertain effect

Biodiversity Resource	Potential Impact and Effect	Effect Duration	Scoring Criteria
Peat habitats	Potential loss of peat habitats under the footprint of the preferred route option could result in a reduction in habitat availability or habitat fragmentation. This effect could be permanent.	Long-term, permanent	Significant negative effect
Species of Conservation Interest			
Atlantic salmon	Permanent alteration of habitat due to outfalls, scour protection and crossings may result in reduced habitat suitability or accessibility for Atlantic salmon.	Long-term, permanent	Minor negative or uncertain effect
Badger	Potential permanent loss of habitat within a badger clan territory under the footprint of the preferred route option could cause a reduction in availability or fragmentation of habitat. This effect would be long-term.	Long-term, permanent	Significant negative effect
	The creation of new sections of road could result in increased injury or mortality of badger due to collisions with road traffic. This effect would be permanent.	Long-term, reversible	Significant negative effect
Black grouse	Potential loss of suitable breeding habitat under the footprint of the preferred route option could result in reduced breeding success.	Long-term, permanent	Significant negative effect
	The creation of new sections of road could result in increased injury or mortality of black grouse due to collisions with road traffic. This effect would be permanent.	Long-term, reversible	Significant negative effect
Breeding birds (including cuckoo, ptarmigan, ring ouzel, song thrush and twite)	Potential loss of suitable breeding habitat under the footprint of the preferred route option could result in reduced breeding success.	Long-term, permanent	Minor negative or uncertain effect
Kestrel Peregrine White-tailed eagle	No operational impacts.		n/a
Pine marten Red squirrel Mountain hare	Potential loss of habitat under the footprint of the preferred route option could result in fragmentation of habitat and the permanent reduction in availability of this habitat to pine marten, red squirrel and mountain hare that rely on it for food, shelter and breeding.	Long-term, permanent	Significant negative effect
	The creation of new sections of road could result in increased injury or mortality of badger due to collisions with road traffic.	Long-term, reversible	Significant negative effect

5.6 Design Development, Mitigation and Enhancement Recommendations

5.6.1 Mitigation and enhancement measures relevant to biodiversity are presented in Table C5.6. Mitigation measures for peat habitats are presented in Appendix C (Section 7: Soils). Additional mitigation presented within Appendix C (Section 9: Landscape and Visual Amenity) and Appendix C (Section 6: Water Environment) will also benefit biodiversity.

Table C5.6: Potential Mitigation, enhancement, and design recommendations in relation to Biodiversity

Mitigation / Enhancement / Monitoring Measure	Stage of Implementation (e.g. DMRB Stage 2, DMRB Stage 3)	Responsible Party for Implementation	Consultation/ Approvals Required
Where feasible, the project should avoid sites designated for their biological interest, particularly sites of international and national importance.	Throughout the lifecycle of the project	Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	Consultation with NatureScot
Should the project require the loss of habitat from an internationally or nationally designated site, bespoke mitigation or compensation could be required. The specific details would be prepared at DMRB Stage 3.	DMRB Stage 3 Construction	Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	Consultation with NatureScot
The design of the project should seek to minimise overall land-take to reduce negative effects on biodiversity.	Throughout the lifecycle of the project	Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	n/a
The project should seek to ensure permeability for wildlife. This could include, where appropriate, the provision of mammal crossings or fish passage through culverts.	Throughout the lifecycle of the project	Designer Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	n/a
The principle of Positive Effects for Biodiversity should be adopted, to ensure compliance with government policy, DMRB guidance and that functional ecosystems are maintained.	Throughout the lifecycle of the project Monitoring approach to be developed at DMRB Stage 3 but could include Biodiversity Metric 2.	Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	n/a
The loss of woodland and other notable habitats should be replaced through tailored planting mitigation to ensure contiguousness of woodland.	DMRB Stage 3 Pre-construction Planting/regrowth would be monitored. Details to be developed at DMRB Stage 3.	Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and by contractor during design and construction.	n/a

Mitigation / Enhancement / Monitoring Measure	Stage of Implementation (e.g. DMRB Stage 2, DMRB Stage 3)	Responsible Party for Implementation	Consultation/ Approvals Required
<p>A Construction Environmental Mitigation Plan (CEMP) should be developed. This should include a Biosecurity Plan, an Ecological Management Plan and Species Management Plans as required.</p>	<p>DMRB Stage 3 Pre-construction Construction The plans would be refined and updated during the construction stage and finalised at the end of construction to support future management and operation</p>	<p>Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and procurement, and by contractor's ECoW on site during construction.</p>	<p>Consultation with NatureScot</p>
<p>Schedule construction activities to reduce disturbance to species of conservation interest where practicable (e.g. seasonal restrictions or avoidance of works during the hours of darkness). Compliance would be monitored by an Ecological Clerk of Works (ECoW) for the duration of works.</p>	<p>DMRB Stage 3 Construction</p>	<p>Designer & Contractor To be monitored by Transport Scotland during subsequent DMRB stages and procurement, and by contractor's ECoW on site during construction.</p>	<p>n/a</p>

5.7 Legislation

- Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019
- Environmental Impact Assessment (Transport) (EU Exit) (Scotland) (Amendment) Regulations 2019
- National Parks (Scotland) Act 2000
- Nature Conservation (Scotland) Act 2004
- Protection of Badgers Act 1992 (as amended by WANE)
- The European Union Directive (92/43/EEC) on the Conservation of natural habitats and of wild fauna and flora (Habitats Directive) (1992) as ratified by The Conservation (Natural Habitats, &c.) Regulations 1994
- The European Union Directive on the Conservation of wild birds (79/409/EEC) (1979) as ratified by the Wildlife and Countryside Act 1981 (as amended for Scotland)
- The Loch Lomond and The Trossachs National Park Designation, Transitional and Consequential Provisions (Scotland) Order 2002
- The Water Framework Directive (European Council Directive 2000/60/EC)
- Wildlife and Countryside Act 1981 (as amended for Scotland)

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