A83 Rest and Be Thankful

LTS EIAR VOLUME 4, APPENDIX 11.3 - BIODIVERSITY METHODOLOGY

Transport Scotland

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A11-3.Biodiversity Methodology

A11-3.1. Introduction

A11-3.1.1. The assessment approach was informed by the Design Manual for Roads and Bridges (DMRB) LA 104 Environmental assessment and monitoring and LA 108 Biodiversity. The importance of nature conservation follows that of CIEEM Guidelines for Ecological Impact Assessment (EcIA).

A11-3.1.2. The assessment has considered the effects of the Proposed Scheme for the construction period (estimated at three to four years), and its subsequent operation. The effects of the Proposed Scheme have been assessed with potential mitigation i.e. embedded mitigation incorporated into design as well as additional mitigation measures.

A11-3.1.3. Alongside the standard Environmental Impact Assessment (EIA) process, assessment is also being undertaken in relation to Biodiversity Net Gain (BNG) and Natural Capital. This is being reported separately from the biodiversity EIA reporting. The approach to BNG and Natural Capital assessments, with reference to DMRB LA 108 and National Planning Framework 4 (NPF4), is detailed in (Appendix 4.1: Biodiversity Net Gain/Natural Capital Assessment).

Study Area

A11-3.1.4. The study areas for data gathering and field surveys have been determined in accordance with standard best practice (Good Practice Guidance for Habitats and Species), DMRB LA 104, DMRB LA 108 and professional judgement.

Baseline Conditions

A11-3.1.5. The assessment was undertaken by appropriately qualified ecologists and comprised desk study, field surveys and consultation. Baseline data for species and habitats are outlined in Appendices 11.1, 11.4 – 11.14.

Consultation

A11-3.1.6. Consultation was undertaken throughout DMRB Stage 2 and 3 through the A83 Environmental Steering Group (ESG) which included, in relation to biodiversity, Loch Lomond and The Trossachs National Park Authority, NatureScot, Scottish Environment Protection Agency (SEPA), Scottish Forestry, and Argyll and Bute Council.

A11-3.2. Nature Conservation Importance

A11-3.2.1. A number of criteria have become accepted as a means of assessing the nature conservation importance of a feature which are set out in A Nature Conservation Review (Frazer J.F.D. (1977). A Nature Conservation Review, Edited by D. A. Ratcliffe. Cambridge University Press, Cambridge, England (on behalf of the Nature Conservancy Council and the Natural Environment Research Council): Vol. 1 s.) and the CIEEM Guidelines for Ecological Impact Assessment (EcIA) and include diversity, rarity, and naturalness. The rarity, ability to resist or recover from environmental change, and uniqueness of an ecological feature, function/role within an ecosystem, and level of legal protection or designation afforded to a given ecological feature are all factors taken into account in determining its importance.

A11-3.2.2. Ecological features including designated sites for nature conservation, habitats and species within the Ecological Zone of Influence (EZoI) are assigned levels of importance for nature conservation based on the criteria set out in Table A11-3.1. These criteria are brief descriptions, and are applied by the ecologist using professional judgement. If a feature is afforded a lower value than indicated by the criteria (for example if a habitat receptor is a small and poor-quality example of its type and common in the locality) then this judgement is explained in the baseline conditions section of the biodiversity Chapter (Volume 2, Chapter 11: Biodiversity).

A11-3.2.3. When assessing potential effects on features of nature conservation importance, the known or likely background trends and variations in status have been taken into account. The level of ecological resilience or likely level of

ecological conditions, that would allow the population of a species or area of habitat to continue to exist at a given level or continue to increase along an existing trend or reduce a decreasing trend, has been estimated where appropriate to do so.

A11-3.2.4. Plans and strategies at different geographic levels (e.g. European legislation, Scotland Biodiversity List and Argyle and Bute Biodiversity Action Plan) were taken into account. Where a biodiversity resource is covered by plans at multiple levels, the highest level plan is reported in the biodiversity chapter (Volume 2, Chapter 11: Biodiversity).

A11-3.2.5. Where a biodiversity resource falls into more than one category, the highest value category applies. For example, for this Proposed Scheme all species recorded as potential receptors that are listed in the Argyll and Bute Local Biodiversity Action Plan (LBAP) 2010-2015 are also on the Scotland Biodiversity List (NatureScot).

Table A11-3.1 - Importance criteria

Importance		Criteria

International or European Importance	Sites	Sites including:
		• European sites:
		  ○ Sites of Community Importance (SCIs)
		  ○ Special Protection Areas (SPAs)
		  ○ potential SPAs (pSPAs)
		  ○ Special Areas of Conservation (SACs)
		  ○ Candidate or possible SACs (cSACs or pSACs)
		  ○ Wetlands of International Importance (Ramsar sites).
		• Biogenetic Reserves, World Heritage Sites (where recognised specifically for their biodiversity value) and Biosphere Reserves.
		• areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.

International or European Importance	Habitats	Not Applicable
International or European Importance	Species	Resident, or regularly occurring, populations of species which can be considered at an international or European level where: • the loss of these populations would adversely affect the conservation status or distribution of the species at an international or European scale or • the population forms a critical part of a wider population at this scale or • the species is at a critical phase of its life cycle at an international or European scale.

Importance		Criteria
UK or National	Sites	Sites including: • Sites of Special Scientific Interest (SSSIs) or Areas of Special Scientific Interest (ASSIs) • National Nature Reserves (NNRs) • National Parks • Marine Protected Areas (MPAs) including Marine Conservation Zones (MCZs) or • areas which meet the published selection criteria for those sites listed above but which are not themselves designated as such.

UK or National	Habitats	Habitats including:
		• habitats included in the relevant statutory list of priority species and habitats (Scottish Biodiversity List, NatureScot) and
		• areas of irreplaceable habitats including:
		  ○ ancient woodland
		  ○ ancient or veteran trees
		  ○ blanket bog
		  ○ limestone pavement
		  ○ sand dunes
		  ○ salt marsh
		  ○ lowland fen.
		• areas of habitat which meet the definition for habitats listed above but which are not themselves designated or listed as such.

Importance		Criteria
UK or National	Species	Resident, or regularly occurring, populations of species which can be considered at an international, European, UK or national level where: • the loss of these populations would adversely affect the conservation status or distribution of the species at a UK or national scale or • the population forms a critical part of a wider population at this scale or • the species is at a critical phase of its life cycle at a UK or national scale
Regional	Sites	Non-statutory designated sites for nature conservation, designated at a Regional level, including heritage coasts.
Regional	Habitats	Areas of habitats identified (including for restoration) in regional plans or strategies (where applicable).

Regional	Species	Species including:
		• resident, or regularly occurring, populations of species which can be considered at an international, European, UK or national level where:
		  ○ the loss of these populations would adversely affect the conservation status or distribution of the species at a regional scale or
		  ○ the population forms a critical part of a wider regional population or
		  ○ the species is at a critical phase of its life cycle.
		• species identified in regional plans or strategies.

Importance		Criteria
County or Equivalent Authority Area	Sites	Wildlife / nature conservation sites designated at a county (or equivalent) level including: • Local Nature Conservation Sites (LNCS) and • Local Nature Reserves (LNRs).
County or Equivalent Authority Area	Habitats	Areas of habitats identified in county or equivalent authority plans or strategies (where applicable).
County or Equivalent Authority Area	Species	Species including: • resident, or regularly occurring, populations of species which can be considered at an international, European, UK or national level where: ○ the loss of these populations would adversely affect the conservation status or distribution of the species at a county or unitary authority scale or ○ the population forms a critical part of a wider county or equivalent authority area population, e.g. metapopulations; or ○ the species is at a critical phase of its life cycle. • species identified in a county or equivalent authority area plans or strategies.
Local	Sites	Wildlife / nature conservation sites designated at a local level including: • Local Nature Conservation Sites (LNCS) and • Local Nature Reserves (LNRs).
Local	Habitats	Areas of habitat considered to appreciably enrich the habitat resource within the local context including features of importance for migration, dispersal, or genetic exchange.

Importance		Criteria
Local	Species	Populations / communities of species considered to appreciably enrich the habitat resource within the local context including features of importance for migration, dispersal or genetic exchange.

A11-3.3. Impact Assessment

A11-3.3.1. The assessment of the potential effects of the Proposed Scheme takes into account both on-site impacts, and impacts that may occur to adjacent and/or more distant ecological features. The significance of effect was assessed taking into account the importance of the receptor, and the nature and magnitude of potential impacts (including duration, extent and reversibility) and their consequent impacts on important ecological features.

Impact Characterisation

A11-3.3.2. For the purposes of this assessment, the impact descriptors in Table A11-3.2 are taken to summarise the overall characterisation of impacts in accordance with DMRB LA 108 and CIEEM Guidelines, including:

- beneficial or adverse
- impact extent/magnitude (e.g. entire habitat loss, partial habitat loss or indication over specific area affected)
- direct or indirect impact (e.g. direct mortality of individuals from vehicle collisions, or indirect mortality of individuals from reduced prey resources due to pollution of watercourses)
- reversibility of impact (reversible or irreversible)
- frequency of impact (single event, recurring or constant)
- duration of impact:
    - short-term (up to five years)
    - medium-term (between five and ten years)

- long-term (over ten years) or permanent)

- likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely).

A11-3.3.3. The assessment aims to characterise ecological impacts rather than placing a reliance only on magnitude alone. The character of impacts is defined as their 'level', using the criteria set out in Table A11-3.2 as Major, Moderate, Minor or Negligible, following the above impact characterisation approach.

Table A11-3.2 - Level of impact and typical descriptions

Level of Impact Change	Typical Description
Major Adverse	• Long-term/ permanent irreversible damage to a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
Major Beneficial	• Permanent addition of improvement to, or restoration of, a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Moderate Adverse	• Medium-term reversible damage to a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact negatively affects the integrity or key characteristics of the resource.
Moderate Beneficial	• Long- or Medium-term temporary addition of, improvement to, or restoration of, a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact positively affects the integrity or key characteristics of the resource.
Minor Adverse	• Long-term/ permanent irreversible damage to a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Minor Beneficial	• Permanent addition of improvement to, or restoration of, a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.

Level of Impact Change	Typical Description
Negligible Adverse	• Short-term reversible damage to a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
Negligible Beneficial	• Temporary addition of improvement to, or restoration of, a biodiversity resource and • the extent, magnitude, frequency, and/or timing of an impact does not affect the integrity or key characteristics of the resource.
No change	No observable impact, either positive or negative.

Impact Significance of Effect

A11-3.3.4. The importance of the resource (identified in Table A11-3.1) and level impact (identified in Table A11-3.2) shall be used to determine the significance of effect based on Table A11-3.3.

Table A11-3.3 - Significance of effect matrix

Resource Importance	Impact Magnitude - No Change	Impact Magnitude - Negligible	Impact Magnitude - Minor	Impact Magnitude - Moderate	Impact Magnitude - Major
International or European Importance	Neutral	Slight	Moderate or large	Large or very large	Very large
UK or National Importance	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
Regional Importance	Neutral	Neutral or slight	Slight	Moderate	Moderate or large

Resource Importance	Impact Magnitude - No Change	Impact Magnitude - Negligible	Impact Magnitude - Minor	Impact Magnitude - Moderate	Impact Magnitude - Major
County or equivalent Authority Importance	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
Local Importance	Neutral	Neutral	Neutral or Slight	Neutral or slight	Slight

A11-3.3.5. Each feature's importance and the potential impacts upon it have been determined through surveys and consultation, to provide a robust basis for making a professional decision on the appropriate focus of the impact assessment. The assessment is then focused on those impacts that result in potentially significant effects on important ecological features. For example, an area of amenity grassland would not meet the criteria for local ecological importance and would not progress through the assessment process, as the assessment only includes features of local importance or above. However, any impact on a SSSI would progress through the assessment process as these sites are designated as nationally important.

A11-3.3.6. Habitats, species and species groups that are considered to have a nature conservation value of less than local are not considered important ecological features (An ecological feature is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in A Nature Conservation Review (Ratcliffe, 1977)) in the context of this assessment. Any impact on such a feature as a result of the Proposed Scheme is considered unlikely to have a significant effect on the conservation status of such habitats or species on a local or wider scale. Therefore, features assessed to be of less than local nature conservation value have been scoped out of the ecological impact assessment (see Volume 2, Chapter 11: Biodiversity for details of scoped out elements).

However, mitigation is still set out in relation to such features where required for legal reasons.

A11-3.3.7. CIEEM notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (negative or positive) on important ecological features. Significant effects are those that undermine the conservation status of important ecological features. Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its population within a given geographical area. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the project on ecological features.

A11-3.3.8. The importance of a receptor and level of impact on it are considered to determine significance of effect, taking mitigation into account. There may in addition be a number of impacts on a feature that, whilst not of a character to be significant in themselves, may cumulatively result in a significant effect on that feature.

A11-3.3.9. Significance of effect is used to inform the determination of whether or not the impact on the feature in question is a significant in the context of the EIA Regulations. DMRB LA 108 states '*significant effects typically comprise effects that remain within the moderate, large or very large categories once mitigation has been taken into account*'.

Mitigation

A11-3.3.10. The principles of the biodiversity mitigation hierarchy have been applied when considering potential impacts and subsequent effects on ecological receptors

within the EZoI. The principles of the mitigation hierarchy are that impacts on biodiversity should be subject to the following sequential mitigation actions:

- avoidance
- mitigation and finally
- compensation, including offsetting.

A11-3.3.11. For the purpose of this assessment, mitigation refers to measures that are considered essential to avoid and reduce negative impacts of the Proposed Scheme. Compensation refers to measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Unless otherwise stated, all compensatory measures are considered to be part of the essential mitigation package.

A11-3.3.12. Within the assessment, potential impacts are characterised first, taking only embedded mitigation into account. The final assessment of significance of effect of residual impacts takes both embedded and additional mitigation into account. The mitigation measures described within Chapter 11: Biodiversity have been incorporated into the design and construction programme and taken into account in the assessment of residual effects. The mitigation aims to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government environmental impact, planning and sustainability policies (see Appendix 11.2: Biodiversity Legislation, Planning Policy and Guidance).

A11-3.3.13. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any negative impacts of the Proposed Scheme. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.

A11-3.3.14. Mitigation is also designed to provide enhancement where practicable in line with policy and guidelines. Biodiversity Net Gain and Natural Capital are discussed in the separate report (Appendix 4.1: Biodiversity Net Gain / Natural Capital Assessment).

A11-3.3.15. Mitigation measures set out in the EIA Report will be specified as environmental commitments in the contract documents to ensure implementation by the appointed Contractor.

A11-3.3.16. Impacts that are not significant (including those where compliance with regulation is required) would also be expected to be avoided or reduced through the application of a Construction Environmental Management Plan (CEMP) and best working practice (e.g. mitigation of potential pollution impacts through adherence to standard best practice and guidelines). Significant ecological impacts are expected to be mitigated through a combination of best practice and typical, proven mitigation methods along with mitigation targeted to specific locations as described in the assessment.

Impact Assessment Assumptions and Limitations

A11-3.3.17. Habitat and species-specific assumptions and limitations are discussed in further detail in Appendices 11.4 – 11.14. Where necessary, a precautionary approach to the assessment and mitigation has been taken and therefore the assessment is considered robust.