

12. Ecology and Nature Conservation

12.1. Introduction

- 12.1.1. This chapter presents the results of the Design Manual for Roads and Bridges (DMRB) Stage 3 Ecological Impact Assessment (EclA) for the Proposed Scheme and considers both terrestrial and aquatic ecological receptors, which includes designated sites, terrestrial and freshwater habitats, plants and species.
- 12.1.2. This DMRB Stage 3 Assessment has been informed by desk study, field survey data and consultation with relevant stakeholders and statutory bodies. The field surveys focused on those habitats and species that have the potential to be affected by the Proposed Scheme. The DMRB Stage 3 Assessment has been undertaken in accordance with the Interim Advice Note 130/10ⁱ, DMRB Volume 11, Section 3, Part 4ⁱⁱ and follows CIEEM guidanceⁱⁱⁱ.
- 12.1.3. Air quality impacts affecting ecological receptors have been considered but ruled out; air quality modelling undertaken during the Stage 3 assessment indicated that changes in NO₂ and particulate emissions will not be significant.

Study Area

- 12.1.4. The Study Areas for the data gathering and field surveys have been determined in accordance with standard best practice and in consultation with Scottish Natural Heritage (SNH) based on site specific approaches required for the scale of the Proposed Scheme and on the requirements of each habitat and species. The ecological Study Areas are as follows:
- Designated Sites and Ancient Woodland – A 10km Study Area (from the existing A9) has been used for internationally designated sites, a 2km Study Area for all other statutory designated sites, and a 1km Study Area for non-statutory designated sites and ancient woodland. The Study Areas and locations of the designated sites and ancient woodland are detailed in Table 12.1 and shown on Figure 12.1a-c.
 - The DMRB guidance indicates that consideration should be given to Special Areas of Conservation (SAC) where bats are the qualifying interest within 30km of the Scheme. There are no SACs designated for bats within Scotland and as such, effects on bats are generally considered within 2km of the Scheme (this distance is considered appropriate to consider the effects of road widening on bats, although local ecological and hydrological connectivity has also been considered within respect to wider effects).
 - Habitat data - A number of data providers were contacted to provide data on protected and notable plant species and habitats (full details provided in paragraph 12.2.6 below). The Study Area was 1km from the existing A9 for terrestrial habitats and 2km from the existing A9 for aquatic habitats.
 - Species Data – A number of data providers were contacted to provide data on protected and notable species (full details provided in paragraph 12.2.6 below). The Study Area ranged from 500m to 5km from the existing A9 depending on the species. A 5km search area was used due to the mobile nature of some species and the size of their home ranges (for example wildcat) and due to the scale at which data is available.
 - Field surveys – The Study Areas for each receptor vary, and is taken from the footprint of the Proposed Scheme, plus appropriate buffers. Specific Study Areas are detailed in Table 12.1 and are shown on Figures 12.2a-j to 12.18a-j.

12.2. Approach and Methods

Overview

- 12.2.1. The assessment has been undertaken in accordance with the following DMRB guidance:
- DMRB Volume 11, Section 3, Part 4: Ecology and Nature Conservationⁱⁱ
 - DMRB Interim Advice Note (IAN) 130/10 Ecology and Nature Conservation: Criteria for Impact Assessmentⁱ (hereafter referenced as IAN 130/10)
- 12.2.2. In addition to DMRB guidance, other policy documents and guidance have been considered during the assessment, including:
- The Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the United Kingdomⁱⁱⁱ
 - Scottish Natural Heritage handbook on Environmental Impact Assessment^{iv}
- 12.2.3. Relevant legislation and policy considered as part of this assessment relating to protected species, designated sites and associated policy is provided in A12.1. Further details on relevant national and local planning policy are found in Chapter 19: Policies and Plans.

Baseline Data Collection

Desk Study and Consultation

- 12.2.4. Baseline data relating to the Study Areas has been gathered from a range of sources through data requests, consultation and using online resources as outlined below.
- 12.2.5. The following online resources were accessed:
- SNH Site Link^v
 - Scottish Natural Heritage's Ancient Woodland Inventory (AWI)^{vi}
 - Scotland's Environment website^{vii}
 - Joint Nature Conservation Committee (JNCC) website^{viii}
 - Forestry Commission Scotland Native Woodland Survey of Scotland^{ix}
 - SEPA River Basin Management Plans Interactive Map^x
 - Ordnance Survey (OS) maps and the Where's the Path website^{xi}
- 12.2.6. The following organisations were contacted to request relevant desk study data, including details of non-statutory designated sites:
- British Trust for Ornithology (BTO)
 - Bat Conservation Trust Scotland (BCT)
 - Cairngorms National Park Authority (CNPA)
 - Fungal Records Database of Britain and Ireland (managed by the British Mycological Society)
 - Forestry Commission Scotland (FCS)
 - Highland Biological Recording Group Centre (HBRG)

- North East Biodiversity Records Centre (NESBrec)
- Raptor Study Groups
- Royal Society for the Protection of Birds (RSPB)
- Scottish Badgers
- Scottish Environment Protection Agency (SEPA)
- Scottish Natural Heritage (SNH)
- Scottish Wildcat Association
- Scottish Wildlife Trust (SWT)
- Findhorn, Nairn and Lossie Fisheries Trust

12.2.7. In addition, a review of the Preliminary Ecological Appraisal (CH2M 2015)^{xii} and ‘*The Potential Utilisation of Highway Underpasses by Deer on the Northern Section of the A9*’ (Mouchel Consulting, 2015)^{xiii} has been undertaken.

12.2.8. Consultation was undertaken with the following stakeholders to agree the scope of the surveys and assessment, through the A9 Environmental Steering Group:

- Scottish Natural Heritage (SNH)
- The Highland Council
- Cairngorms National Park Authority (CNPA)
- Scottish Environment Protection Agency (SEPA)

Field Surveys

12.2.9. This DMRB Stage 3 Assessment has been informed by a series of technical field surveys, including updates to the 2014 Phase 1 habitat survey^{xii} (as shown on Figure 12.3a-1¹) and protected and notable species surveys. Stand-alone technical reports of these surveys have been prepared and are included in Appendices A12.2 to A12.8. These documents explain the rationale for survey extents which are in accordance with approaches to surveys as agreed through the A9 Environmental Steering Group Details of the field surveys conducted for the DMRB Stage 3 Assessment are provided in Table 12.1 below.

Table 12.1: Field Surveys Conducted for DMRB Stage 3 Assessment

Receptor	Desk Study Search Area ²	Type of Survey	Survey Dates	Study Area	Technical Appendix
International designated sites	10km	n/a	n/a	n/a	n/a
Other statutory designated sites	2km	n/a	n/a	n/a	n/a
Non statutory designated sites	1km	n/a	n/a	n/a	n/a

¹ Updates to the Phase 1 habitat mapping have been undertaken using the data gathered from the 2015 NVC surveys as detailed in Appendix A12.2.

² Distance from existing A9.

Receptor	Desk Study Search Area ²	Type of Survey	Survey Dates	Study Area	Technical Appendix
Habitats (Including ancient woodland)	1km	Phase 1 habitat survey ³ National Vegetation Classification	September 2015	Proposed Scheme + 250m	A12.2
Aquatic habitats	2km	River and fish habitat surveys and aquatic macrophytes surveys Aquatic macroinvertebrate surveys Waterbody National Pond Survey	April 2016 May 2016 June 2016	Proposed Scheme + 150m up and downstream	A12.3
Fresh water pearl mussel	2km	Presence/absence surveys	May 2016	100m upstream and 500m downstream	A12.3
Badger	1km	Detailed badger survey	August 2015	Proposed Scheme + 100m	A12.4
Reptiles	1km	Habitat suitability assessment	September 2015	Proposed Scheme	A12.4
Great crested newt	1km	Habitat Suitability Index (HSI) and eDNA analysis	June 2015 and May 2016	Proposed Scheme + 500m	A12.4
Otter	1km	Detailed survey of watercourses	September 2015 and May and June 2016, and February 2017	Proposed Scheme + 100m (extending to 250m on surveyor's judgement)	A12.4
Pine marten	1km	Habitat suitability assessment Den and scat search	October 2015 May and June 2016	Proposed Scheme + 100m	A12.4
Red squirrel	1km	Habitat suitability assessment Detailed transect surveys	October 2015 May and June 2016	Proposed Scheme + 50m	A12.4
Water vole	1km	Detailed survey of watercourses	September 2015 and May	Proposed Scheme + 100m	A12.4

³ The 2014 Phase 1 habitat mapping was updated using the 2015 NVC survey data.

Receptor	Desk Study Search Area ²	Type of Survey	Survey Dates	Study Area	Technical Appendix
			and June 2016		
Wildcat	5km	Habitat suitability assessment	Desk based review based on the SNH wildcat habitat suitability model, plus habitat observations made during other ecological surveys	n/a	A12.4
Bats	2km	Habitat suitability assessment Roost emergence and return surveys A9 crossing surveys	October 2015 May to September 2016	Proposed Scheme + 50m	A12.5
Birds	2km	Wintering birds Breeding birds	October 2015 to March 2016 March to June 2016	Proposed Scheme + 250m	A12.6
Fungi	1km	Habitat suitability assessment – walkover survey	September and October 2015	Proposed Scheme + 50m	A12.7
Invertebrates	1km	Habitat suitability assessment – walkover survey	September 2015	Proposed Scheme + 50m	A12.8

Limitations to the Assessment

- 12.2.10. Specific limitations relating to the desk study and field surveys are referred to within the technical appendices (A12.2 to A12.8). There were no significant limitations, those encountered were minor and related to locations with dense vegetation restricting access.

Ecological Zone of Influence

- 12.2.11. The Ecological Zone of Influence (EZOI) is an area defined by the assessment in which there may be ecological receptors subject to changes and subsequent effects as a result of the Proposed Scheme. The EZOI was determined through:
- A review of the existing conditions within the Proposed Scheme area.
 - Consideration of the activities (during construction and operation phases) associated with the Proposed Scheme.
 - The desk study information including an examination of aerial photography and OS mapping.

- Responses from consultees and records of protected and notable species.
- Findings of the field survey work.

12.2.12. At this stage of the assessment process, due to the large scale and permanent nature of the proposals and as watercourses pass through the area, it is considered that the Zone of Influence of the Proposed Scheme on designated sites may extend to 2km beyond the Proposed Scheme footprint and typically up to 1km for protected and notable species (although this may be reduced or extended depending on the species). For example, a watercourse affected by physical modification within the Study Area could affect a migratory fish population beyond the Study Area (through, for example the severance of spawning habitat).

Temporal Scope

- 12.2.13. Potential impacts on ecological features have been assessed in the context of how the surveyed baseline conditions within the EZoI might change between the surveys and the start of construction.
- 12.2.14. Once construction is complete, the assessment has assumed that the operational phase of the development will last for the foreseeable future.

Nature Conservation Evaluation

- 12.2.15. The general approach to defining the importance of ecological features follows that of CIEEM (2016)ⁱⁱⁱ. The approach is also in line with advice given in IAN 130/10ⁱ.
- 12.2.16. Ecosystems, habitats and species are assigned levels of importance for nature conservation based on the criteria set out in Table 12.2.
- 12.2.17. 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.
- 12.2.18. Only important ecological features are subject to impact assessment. Therefore features that do not meet the criteria for at least local importance are not considered in detail in this assessment.

Table 12.2: Importance Criteria

Importance	Criteria
International	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> · internationally designated areas or undesignated areas that meet the criteria for designation; and/or · viable populations of species of international conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> · the maintenance of qualifying habitats, communities and assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation.
National	Ecosystems and Habitats

Importance	Criteria
	<p>Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> · qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; and/or · viable populations of species of national conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> · the maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; or · the maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Scottish Biodiversity Strategy (SBS) (Scottish Government, 2013, 2015)^{xiv}.
Regional	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> · communities and assemblages that occur within regionally important sites or localities listed as being of conservation importance in the Highland Biodiversity Action Plan (BAP) or Cairngorms Nature Action Plan (CNAP) (including Local Nature Reserves) or within undesignated areas that meet the criteria for such designation; and/or · viable populations of species of regional conservation concern. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> · the maintenance and restoration of biodiversity and ecosystems at a regional level, as defined in the Highland BAP or CNAP.
Authority Area	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> · populations of species of conservation concern within the authority area. <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> · the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Inverness and Nairn Local BAP.
Local	<p>Ecosystems and Habitats Ecosystems or habitats essential for the maintenance of:</p> <ul style="list-style-type: none"> · populations of species of conservation concern within the local area (for example a Local Nature Reserve (LNR)). <p>Species Species whose presence contributes to:</p> <ul style="list-style-type: none"> · the maintenance and restoration of biodiversity and ecosystems at a local level.
Less than Local	<p>Ecosystems and Habitats</p> <ul style="list-style-type: none"> · Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the local area <p>Species</p> <ul style="list-style-type: none"> · Features that are considered to be absent or do not meet any of the above criteria.

12.2.19. In accordance with IAN 130/10ⁱ, deer and invasive non-native species (INNS) were scoped out from ecological evaluation due to their lack of conservation status and so are not further assessed. INNS are discussed in the context of their potential as a risk to

biodiversity and, under the Wildlife and Countryside Act 1981 (as amended), legal responsibilities to prevent their transfer. Deer are discussed in this chapter in the context of potential for vehicle collisions during the operational phase of the proposed scheme, which could have implications regarding human safety and animal welfare.

Impact Characterisation

- 12.2.20. Impact significance was assessed taking into account the nature and magnitude of potential impacts (including duration, extent and reversibility) and their consequent effects on important ecological features, using criteria as set out below.
- 12.2.21. For the purposes of this assessment, the impact descriptors in Table 12.3 are taken to summarise the overall characterisation of positive or negative impacts in accordance with CIEEM (2016)ⁱⁱⁱ, including:
- impact extent/scale (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, medium-term, long-term or permanent)
 - likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely)
- 12.2.22. The character of impacts is defined using the criteria set out in Table 12.3. Impact character was identified as high, medium, low or negligible, following the above impact characterisation approach.

Table 12.3: Impact magnitude and character for ecological features

Impact Descriptor	Impact Characterisation
High	An impact resulting in a permanent effect on the distribution and/or abundance of a habitat, species assemblage/community or population, in such a way as to alter the integrity of the feature and its conservation status. If negative, this type of effect would reduce the integrity of the feature and its conservation status. If positive, it would result in an improvement to the conservation status of the feature.
Medium	An impact resulting in a long-term but reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative, this type of effect would have neutral long-term implications for the integrity of the feature or its conservation status. If positive, it would not alter the long-term conservation status of the feature.
Low	An impact resulting in a short-term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population.
Negligible	No discernible impact on the distribution and/or abundance of a habitat, species assemblage/community or population.

Impact Significance

- 12.2.23. Each feature's importance and the potential impacts upon it have been determined through the above described collection of data and consultation, and also from prior project experience, 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.

- 12.2.24. CIEEM (2016)ⁱⁱⁱ 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 status⁴ of important ecological features. Knowledge and assessment of construction methods and operational activities, together with the professional expertise of ecologists with experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the project on ecological features.
- 12.2.25. Following the above approach the assessment aims to characterise ecological impacts rather than placing a reliance only on magnitude. The character of an impact is used to inform the determination of whether or not the impact on the feature in question is a significant one.
- 12.2.26. Where impacts on internationally, nationally or regionally important ecological features are characterised as 'medium' or 'high', they are considered to be potentially significant for the purposes of the Environmental Impact Assessment (EIA) Regulations^{xv}.
- 12.2.27. Impacts characterised as 'low' on internationally important features, can be determined as potentially significant as can impacts characterised as 'high' impacts on features of authority area importance. 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.
- 12.2.28. Where significant impacts are identified, mitigation will be developed to reduce impacts where feasible and are 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.
- 12.2.29. Impacts that are not significant (including those where compliance with regulation is required) would 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/ typical mitigation methods and also mitigation targeted to specific locations as described in the assessment.
- 12.2.30. Mitigation is also designed to produce a net gain for biodiversity where practicable in line with policy and guidelines (CIEEM, 2016)ⁱⁱⁱ.

Mitigation Hierarchy

- 12.2.31. The principles of the mitigation hierarchy^{xvi} have been applied when considering potential impacts and subsequent effects on ecological receptors within the EZol.

⁴ 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.

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

- avoidance
- mitigation
- compensation
- enhancement

12.3. Baseline Conditions

12.3.1. All of the ecological features within the Proposed Scheme and EZol of the Proposed Scheme have been valued according to the criteria outlined above.

Designated Sites and Ancient Woodland

12.3.2. Table 12.4 summarises the designated sites situated within the EZol for this DMRB Stage 3 Assessment. These are shown on Figure 12.1a-c (Carn nan Tri-tighearnan and Loch Ashie are not shown due to the mapping extent presented on the figures, but are within 10km).

Table 12.4: Designated Sites within the Ecological Zone of Influence

Site Name and Designation	Location of Site in relation to closest Proposed Scheme	Reason for Designation	Nature Conservation Value
Slochd SAC	1.6km southwest	The qualifying feature of this site is European dry heath.	International
Carn nan Tri-tighearnan SAC and SSSI	3.8km northeast of Scheme	The SAC qualifying feature of this site is blanket bog. The SSSI is designated for its blanket bog and subalpine dry heath.	International
Loch Ashie SPA	9.5km northwest of Scheme	Slavonian Grebes are the qualifying feature of this site.	International
Littlemill Fluvioglacial landforms SSSI	1.6km west of northern end of scheme	Geological SSSI – not considered further within this Chapter.	National

12.3.3. A total of 16 areas of ancient woodland are present within the EZol which are listed on the SNH AWI, these are detailed in Table 12.5 and shown on Figure 12.1a-c. For each woodland block an identifier (ID), location information, and a description of the NVC survey details recorded for the block (where applicable) are provided.

12.3.4. The ancient woodland within the Study Area is predominantly Scots pine *Pinus sylvestris* dominated coniferous plantation woodland. The majority of the wooded areas within areas designated as ancient woodland do not exhibit features which are characteristic of ancient woodland, such as very old, mature trees and a well-developed and diverse ground flora. A notable exception to this is ancient woodland stand 12, located to east of the A9, which supports mature trees and floristically diverse ground flora.

12.3.5. The majority of the areas classified as ancient woodland within the Study Area contain other non-woodland habitat, such as grassland and heathland. Three areas classified as ancient woodland on the SNH AWI are not woodland, instead comprising heathland, grassland, bare ground or scrub (see ID Areas 9, 10, and 15 in Table 12.5).

Table 12.5: Ancient Woodland within the EZoI (ID Areas which are within the Proposed Scheme footprint are in bold)

Area ID	Category	Co-ordinates	Section	NVC Code	Description
1	2a Ancient (of semi-natural origin)	280826, 827578	South-west of the A9. 200m from the Proposed Scheme	U4b / W11 / U20	Polygon is predominantly birch dominated broad-leaved plantation woodland, an area of semi-improved acid grassland, and an area of B-road.
2	2a Ancient (of semi-natural origin)	280992, 827819	East and west of the A9. Within Proposed Scheme.	W18, W17, W11, U4, Buildings, Private Gardens, and Road.	Polygon is extensive and covers a variety of habitats, both woodland and non-woodland. Woodland comprises Scots pine plantation and semi-natural and plantation birch woodland. Woodland occupies approximately 75% of the polygon, while non-woodland habitat comprises the remaining 25%. Habitat within the Proposed Scheme includes a small area of birch woodland which does not support a notable ground-flora, and areas of dense bracken, grassland, and hard standing.
3	2a Ancient (of semi-natural origin)	280742, 829116	East and west of the A9. Within the Proposed Scheme.	W18, W11, U4, MG10, Road	The polygon is predominantly semi-natural birch woodland, with smaller pockets of Scots pine plantation, acid grassland, and hard standing. Habitat within the Proposed Scheme includes a small area of plantation birch woodland and the existing A9.
4	2b Long-Established (of plantation origin)	280416, 829427	At southern end of scheme, west and east of the A9. Adjacent to the Proposed Scheme.	W18 / W18c / U4 / Road	The polygon is predominantly Scots pine plantation woodland. The polygon also encompasses the existing A9 and acid grassland verge.
5	2b Long-Established (of	279844, 829646	At southern end of scheme, west of A9.	W18 / MG6 / BG / Road	The polygon is predominantly dense Scots pine plantation woodland. The portion of the polygon

Area ID	Category	Co-ordinates	Section	NVC Code	Description
	plantation origin)		Within Proposed Scheme.		which lies within the Proposed Scheme footprint encompasses an existing B-road, and areas of semi-improved grassland and buildings.
6	2b Long-Established (of plantation origin)	279339, 830299	West of A9. Within 100m buffer of Proposed Scheme.	W18 / BG	The polygon is predominantly Scots pine dominated plantation woodland. This woodland is relatively dense in places, but also supports sparsely wooded areas which contain acid grassland dominated ground-flora. The northern edge of the polygon supports buildings and areas of bare ground.
7	2b Long-Established (of plantation origin)	279404, 830595	East of A9. Within the Proposed Scheme.	W18 / H12 / W11 / MG10a / M19 / U2 / BG / PG / road	The polygon is contains dense Scots pine plantation woodland. The polygon also contains areas (approximately 25% of the polygon) of heathland, grassland (both neutral and acid), buildings, private gardens, and a road (access track). The portion of the polygon which falls within the Proposed Scheme footprint supports coniferous plantation woodland, broad-leaved (downy birch <i>Betula pubescens</i>) woodland, grassland, and a small area of heath and access track).
8	2b Long-Established (of plantation origin)	277862, 833526	East of A9 and B9154, to the west of Loch Moy. Within 100m of the Proposed Scheme.	W18 / W17 / BG / BD / M17 / road	The polygon is predominantly Scots pine dominated plantation woodland. Small pockets of birch <i>Betula</i> sp. woodland are also present. The coniferous woodland within this polygon is mature and supports a relatively well-developed and diverse ground flora.
9	2a Ancient (of semi-natural origin)	276324, 834345	West of A9. 220m from the Proposed Scheme.	M19 / H12	The polygon is predominantly wet heath, although a small patch of dry heath is present. This area does not currently support woodland.
10	1a Ancient (of semi-	274912, 834090	West of A9. Within 50m of the	H12 / W19	The polygon is predominantly dry heath, although a small stand of scrub is also present. This

Area ID	Category	Co-ordinates	Section	NVC Code	Description
	natural origin)		Proposed Scheme.		polygon does not currently support woodland.
11	2b Long-Established (of plantation origin)	276187, 834803	West of A9. Within Proposed Scheme.	W18 / W17 / W11 / U5 /	The polygon contains a mosaic of Scots pine plantation woodland, heath, and acid grassland. The Proposed Scheme footprint lies within an area of Scots pine dominated coniferous woodland.
12	2b Long-Established (of plantation origin)	276464, 833921	East of the A9. Within the Proposed Scheme.	W18 / W17 / W11 / CP / M6 / M4 / U2	The polygon is predominantly Scots pine dominated plantation woodland. The Scots pine woodland within this area is mature, and has taken on characteristics of a mature woodland, including well developed and diverse ground flora. A strip of dense Sitka spruce dominated plantation woodland is situated to the centre of the polygon; this stand is species-poor and does not support a well-developed or diverse ground flora.
13	2b Long-Established (of plantation origin)	276730, 834324	East of the A9. Within 200m of the Proposed Scheme.	W18, W11, Road, Buildings and Private Gardens	The polygon contains predominantly non-woodland habitat (75%), an existing B-road an area of amenity grassland and building. Woodland habitat comprises semi-natural broad-leaved birch woodland and Scots pine plantation woodland.
14	2b Long-Established (of plantation origin)	276322, 834333	East of the A9. Within the Proposed Scheme.	W18, W17, U5, U4, M15	Polygon is approximately 50% woodland, including Scots pine plantation woodland and semi-natural birch woodland. Other habitats comprise acid grassland and an area of wet heath. The Proposed Scheme is within an area of Scots pine plantation woodland with an impoverished ground-flora.
15	1a Ancient (of semi-natural origin)	276990, 834408	East of the A9. 250m from the Proposed Scheme.	N/A (outside of NVC Study Area)	Area of polygon within 250m of Proposed Scheme is not wooded, containing improved and semi-improved grassland.
16	Other (on Roy Map)	273653, 834066	South of the A9. 250m	N/A (outside of	Area of polygon within 250m of Proposed Scheme

Area ID	Category	Co-ordinates	Section	NVC Code	Description
			from the Proposed Scheme.	NVC Study Area)	supports plantation woodland, likely Scots pine dominated.

Terrestrial Habitats

- 12.3.6. Woodland is widespread and relatively extensive throughout the Study Area. The majority is Scots pine dominated coniferous woodland which is of plantation origin. These stands are generally semi-mature to mature and do not support a notably diverse ground-flora. However, there are examples of mature stands with a diverse ground flora, predominantly within the vicinity of Lynebeg. Semi-natural broad-leaved woodland, predominantly birch woodland also occurs within the Study Area although it is generally smaller in extent and restricted to the southern end of the Proposed Scheme.
- 12.3.7. Various mire types and associated flush communities are present within the Study Area, most often occupying flatter, wetter and gently sloping peaty areas. These areas tend to be fragmented, generally occurring in a mosaic with heath and grassland communities, but there are a few larger expanses of blanket bog habitat (particularly to the east of Loch Moy).
- 12.3.8. Wet heath constitutes a relatively small proportion (1.5% of the EZol) of the Study Area, occupying some of the peat upland gently sloping areas and the fringes of blanket bogs. It most often forms mosaics and transitions with other mire types as well as dry heaths and acid grasslands.
- 12.3.9. There are substantial areas of dry heath within the Study Area, particularly on higher, steeper and drier slopes with thinner soils to the west of the existing A9. The dry heath commonly forms mosaics and transitions with various mire, wet heath and acid grassland communities.
- 12.3.10. Grassland within the Study Area is a relatively widespread. It includes acid grassland, the existing A9 verge and areas used for rough grazing, and as mosaics with other habitats such as heath, mire, and other vegetation communities of open habitats. Neutral grassland areas are relatively extensive in the vicinity of Dalmagarry, and predominantly comprise agriculturally improved fields which are generally species-poor.

Field Survey Results - NVC

- 12.3.11. The NVC field surveys recorded 43 vegetation communities within the Study Area, including:
- woodland and scrub: W4, W6, W7, W9, W10, W11, W17, W18, W19, W23, W24
 - mires and flushes: M2, M3, M4, M6, M10, M17, M19, M20, M23, M25
 - wet heaths: M15, M16
 - dry heaths: H9, H10, H12, H9-12 Intermediate, H16, H18, H21
 - grasslands (including acid (calcifugous) and neutral (mesotrophic) grassland) and bracken: U2, U4, U5, U6, U20, MG1, MG6, MG9, MG10
 - swamp: S9
 - vegetation of open habitats (tall ruderal areas): OV24, OV25, OV27

- 12.3.12. The results of the NVC surveys are described in detail in Appendix A12.2 and the distribution of the various vegetation communities is presented on Figure 12.2a-l. Table 12.6 provides a summary of the survey results.
- 12.3.13. The surveys recorded a number of vegetation communities which may, depending on hydrogeological setting, be considered Ground Water Dependent Terrestrial Ecosystems (GWDTE). Table 12.6 details the potential GWDTE status of each vegetation community, which is shown on Figure 12.4a-k. A total of 452 locations were identified as being potentially groundwater dependent within the study area. A number of areas (62 areas) have been screened out where they are located more than 250m from the Proposed Scheme. Additionally, areas which are not hydrologically connected to the scheme (79 areas), were also screened out from the assessment. A total of 311 locations were screened in for baseline review of groundwater dependency. A qualitative baseline assessment of the groundwater dependency of each community is provided Appendix A10.3. Chapter 10 Geology, Soils and Groundwater presents the impact assessment for these features.
- 12.3.14. The NVC communities have been reviewed against the Joint Nature Conservation Committee (JNCC) Annex I habitats and Scottish Biodiversity List (SBL) of Priority Habitats. 19 Annex 1 habitats have been identified as well as seven SBL Priority Habitats, details of these are provided in Table 12.6 and are presented on Figure 12.2a-l (Annex 1 habitats) and Figure 12.5a-k (SBL Priority Habitats).

Table 12.6. Summary of Study Area NVC Communities and associated Annex 1 and SBL Priority Habitats (those communities qualifying as Annex I habitat are in bold)

NVC Codes Recorded	NVC Community Name	Area of habitat (Ha)	% of EZoI	Potential GWDTE Status	Annex I Type Code	SBL Priority Habitat Type
Woodland and Scrub						
W4, W4b, W4c	<i>Betula pubescens</i> – <i>Molinia caerulea</i> woodland	6.8	0.7	High	n/a	Upland birch woods
W6	<i>Alnus glutinosa</i> – <i>Urtica dioica</i> woodland	0.04	0.004	Moderate	n/a	Wet woodland
W7, W7a, W7c	<i>Alnus glutinosa</i> – <i>Fraxinus excelsior</i> – <i>Lysimachia nemoreum</i> woodland	0.4	0.04	High	91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	Wet woodland
W9a	<i>Fraxinus excelsior</i> – <i>Sorbus aucuparia</i> – <i>Mercurialis perennis</i> woodland	0.4	0.04	n/a	n/a	Upland mixed ashwoods
W10	<i>Quercus robur</i> – <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> woodland	0.06	0.006	n/a	n/a	Lowland mixed deciduous woodland
W11, W11c, W11d	<i>Quercus petraea</i> – <i>Betula pubescens</i> – <i>Oxalis acetosella</i> woodland	26.8	2.8	n/a	n/a	Upland birchwoods
W17, W17b, W17c	<i>Quercus petraea</i> – <i>Betula pubescens</i> – <i>Dicranum majus</i> woodland	18.1	1.9	n/a	n/a	Upland birchwoods
W18, W18a, W18b, W18c, W18d	<i>Pinus sylvestris</i> – <i>Hylocomium splendens</i> woodland	194.7	20	n/a	n/a	n/a
W19, W19a, W19b	<i>Juniperus communis</i> – <i>Oxalis acetosella</i> woodland	1	0.1	n/a	5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands	n/a
W23	<i>Ulex europaeus</i> – <i>Rubus fruticosus</i> scrub	0.2	0.02	n/a	n/a	n/a
W24	<i>Rubus fruticosus</i> – <i>Holcus lanatus</i> underscrub	0.04	0.004	n/a	n/a	n/a

NVC Codes Recorded	NVC Community Name	Area of habitat (Ha)	% of EZoI	Potential GWDTE Status	Annex I Type Code	SBL Priority Habitat Type
Mires and Wet Heath						
M2, M2b	<i>Sphagnum cuspidatum</i> / <i>fallax</i> bog pool community	0.03	0.003	n/a	7130 Blanket bogs	Blanket bog
M3	<i>Eriophorum angustifolium</i> bog pool community	Community forms mosaic with U6 acid grassland, where it is sub-dominant		n/a	7130 Blanket bogs	Blanket bog
M4	<i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire	0.4	0.04	n/a	7140 Transition mires and quaking bogs	Upland flushes, fens and swamps
M6, M6a, M6b, M6c	<i>Carex echinata</i> - <i>Sphagnum fallax/denticulatum</i> mire	15.1	1.6	High		Upland flushes, fens and swamps
M10a	<i>Carex dioica</i> - <i>Pinguicula vulgaris</i> mire	19.0	2.0	High	7230 Alkaline fens	Upland flushes, fens and swamps
M15, M15a, M15b, M15c, M15d	<i>Trichophorum germanicum</i> – <i>Erica tetralix</i> wet heath	14.2	1.5	Moderate	4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> or 7130 Blanket bogs (where peat is greater than 0.5m deep) (*M15a excluded from blanket bog)	Upland heathland or blanket bogs (where peat is greater than 0.5m deep) (*M15a excluded from blanket bog)
M16d	<i>Erica tetralix</i> – <i>Sphagnum compactum</i> wet heath	1.7	0.2	High	4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> or 7130 Blanket bogs (where peat is greater than 0.5m deep) (*M15a excluded from blanket bog)	Upland heathland or blanket bogs (where peat is greater than 0.5m deep) (*M15a excluded from blanket bog)
M17, M17a, M17b, M17c	<i>Trichophorum germanicum</i> – <i>Eriophorum vaginatum</i> blanket mire	46.1	4.7	n/a	7130 Blanket bogs	Blanket bog
M19, M19a, M19b, M19c	<i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> blanket mire	46.8	4.8	n/a	7130 Blanket bogs	Blanket bog
M20, M20a	<i>Eriophorum vaginatum</i> blanket mire	5.2	0.5	n/a	7130 Blanket bogs	Blanket bog

NVC Codes Recorded	NVC Community Name	Area of habitat (Ha)	% of EZoI	Potential GWDTE Status	Annex I Type Code	SBL Priority Habitat Type
M23a, M23b	<i>Juncus effusus/acutiflorus</i> - <i>Galium palustre</i> rush-pasture	9.9	1.0	High	n/a	Upland flushes, fens and swamps (applies to M23a only)
M25, M25a, M25b	<i>Molinia caerulea</i> – <i>Potentilla erecta</i> mire	3.3	0.3	Moderate	7130 Blanket bogs (where peat is greater than 0.5m deep – M25a only)	Blanket bog (where peat is greater than 0.5m deep - M25a only)
Dry Heaths						
H9, H9a, H9c	<i>Calluna vulgaris</i> – <i>Deschampsia flexuosa</i> heath	2.9	0.3	n/a	4030 European dry heaths	Upland heathland
H10, H10a	<i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath	11.4	1.2	n/a	4030 European dry heaths	Upland heathland
H9-12 Intermediate	H9 to H12 Intermediate heath	27.8	2.9	n/a	4030 European dry heaths	Upland heathland
H12, H12a, H12b, H12c	<i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> heath	53.4	5.5	n/a	4030 European dry heaths	Upland heathland
H16	<i>Calluna vulgaris</i> - <i>Arctostaphylos uva-ursi</i> heath	Community forms mosaic with H9 – H12 heath, where it is sub-dominant.		n/a	4030 European dry heaths	Upland heathland
H18a	<i>Vaccinium myrtillus</i> – <i>Deschampsia flexuosa</i> heath	0.03	0.003	n/a	4030 European dry heaths	Upland heathland
H21a	<i>Calluna vulgaris</i> – <i>Vaccinium myrtillus</i> – <i>Sphagnum capillifolium</i> heath	5.5	0.6	n/a	4030 European dry heaths	Upland heathland
Calcifugous Grasslands						
U2, U2a	<i>Deschampsia flexuosa</i> grassland	2.0	0.2	n/a	n/a	n/a
U4, U4a, U4b, U4d, U4e	<i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Galium saxatile</i> grassland	120.9	12.4	n/a	n/a	n/a

NVC Codes Recorded	NVC Community Name	Area of habitat (Ha)	% of EZoI	Potential GWDTE Status	Annex I Type Code	SBL Priority Habitat Type
U5, U5a, U5b, U5d	<i>Nardus stricta</i> – <i>Galium saxatile</i> grassland	21.4	2.2	n/a	n/a	n/a
U6, U6a, U6b, U6d, U6z	<i>Juncus squarrosus</i> – <i>Festuca ovina</i> grassland	2.5	0.3	Moderate	n/a	n/a
U20	<i>Pteridium aquilinum</i> – <i>Galium saxatile</i> community	0.4	0.4	n/a	n/a	n/a
Mesotrophic grasslands						
MG1	<i>Arrhenatherum elatius</i> grassland	1.8	0.2	n/a	n/a	n/a
MG6	<i>Lolium perenne</i> – <i>Cynosurus cristatus</i> grassland	45.6	4.7	n/a	n/a	n/a
MG9	<i>Holcus lanatus</i> – <i>Deschampsia cespitosa</i> grassland	9.9	1.0	Moderate	n/a	n/a
MG10a	<i>Holcus lanatus</i> – <i>Juncus effusus</i> rush-pasture	19.0	2.0	Moderate	n/a	n/a
Swamps and Tall-Herb Fens						
S9, S9a	<i>Carex rostrata</i> swamp	0.2	0.02	n/a	n/a	Upland flushes, fens and swamps
Vegetation of Open Habitats						
OV24	<i>Urtica dioica</i> – <i>Galium aparine</i> community	0.01	0.001	n/a	n/a	n/a
OV25	<i>Urtica dioica</i> – <i>Cirsium arvense</i> community	Community forms mosaic with U4 acid grassland and MG6 neutral grassland, where it is sub-dominant.		n/a	n/a	n/a
OV27	<i>Chamerion angustifolium</i> community	1.2	0.3	n/a	n/a	n/a

Aquatic Habitats

- 12.3.15. River and pond habitats are described in detail in Appendix A12.3.
- 12.3.16. River habitats within the Study Area were characteristic of the upland, historically managed landscape and 'flashy' hydrological regime of the low permeability catchment setting. Surveys recorded low vascular macrophyte abundance and diversity, bed substrates dominated by gravel, pebble and cobble, and a range of flow types from high energy (e.g. chute flow) to low energy (e.g. smooth laminar flow). All watercourses surveyed are relatively minor, with average wetted widths ranging from approximately 0.5 to 2m, and average depths of 0.1-0.3m.
- 12.3.17. The river aquatic macroinvertebrate diversity was relatively high, suggesting good habitat quality and diversity, with 66 species recorded across the sites surveyed, including two Notable⁵ species; the caseless caddis *Hydropsyche fulvipes* and water scavenger beetle *Helophorus arvernicus*. No taxa identified are included on the SBL.
- 12.3.18. All rivers surveyed exhibited a degree of historical modification, consistent with the rural (managed) landscape and the presence of existing infrastructure. Dominant bank land use was predominantly managed, consisting of heathland, coniferous plantation and rough pasture. None of the rivers within the Study Area qualify as Priority Habitat under the published definition for rivers^{xvii}.
- 12.3.19. A variety of riverine fish habitat is present within the Study Area, with glide, pool and riffle/run habitat recorded throughout the watercourses surveyed. Associated features such as large woody debris and undercut banks provide good habitat for salmonid fry and parr in particular. Salmonid spawning habitat was also recorded within the reaches surveyed. Juvenile salmonids were observed in small numbers throughout most reaches surveyed. Adult salmon were also observed spawning in the Dalmagarry Burn, upstream of its confluence with the Funtack Burn, in early November 2016.
- 12.3.20. None of the existing A9 crossings (or other structures observed at survey) pose impassable barriers to fish migration. However some crossings (namely crossings on the Allt na Frithe, Allt Dubhag, and Allt na Loinne Mòire) may pose barriers to upstream fish migration during some flow conditions.
- 12.3.21. Some suitable habitat for freshwater pearl mussel was also identified during the surveys. However, this habitat was sub-optimal and sparsely distributed within the Study Area. No live or dead freshwater pearl mussel were found in any watercourse within the Study Area during species surveys.
- 12.3.22. Pond habitats within the Study Area were all slightly acidic, with high dissolved oxygen levels and relatively low dissolved solids. Overall wetland plant species richness varied notably between ponds, ranging from 8 to 28 species recorded. Aquatic macroinvertebrate survey recorded 33 species across the five ponds surveyed, including two Notable⁴ species; the highland great diving beetle *Dytiscus lapponicus* and the whirligig beetle *Gyrinus minutus*. No taxa identified are included in the SBL. Individual pond species richness was indicative of moderate to good water quality, with a range of 11 to 21 species recorded across the Study Area.
- 12.3.23. No ponds within the Study Area qualify as Priority Habitat under the published definition for ponds^{xviii}.

⁵ Scarce in Great Britain and thought to occur in less than 100 10km squares of the National Grid.

Notable Species

- 12.3.24. From the desk study and recordings made during the 2014 Phase 1 habitat survey and 2015 and 2016 field surveys, a number of protected and notable species have been recorded within the EZol for the Scheme. A summary of those species found to be present within the EZol is provided in Table 12.17 below. Full details of the survey findings can be found in technical appendices A12.2, to A12. 8 and on Figures 12.2a-k to 12.18a-k.
- 12.3.25. The CNPA has provided details of locations where notable species are present that are not legally protected, or where suitable habitat for them may exist. These species are considered important as they are scarce and the Cairngorms hold a significant proportion of the UK population. This list contains invertebrates, plants, fungi and lichens. Areas that have been identified as red or amber priority for Cairngorm priority species are shown on Figure 12.6a-k and 12.7a-k. Red areas have been defined where there are known records of priority species, for example aspen trees or confirmed records of a Cairngorms Nature Action Plan^{xix} species. Amber locations have no confirmed records but an indication of habitat suitability has been provided by an expert in that particular group, for example grassland habitat which has the potential to provide habitat for waxcap fungi.

Summary of Notable Species

- 12.3.26. Table 12.7 provides a summary of notable species records received through desk study and recorded during 2015/16 surveys.

Table 12.7: Notable Species within EZoI

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
Aquatic macroinvertebrates	None received within the Study Area	Two notable species recorded in rivers: caseless caddis <i>Hydropsyche fulvipes</i> and water scavenger beetle <i>Helophorus arvernicus</i> . Two notable species recorded in ponds; the highland great diving beetle <i>Dytiscus lapponicus</i> and the whirligig beetle <i>Gyrinus minutus</i> .	Appendix A12.3 Figure 12.8a-k
Bats	Trees, structures (buildings and bridges) and culverts all identified within the Phase 1 habitat survey as having bat roost potential.	No bat roosts were located within any of the trees subject to survey. Two buildings and five bridges (assessed as having high suitability to support roosting bats) were subject to survey. Roosts were located in the following structures: Building 6 (149) - Single soprano pipistrelle bat observed roosting in the structure. Roost type: day roost. Building 8 (151) - One possible and two confirmed roosts were identified: a possible soprano pipistrelle roost, common pipistrelle roost and a myotis roost. All roosts are likely day / transitional roosts. Bridge 1 (146) - Single soprano pipistrelle bat observed roosting in the structure. Roost type: day roost. Bridge 3 (123) - Single pipistrelle sp. (likely common pipistrelle) observed roosting in the structure. Roost type: transitional roost. Bridge 6 (135) - Single soprano pipistrelle bat observed roosting in the structure. Roost type: day roost. Rock face (1) - One soprano pipistrelle roost, and one roost likely to be either common or soprano pipistrelle. Seven crossing point locations (identified as having moderate suitability for bats to cross either over or under the existing A9) were subject to monthly surveys between May and September 2016. The following crossing activity levels were recorded (maximum peak count recorded detailed below): Crossing Point 1 – 17 bats (August).	Appendix A12.5 Figure 12.9a-k

⁶ Only records from the last 10 years are listed here.

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
		<p>Crossing Point 2 – No bats recorded. Crossing Point 3 – 2 bats (August). Crossing Point 4 – 1 bat (May). Crossing Point 5 – 2 bats (September). Crossing Point 6 – 30 bats (July). Crossing Point 7 – 2 bats (June/July/September).</p> <p>Two transect survey routes were undertaken in an area of high suitability habitat for commuting and foraging bats. Transect surveys were undertaken bi-monthly between May and September 2016. The following activity levels were recorded (maximum peak count recorded detailed below): Transect 1 – 12 bats (June). Transect 2 – 7 bats (June).</p>	
Badger <i>Meles meles</i>	Two records of dead badgers on carriageway.	No badger evidence recorded.	Appendix A12.4 Figure n/a
Birds – breeding	Records received for golden eagle <i>Aquila chrysaetos</i> , kestrel <i>Falco tinnunculus</i> and red kite <i>Milvus milvus</i>	<p>52 bird species recorded during the breeding bird surveys, of which 33 species were recorded breeding. Of the species recorded 11 are listed on the SBL, nine are BoCC⁷ Red listed and 15 are BoCC Amber listed.</p> <p>SBL species recorded: Red grouse <i>Lagopus lagopus</i> - 4+territories; Lapwing <i>Vanellus vanellus</i> - 11+territories; Curlew <i>Numenius arquata</i> - 9+territories; Cuckoo <i>Cuculus canorus</i> - no breeding territories; Skylark <i>Alauda arvensis</i> - 3+territories; Song thrush <i>Trudus philomelos</i> - 7+territories; Spotted flycatcher <i>Muscicapa striata</i> - 1+territory; Dunnock <i>Prunella modularis</i> - 7+territories;</p>	Appendix A12.6 Figure 12.10a-k

⁷ Birds of Conservation Concern

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
		<p>Bullfinch <i>Pyrrhula pyrrhula</i> - 2+territories, Lesser redpoll <i>Carduelis cabaret</i> - 2+territories; Siskin <i>Carduelis spinus</i> - 5+territories.</p> <p>Red list species (not on the SBL): Grey wagtail <i>Motacilla cinere</i> – no breeding territories. Mistle thrush <i>Turdus viscivorus</i> – no breeding territories</p> <p>Amber list species (not on the SBL): House martin <i>Delichon urbica</i> - Kestrel <i>Falco tinnunculus</i> – no breeding territories Meadow pipit <i>Anthus pratensis</i> - Greylag goose <i>Anser anser</i> - 5+territories; Wigeon <i>Anas penelope</i> - 1 pair recorded in April survey; Teal <i>Anas crecca</i> - 1 pair recorded in April survey; Mallard <i>Anas platyrhynchos</i> - 3+territories; Oystercatcher <i>Turdus iliacus</i> - 13+territories; Common sandpiper <i>Actitis hypoleucos</i> - 1 territory; Snipe <i>Gallinago gallinago</i> - 4+territories; and Common gull <i>Larus canus</i> - breeding colony.</p>	
Birds – wintering		<p>A total of 52 bird species were recorded during the wintering bird surveys. Of the species recorded 16 are listed on the SBL, 10 are BoCC⁸ Red listed and 14 are BoCC Amber listed.</p> <p>SBL species recorded: Bullfinch <i>Pyrrhula pyrrhula</i>; Curlew <i>Numenius arquata</i>;</p>	Appendix A12.6 Figure 12.11a-k

⁸ Birds of Conservation Concern

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
		<p>Dunnock <i>Prunella modularis</i>; Hen Harrier <i>Circus cyaneus</i>; Herring Gull <i>Larus argentatus</i>; Kestrel <i>Falco tinnunculus</i>; Lapwing <i>Vanellus vanellus</i>; Lesser Redpoll <i>Carduelis cabaret</i>; Linnet <i>Carduelis cannabina</i>; Red Grouse <i>Lagopus lagopus</i>; Redwing <i>Turdus iliacus</i>; Siskin <i>Carduelis spinus</i>; Skylark <i>Alauda arvensis</i>; Song Thrush <i>Turdus philomelos</i>; Starling <i>Sturnus vulgaris</i>; Woodcock <i>Scolopax rusticola</i>.</p> <p>Red list species (not on the SBL): Fieldfare <i>Turdus pilaris</i>.</p> <p>Amber list species (not on the SBL): Common Gull <i>Larus canus</i>; Crested Tit <i>Lophophanes cristatus</i>; Grey Wagtail <i>Motacilla cinerea</i>; Greylag Goose <i>Anser anser</i>; Mallard <i>Anas platyrhynchos</i>; Meadow Pipit <i>Anthus pratensis</i>; Mistle thrush <i>Turdus viscivorus</i>; and Stock Dove <i>Columba oenas</i>.</p>	

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
Capercaillie Tetrao urogallus	No records within the Study Area	No signs of Capercaillie or individual Capercaillie recorded within the Study Area.	Appendix A12.6 Figure n/a
Deer	Multiple records within EZol. The Tomatin to Moy extent of the existing A9 is known as a hot spot for deer collisions ^{xiv} .	No specific deer surveys undertaken.	Figure 12.18a-k and 12.19a-c
Fish (including salmonids, lamprey and eel <i>Anguilla anguilla</i>)	No records within the Study Area.	No fish surveys undertaken. Juvenile salmonids were observed in small numbers throughout during RHS and freshwater pearl mussel surveys. Adult salmon were also observed spawning in the Dalmagarry Burn, upstream of its confluence with the Funtack Burn, in early November 2016.	Appendix A12.3 Figure 12.12a-k
Freshwater pearl mussel <i>Margaritifera margaritifera</i>	No records within the Study Area.	No freshwater pearl mussels recorded within the Study Area. Habitat was assessed to be sub-optimal for the species and sparsely distributed.	Appendix A12.3 Figure 12.8a-k
Fungi	CNPA have provided details of areas considered likely to support notable fungi. 27 locations have been identified within the Proposed Scheme, of these 13 have been specifically identified for waxcaps.	Habitat suitability walkover survey within Study Area.	Appendix A12.7 Figure 12.6a-k
Great crested newt <i>Triturus cristatus</i>	No records within the Study Area.	Of the 12 ponds located within the Study Area, 11 of which were subject to HSI, all are considered to have poor or below average suitability to support great crested newts. No great crested newts recorded during eDNA surveys of 10 ponds. Two ponds were not subject to eDNA – ponds 18 and 24. For the purposes of the assessment it is assumed that these support great crested newts,	Appendix A12.4 Figure 12.13a-k
Invertebrates	CNPA have provided details of areas considered likely to support notable invertebrates. 16 locations have been identified within the Proposed	Habitat suitability walkover survey within Study Area. Three wood ant nests recorded.	Appendix A12.8 Figure 12.6a-k and 12.7a-k

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
	<p>Scheme, including one location where wood ants have been recorded and 11 with potential for rare saproxylic hoverflies and spiders.</p> <p>Four records of hairy wood ants received.</p>		
Red squirrel <i>Sciurus vulgaris</i>	Six records for red squirrels within the Study Area.	<p>Evidence of red squirrels has been recorded throughout the Study Area, 2015 surveys recorded 70 dreys, 146 feeding signs and 10 sightings and 2016 surveys recorded 42 dreys (2 active), 75 feeding signs and 15 sightings.</p> <p>The majority of dreys were recorded in the northern section of the Proposed Scheme, in areas of woodland located to the west of the A9 at Lynebeg and to the east of the A9 at Moy. These areas of mature Scots pine plantation contain trees of an age and size to provide abundant feeding resources in the form of cones as well as suitable drey sites for red squirrels.</p>	Appendix A12.4 Figure 12.14a-k
Reptiles	Records of slow worm (x 3), common lizard (x 17) and adder (x 1).	A relatively large proportion of the reptile study area supports habitats which are suitable for common reptiles to bask, forage and shelter. Four incidental sightings of common lizard confirms the presence of this species within the Study Area.	Appendix A12.4 Figure 12.15a-k
Otter <i>Lutra lutra</i>	Two records of dead otters on carriageway.	<p>Sporadic sprainting was recorded throughout the Study Area.</p> <p>A total of 9 resting sites recorded (2 holts and 7 hovers). Eight resting sites assessed as low status due to limited amount of otter evidence recorded and the nature of the features. One resting site (TN 9) assessed as moderate status due to the amount of otter evidence recorded (spraints of various ages).</p> <p>The evidence recorded during the field surveys indicates that otter are using many of the watercourses in the Study Area to commute and forage. However, the limited number of resting sites and sporadic nature of spraints found suggests that these watercourses are not the mainstay of otter territory and they are not regularly patrolled.</p>	Appendix A12.4 Figure 12.16a-k

Species or Species Group	Desk Study Records ⁶ , including incidental records during 2014 Phase 1 habitat survey	Summary of 2015/2016 Field Survey Records	Relevant Technical Appendix and Figures
Pine marten <i>Martes martes</i>	Three records within the Study Area.	The overall habitat suitability of the Study Area has been assessed as sub-optimal for pine marten. Two pine marten scats were recorded and the species is likely to occur at low densities across the Scheme.	Appendix A12.4 Figure 12.17a-k
Water vole <i>Arvicola amphibius</i>	No records within the Study Area.	Field surveys in 2015 and 2016 have recorded water vole latrines along Allt Creag Bhethin and its tributary, Allt Dubhag, Midlairg's Burn, the River Findhorn and its tributaries on the southbound side of the A9, and the tributary of Moy Burn. The largest population was recorded on the Allt Creag Bhethin and its unnamed tributary - 2016 surveys recorded 64 latrines and 67 burrows, population estimated ⁹ at 45 water voles. The populations on the Midlarig's Burn and River Findhorn are estimated to be smaller at 7 and 8 water voles respectively. Field surveys in 2015 recorded water vole latrines along Allt Dubhag and the tributary of Moy Burn. Both of these watercourses were estimated to support a population of three water voles at the time of survey. No latrines were recorded along either watercourse during 2016 surveys.	Appendix A12.4 Figure 12.16a-k
Wildcat <i>Felis silvestris grampia</i>	No records within the Study Area, the closest record is approximately 4km south of the Scheme.	No specific surveys undertaken.	Appendix A12.4 Figure n/a
Other notable species	Six records of hedgehog. One record of mountain hare. Three records of brown hare.	Nothing recorded.	Appendix A12.4 Figure 12.18a-k

⁹ Population estimate formula: $y = 1.48 + 0.683(x)$, whereby y = number of water voles and x = number of latrines.

Other species - Deer

- 12.3.27. In accordance with IAN 130/10, deer were scoped out from ecological evaluation due to their lack of conservation status. However, deer are discussed below in the context of potential for vehicle collisions during the operational phase of the Proposed Scheme, which could have implications for human safety and animal welfare.
- 12.3.28. Data on deer collisions in the vicinity of the existing A9 road was received from Highland Biological Recording Group Centre (HBRG) covering the period 2002 to 2013. The data show a number of deer collisions along the Proposed Scheme with some clustering mainly within the vicinity of woodland and grazing land with a water source nearby. This data has been reviewed and is summarised below in relation to current habitats, passage across the A9 and existing deer fencing locations. Locations of deer collision records are shown on Figure 12.19a-c, as well as locations of existing passage (see paragraph 12.3.33) under the A9.
- 12.3.29. There are a number of deer collisions recorded along the stretch of the existing A9 road that is adjacent to Loch Moy. Four of these are clustered between Lynebeg and Moy near where Alt na Loinne Moire crosses under the existing A9 (recorded between 2012 and 2013). There is a deer fence that runs from the south up to the southwestern edge of A9 road at this location. It is possible that deer moving south or west between water, grazing, and shelter are blocked by the deer fence at this location, increasing the amount of time the deer are on or in the near vicinity of the A9, and consequently increasing the risk of collision.
- 12.3.30. Immediately south of Loch Moy, between the southern end of the woodland surrounding Loch Moy and Dalmagarry running parallel to Funtack Burn to the west (approximately 1.6km) there are eight recorded collisions (between 2007 and 2011). It is possible that some of these recorded collisions occurred around the railway line which runs in close proximity to the road in this area. There is a water source to the east of the existing A9 and woodland/scrub cover along the A9 corridor; however, there is a deer fence to the west of the existing A9 and railway line which could block deer movement into the land west of the existing A9. As mentioned above, the deer fence could block movement into the wider area and could increase risk of vehicle collision in this location.
- 12.3.31. There are four records of deer collisions to the north of Tomatin, in the north of the woodland and adjacent grazing land (recorded between 2004 and 2010)). There is a water source in the vicinity. The deer fence runs north/south to the west of the railway line which runs parallel and to the west of the existing A9. The River Findhorn is located to the east of the road which, when coupled with the railway and deer fence on the west, could act as a bottleneck for deer moving in this area which could explain the cluster of deer collision records.
- 12.3.32. There are two clusters focused where the existing A9 crosses the River Findhorn (to the east of the Findhorn Viaduct) (one cluster each side of the crossing, each with three collisions, recorded between 2004 and 2012)). The records appear to be in areas where there is woodland/scrub along the roadside. It is possible that deer may be attempting to cross the road where there is woodland cover on either side, rather than dropping down through pastoral fields to cross under the road, along the side of the River Findhorn.
- 12.3.33. In terms of existing passage under the A9, it is possible that deer use the following locations:
- Underpass where Dalmagarry Burn crosses under the A9 (Chainage 3650). There are two records of deer collisions in this area; although it is likely one was recorded along the adjacent railway line.

- Underpass located midway between Tomatin and Dalmagarry (Chainage 2200) with the closest deer collision record being approximately 250m to the south.
 - Underpass at Tomatin (Chainage 450) which consists of a vehicular underpass; however, there are records of deer collision 160m to the north and 250m to the south of this location.
- 12.3.34. Deer have been scoped out of the EclA. In relation to health and safety, the Proposed Scheme will increase the permeability of the road to deer with the new underpasses at Lynebeg LILLO, Tomatin junction and Dalmagarry Burn. At Lynebeg and Tomatin although roads will pass through these underpasses, levels of traffic are likely to be low at night and as such it may be used by the species. At the Dalmagarry Burn bridge an access track will pass under the A9, with this underpass likely to have very low vehicle usage at night so will be suitable for deer usage.
- 12.3.35. Existing underpasses (at chainages 3650 and 450 as detailed above) will remain suitable for use following Scheme construction. The underpass between Tomatin and Dalmagarry, will be removed as part of the Proposed Scheme. Given the distance and limited number of collisions recorded in this area the loss of the underpass at this location is considered unlikely to impact deer passage or permeability in the area, particularly in cognisance of the retention of two underpasses and the creation of new underpasses. The location of the new passage under the A9 is shown on Figure 12.19a-c.

Nature Conservation Valuation

Ancient Woodland

- 12.3.36. There are 16 areas listed on the AWI within the EZol totalling an area of approximately 200ha (see Figure 12.1a-c). Of these sites 10 are classified as 2b Long-established (of plantation origin), five as 2a Ancient (of semi-natural origin), and one as Other (on Roy Map).
- 12.3.37. Detailed survey data has not been collected for those ancient woodland stands which will not be directly affected by the Proposed Scheme (Areas 1, 4, 6, 8, 9, 10, 13, 15, and 16). A precautionary approach has been taken to the evaluation of these sites and they are assessed as being of up to Authority Area importance. Detailed survey data has been collected for those sites which will be subject to direct habitat loss (Areas 2, 3, 5, 7, 11, 12, and 14) in an effort to characterise these sites and provide a more accurate assessment of their nature conservation importance. A description of these woodland stands and their valuation is presented below.
- 12.3.38. ID Area 2 encompasses a range of habitat types, including woodland and non-woodland habitats (grassland, roads, buildings etc.). Habitats comprise predominantly non-woodland, including hard standing areas (the existing A9), grassland (the A9 verge), and areas of dense bracken. The woodland that is present is birch or Scots pine plantation woodland, or birch woodland of a semi-natural origin. It covers a relatively small area and does not contain very mature or ancient trees or a notably developed or diverse ground flora.
- 12.3.39. ID Area 3 (Figure 12.1b) comprises predominantly birch woodland of a semi-natural origin, but hard standing (the existing A9) and acid grassland area habitat is also present. Woodland habitat is of a limited extent, and includes a small area of birch dominated plantation woodland and the existing A9. The wooded area does not support mature or ancient trees or a notably diverse or developed ground-flora.

- 12.3.40. ID Area 5 (Figure 12.1b) is predominantly comprised of dense Scots pine plantation woodland with smaller patches of Sitka spruce. Non-woodland habitat, including grassland and an existing B-road, are also present, comprising approximately 5% of the designated area. The Proposed Scheme falls completely within the area of non-wooded habitat. Within the wooded areas, the ground-flora at the woodland edge is generally species-poor, dominated by grasses such as tufted hair-grass *Deschampsia cespitosa* and Yorkshire-fog *Holcus lanatus* and common moss species such as *Polytrichum commune* and *Sphagnum fimbriatum*. Deeper into the woodland, the ground-flora is very sparse, with the ground mostly covered in conifer needles. This stand does not exhibit features which are characteristic of an ancient woodland.
- 12.3.41. ID Area 7 (Figure 12.1b) supports predominantly Scots pine plantation woodland, although a strip of semi-natural broad-leaved birch woodland is also present adjacent to Allt Dhubaig burn (approximately 10% of the area). It also contains areas of non-woodland habitat (approximately 15% of the area), including heathland, acid grassland, buildings, private gardens, and a road (access track). Within wooded areas, the ground-flora is generally species-poor, predominantly comprised of grasses including creeping soft-grass *Holcus mollis* and common bent *Agrostis capillaris* and common bryophytes. Within the vicinity of the burn where the woodland has thinned out, the ground-flora is however more diverse, where species indicative of ancient woodland occur including bilberry, greater wood-rush *Luzula sylvatica*, and primrose *Primula vulgaris*. This area constitutes a relatively small proportion of the entire AWI polygon (less than 5%). Despite this relatively small area of greater diversity, the stand is a predominantly dense coniferous plantation woodland with a species-poor ground-flora.
- 12.3.42. ID Area 11 (Figure 12.1c) supports Scots pine coniferous plantation woodland as well as non-woodland habitat (approximately 25% of the area) including acid grassland, relatively small areas of heath, and an access track. Within the wooded areas to the east of the designation the ground-flora is more well developed, comprising heather *Calluna vulgaris*, bilberry *Vaccinium myrtillus*, wavy hair-grass *Deschampsia flexuosa* and common mosses *Rhytidiadelphus squarrosus*, *Pleurozium schreberi*, *Hypnum jutlandicum*, *Pseudoscleropodium purum* and *Hylocomium splendens*. The woodland to the west is denser and supports a species-poor ground flora of acid grassland and common mosses. Although the ancient woodland area exhibits areas which have a well-developed ground-flora, across the stand, the woodland is managed for plantation and the trees are consequently not of a notable age. It also contains a significant area of non-woodland habitat within the designated area (approximately 25%).
- 12.3.43. ID Area 12 (Figure 12.1c) supports a mosaic of plantation and semi-natural stands, dominated by Scots pine. The understory includes occasional birch. Generally this stand is a good example of long-established pine woodland. The areas adjacent to the existing A9 are generally less mature, although they are still in good condition. Natural ground flora including bilberry, cow-berry *Vaccinium vitis-idaea*, wavy hair-grass, creeping ladies-tresses *Goodyera repens* and several fern species are present. Mosses include *Ptilium crista-castrensis*, *Rhytidiadelphus triquetrus*, *Pleurozium schreberi*, *Hylocomium splendens*, *Polytrichum commune*, *Thuidium tamariscinum*, *Dicranum majus* and *Plagiothecium undulatum*.
- 12.3.44. ID Area 14 (Figure 12.1c) consists of a band of coniferous plantation woodland running adjacent to the A9 with patches of acid grassland. All trees are less than 20m height, relatively young with a very sparse ground flora of acid grassland and bryophytes including *Hylocomium splendens*, *Pleurozium schreberi*, *Rhytidiadelphus triquetrus*. This stand does not exhibit features which are characteristic of an ancient woodland.
- 12.3.45. ID Areas 2, 3, 5, 7, and 14 (Figure 12.1b-c) generally do not exhibit features of a typically ancient wood, i.e. very mature or ancient trees and a well-developed and

diverse ground-flora. In these locations there is limited tree diversity; they are largely dominated by Scots pine and to a lesser extent Sitka spruce (*Picea sitchensis*). The ground flora is limited in these locations due to the density of the tree planting which limits the light within the wood. In general these woodland areas are considered to be of local value, however, as it is listed on the AWI, a precautionary view has been taken and all woodland in this area is assessed as being of importance in an Authority Area context.

- 12.3.46. ID Areas 11 and 12 (Figure 12.1c) generally support a relatively floristically diverse ground flora and the trees, although also generally Scots pine of plantation origin, are of a more notable maturity. Considering the relative maturity of the tree species present, and the well-developed ground-flora which this site supports, the woodland in these areas is assessed as being of importance in an Authority Area context.

Terrestrial Habitats

- 12.3.47. Table 12.8 presents a summary of the nature conservation valuation for non-designated terrestrial habitats which were recorded within the Study Area. Appendix A12.2 Vegetation and Habitats provides a detailed description of each habitat type and the rationale with regards to the nature conservation valuation.
- 12.3.48. Assessment with respect to GWDTE's is provided in Chapter 10: Geology, Soils and Groundwater and detailed descriptions of the each potential GWDTE location is provided in Appendix A10.3, with locations shown on Figure 12.4a-k.

Table 12.8: Nature Conservation Valuation of Terrestrial Habitats within the EZol

Habitat (Phase 1 category)	NVC Communities & Non-NVC Features (see Appendix A12.2 for details on NVC Codes)	Area (Ha) within Study Area	% of EZol	Valuation (see Appendix A12.2 for greater detail on valuation)
Woodland: broadleaved, semi-natural (A1.1.1)	W4, W4b, W4c, W6, W7, W7a, W7c, W9a, W10, W11, W11c, W11d, W17, W17b, W17d	55.87	6.1	Alder-ash woodland (W7) qualifies as Annex I habitat (0.4ha). All other broad-leaved woodland communities qualify as SBL Priority Habitat. Assessed as being of Authority Area importance.
Dry dwarf shrub heath: acid (D1.1) and dry heath / acid grassland mosaic (D5)	H9, H9a, H9b, H9c, H10a, H9-H12 Intermediate, H12, H12a, H12b, H12c, H16, H18a, H21a	95.5	9.6	All dry dwarf shrub heath communities qualify as Annex I and SBL Priority Habitat. Assessed as being of Authority Area importance.
Wet dwarf shrub heath (D2) and wet heath / acid grassland mosaic (D6)	M15, M15a, M15b, M15c, M15d, M16d	16.5	1.6	Communities M15 and M16 qualify as Annex I (Northern Atlantic wet heaths) and SBL Priority Habitat (upland heathland or blanket bogs).

Habitat (Phase 1 category)	NVC Communities & Non-NVC Features (see Appendix A12.2 for details on NVC Codes)	Area (Ha) within Study Area	% of EZol	Valuation (see Appendix A12.2 for greater detail on valuation)
				Assessed as being of Authority Area importance.
Bog: blanket (E1.6.1)	M2, M2b, M3, M17, M17a, M17b, M17c, M19, M19a, M19b, M19c, M20, M20a	91.7	9.6	Communities M2, M3, M17, M19, M20 qualify as Annex I (blanket bogs) and SBL Priority Habitat (blanket bog). Assessed as being of Authority Area importance.
Bog: wet modified (E1.7)	M25, M25a, M25b	10.1	1.1	Community M25 qualifies as Annex I (blanket bogs) and SBL Priority Habitat (upland flushes, fens, and swamps). Assessed as being of Authority Area importance.
Flush and spring: acid/neutral (E2.1)	M4, M6, M6a, M6b, M6c, M6d	11.8	1.2	Community M4 qualifies as Annex I (transition mires and quaking bogs) and SBL Priority Habitat (upland flushes, fens, and swamps). Community M6 qualifies as SBL Priority Habitat (upland flushes, fens, and swamps). Assessed as being of Authority Area importance.
Woodland: coniferous, plantation (A1.2.2)	W18, W18a, W18b, W18c, W18d, CP	320.8	33.6	Does not qualify as Annex I or SBL Priority Habitat. Assessed as being of Local importance.
Woodland: coniferous, recently-felled (A4.2)	CF (clear-fell)	36.9	3.8	Does not qualify as Annex I or SBL Priority Habitat, but does support secondary semi-natural vegetation (mire and heath) which has intrinsic value. Assessed as being of Local importance.
Acid grassland: unimproved (B1.1)	U2, U2a, U4, U4a, U4d, U4e, U5, U5a, U5b, U5d, U6, U6a, U6b, U6c, U6d, U6z	68.0	7.1	Habitats do not qualify as Annex I or SBL Priority Habitat. Assessed as being of Local importance.

Habitat (Phase 1 category)	NVC Communities & Non-NVC Features (see Appendix A12.2 for details on NVC Codes)	Area (Ha) within Study Area	% of EZol	Valuation (see Appendix A12.2 for greater detail on valuation)
Neutral grassland: unimproved or semi-improved (B2.1/B2.2)	MG1, MG9, MG10a	7.8	0.8	Habitats do not qualify as Annex I or Priority Habitat. Assessed as being of Local importance.
Marsh/marshy grassland (B5)	M23a, M23b, MG10a, Je	35.9	3.8	Upland flushes and fens (M23) qualifies as SBL Priority Habitat. Assessed as being of Local importance.
Swamp (F1)	S9, S9a	0.2	0.01	Community S9 qualifies as SBL Priority Habitat (upland flushes, fens, and swamps). Assessed as being of Local importance.
Scrub: dense/continuous or scattered (A2.1/A2.2)	W19, W19a, W23	1.4	0.1	Juniper scrub community (W19) qualifies as Annex I habitat (0.9ha). Other scrub habitat does not qualify as Annex I or SBL Priority Habitat. Areas of juniper scrub within the Study Area are not of a notable extent outside of the local area, and they are therefore assessed as being of Local importance, only. Other areas of scrub are assessed as being of Less than Local importance.
Woodland: broadleaved, plantation (A1.1.2)	W11, W17	4.41	0.46	Does not qualify as Annex I or SBL Priority Habitat. Assessed as being of Less than Local importance.
Woodland: mixed, plantation (A1.3)	W17, W18	1.2	0.1	Does not qualify as Annex I or SBL Priority Habitat. Assessed as being of Less than Local importance.
Acid grassland: semi-improved (B1.2)	U4b	72.1	7.6	Habitats do not qualify as Annex I or SBL Priority Habitat. Assessed as being of Less than Local importance.

Habitat (Phase 1 category)	NVC Communities & Non-NVC Features (see Appendix A12.2 for details on NVC Codes)	Area (Ha) within Study Area	% of EZol	Valuation (see Appendix A12.2 for greater detail on valuation)
B4 Improved grassland (B4) or Poor semi-improved grassland (B6)	MG6	49.2	4.8	Habitats do not qualify as Annex I or SBL Priority Habitat. Assessed as being of Less than Local importance.
Bracken: continuous (C1.1)	U20, U20a	0.07	0.01	Habitats do not qualify as Annex I or SBL Priority Habitat. Assessed as being of Less than Local importance.
Other tall herb & fern: ruderal (C3.1)	W24, OV24, OV25, OV27, OV27a, Pr	0.9	0.1	Habitats do not qualify as Annex I or SBL Priority Habitat. Comprise common plant species with limited intrinsic value. Assessed as being of Less than Local importance.
Standing water (G1)	SW (standing water)	0.3	0.03	See evaluation of Aquatic Receptors in Section 12.4.10 – 12.4.16 below.
Running water (G2)	RW (running water)	10.6	1.1	See evaluation of Aquatic Receptors in Section 12.4.10 – 12.4.16 below.
Quarry (I2.1)	BG (bare rock)	4.6	0.4	Habitats do not qualify as Annex I or SBL Priority Habitat. Habitat is of limited intrinsic biodiversity value. Assessed as being of Less than Local importance.
Amenity grassland (J1.2)	PG (gardens, lawns etc.)	9.9	1.0	Habitats do not qualify as Annex I or SBL Priority Habitat. Habitat is of limited intrinsic biodiversity value. Assessed as being of Less than Local importance.
Bare ground (J4)	BG (Bare ground, bare rock, shingle, hardstanding, driveways, roads, tracks etc.)	45.1	4.7	Habitats do not qualify as Annex I or SBL Priority Habitat. Habitat is of limited intrinsic biodiversity value.

Habitat (Phase 1 category)	NVC Communities & Non-NVC Features (see Appendix A12.2 for details on NVC Codes)	Area (Ha) within Study Area	% of EZol	Valuation (see Appendix A12.2 for greater detail on valuation)
				Assessed as being of Less than Local importance.
Buildings (J3.6)	BD (buildings)	3.2	0.3	Habitats do not qualify as Annex I or SBL Priority Habitat. Habitat is of limited intrinsic biodiversity value. Assessed as being of Less than Local importance.

Aquatic Receptors

- 12.3.49. No aquatic habitats have been assessed as being of higher than Authority Area importance for nature conservation.

Authority

- 12.3.50. The Funtack Burn is assessed to be of Authority Area importance for nature conservation. The Funtack Burn provides connectivity for the entire catchment upstream of its confluence with the River Findhorn (which includes the Dalmagarry Burn, Allt na Loinne Mòire, Allt na Slànaich; and Allt Creag Bheithin which have separately been assessed to be of local importance for nature conservation).

Local

- 12.3.51. Watercourses Allt na Frithe, Allt Dubhag, Dalmagarry Burn, Allt na Loinne Mòire, Allt na Slànaich, and Allt Creag Bheithin are assessed to be of Local importance for nature conservation.
- 12.3.52. Despite a degree of restricted habitat modification identified within these watercourses (mainly as a result of the existing A9), they provide a range of habitats that are likely to be locally important in supporting salmonid and coarse fish assemblages and wider ecological communities. They also support species-rich macroinvertebrate communities indicative of high quality habitat.
- 12.3.53. Ponds P4, P5, P12, and P14 (see Appendix A12.3 and Figure 12.13a-k) are assessed to be of Local importance for nature conservation. These ponds are predominantly permanent, unmanaged with good water quality, supporting species rich macrophyte and macroinvertebrate communities.

Less than local

- 12.3.54. All other watercourses are considered to be of less than Local importance for nature conservation.
- 12.3.55. All other waterbodies (ponds) are considered to be of less than Local importance for nature conservation.

Protected Species

- 12.3.56. No great crested newts or badger were recorded during the field surveys and as such no valuation is provided for these species.

Bats

Authority

- 12.3.57. Two roosts were located within the rock face at the northern end of the Scheme (Figure 12j). While both roosts located were found to support only single bats, a small number of features extended into the rock face which may provide suitability for hibernation and as such, following the precautionary principal the rock face is assessed to of Authority Level importance.
- 12.3.58. Three small roosts were also identified in Bridges 135, 123 and 146 (Figure 12.9f-h), with single bats recorded roosting at each structure, with common species recorded (soprano and common pipistrelle). A small number of potential features were identified that extended into the bridges which may provide suitability for hibernation. Taking account of this potential use and following the precautionary principal these are assessed to be of Authority Level importance.

Local

- 12.3.59. Four locations have been assessed to be of Local value for bats. These locations support small roosts of common bat species (Building 149 and 151 and Bridge 381, Figure 12.9f-g) or in the case of Culvert 281 (Figure 12.9g) may support a small roost. None of these locations are locations are likely to support maternity, breeding or hibernating roosts.
- 12.3.60. From the levels of bat activity recorded across the crossing point and the transect surveys, the suitable habitats identified at the location of the proposed Tomatin Grade Separated junction, and at crossing points 1 and 6 are assessed to be of Local importance to bats. These locations were used by low numbers of common bat species across the active season. They are considered to be of Local value given the levels of bat use and the abundance of similarly suitable habitats within the wider area. All other areas across the bat Study Area that were surveyed provide some suitable habitat for bats. However, the survey results indicate that they are used by very low numbers of bats and they are assessed to be of less than local value for bats.

Otters

Local

- 12.3.61. The following 13 watercourses have been assessed to be of Local value for otters: WC3, WC 4, WC 7, WC 8, WC 16, WC 17, WC 24, WC 25, WC 26, WC 27, WC 29, WC 30, and WC 31 (see Figure 12.16a-j for watercourse locations). The evidence recorded during field surveys in 2015, 2016 and 2017 indicates that otter are using these watercourses to commute and forage. However, the limited number of resting sites and sporadic nature of spraints recorded suggests that these watercourses are not the mainstay of otter territory and they are not regularly patrolled and accordingly have been assessed to be of Local value.

Less than local

- 12.3.62. The following 20 watercourses are assessed to be of less than local value for otter: WC1, WC2, WC 5, WC 6, WC 9, WC 10, WC 11, WC 12, WC 13, WC 14, WC 15, WC 18, WC 19, WC 20, WC 21, WC 22, WC 23, WC 28, WC 32, and WC 33 (see Figure 12.16a-k for watercourse locations).
- 12.3.63. These small burns and drainage channels offer some suitable connecting routes for otter, providing links to high quality habitats for foraging and resting. However, no evidence of otter was recorded along these watercourses during field surveys in. Due to the location of the watercourses in largely open habitat, they offer negligible potential for otters to rest and shelter. No resting sites were recorded during field surveys.
- 12.3.64. In addition to the watercourses, there are five ponds within the otter survey area that are assessed to be of less than local value for otter: P4, P5, P12, P13, and P14 (see Figure 12.13a-k for pond locations). These ponds offer suitable foraging habitat for otter, however no confirmed evidence of otter was recorded during field surveys. No other ponds are present within the otter survey area.

Water voles

Authority

- 12.3.65. One watercourse is assessed to be of Authority Area value for water vole: WC 30 (Allt Creag Bheithin) shown on Figure 12.16i-k.
- 12.3.66. Field surveys in 2015 and 2016 recorded a large volume of water vole evidence along Allt Creag Bhethin, which flows through an area of cleared coniferous plantation woodland and bog habitat. During surveys in 2016, 42 latrines and 44 burrows were recorded, with droppings, feeding stations and runs recorded along the length of the surveyed watercourse. Based on the data collected in 2016, it has been calculated that Allt Creag Bhethin supports an estimated population of 30 water voles. This calculation has been made using the formula¹⁰ detailed in the Water Vole Conservation Handbook (2nd edition)^{xx}.

Local

- 12.3.67. The following seven watercourses are assessed to be of Local value for water vole: WC 2, WC 3, WC 4, WC 8, WC 26, WC 27, and WC 31 (see Figure 12.16a-k for watercourse locations). These watercourses offer suitable habitat for water vole to forage and shelter. Field surveys in 2015 and 2016 recorded a small number of water vole latrines along these watercourses.

Less than local

- 12.3.68. 25 watercourses are assessed to be of less than local value for water vole: WC 1, WC 5, WC 6, WC 7, WC 9, WC 10, WC 11, WC 12, WC 13, WC 14, WC 15, WC 16, WC 17, WC 18, WC 19, WC 20, WC 21, WC 22, WC 23, WC 24, WC 25, WC 28, WC 29, WC 32, and WC 33.
- 12.3.69. These small burns and drainage channels offer some suitable habitat for water vole to forage and shelter. However, no evidence of water vole was recorded during field surveys in 2015 and 2016. Several watercourses are located within areas of dense coniferous woodland and are generally sub-optimal for this species as they are heavily shaded and provide limited suitable vegetation for water voles to forage.

¹⁰ Population estimate formula: $y = 1.48 + 0.683(x)$, whereby y = number of water voles and x = number of latrines.

Red Squirrel

Authority

- 12.3.70. The following 15 survey areas have been assessed to be of Authority Area value for red squirrel: survey areas 4, 5, 7, 8, 9, 10, 17, 18, 20, 21, 22, 23, 24, 26, and 27 (refer to Figure 12.14a-k). These survey areas largely comprise mature Scots pine plantation woodland, containing trees of an age and size to provide abundant feeding resources and suitable drey sites for red squirrels. Field surveys in 2015 and 2016 recorded the greatest volume of red squirrel evidence in the northern section of the Proposed Scheme, around Lynebeg and Moy (survey areas 17 – 24, Figure 12.14g-h).

Local

- 12.3.71. The following 10 survey areas have been assessed to be of Local value for red squirrel: survey areas 1, 2, 3, 6, 11, 12, 13, 15, 16, 19, 25, and, 28. The majority of the woodland in these areas comprises relatively young, species-poor coniferous plantation woodland. The results of the habitat suitability assessment indicate that this type of woodland typically provides low to moderate quality habitat for red squirrels. A limited amount of evidence of red squirrel was recorded in these areas of woodland during field surveys in 2015 and 2016.

Reptiles

Local

- 12.3.72. Areas of 'High' and 'Moderate' suitability for reptiles within the survey areas have been assessed to be of Local value for reptiles (see Figure 12.15a-k). These survey areas comprise predominantly semi-improved grassland or heathland which is connected to adjacent larger expanses of grassland, heathland and scrub, some of which also falls within the study areas. These habitats provide suitable basking, foraging, and sheltering habitat for reptiles, particularly common lizard and adder.

Less than local

- 12.3.73. Areas of 'Low' suitability for reptiles within the survey areas have been assessed to be of less than local value for reptiles (see Figure 12.15a-k). These survey areas comprise predominantly coniferous plantation woodland, with smaller pockets of mixed and semi-natural broad-leaved woodland. These areas have low suitability for reptiles, as they receive less sunlight required by reptiles for basking. However, they do offer some opportunity for shelter in drier areas.

Birds

Wintering Birds

- 12.3.74. A total of 60 species were recorded during the wintering surveys; eight of those were waterfowl species seen exclusively on Loch Moy. 17 of the species are considered to be important as they are listed on the SBL. 13 species were also recorded which are identified as BoCC but which are not listed on the SBL.
- 12.3.75. Loch Moy is an important winter wildfowl refuge, and also a migratory stop over for species including large numbers of teal.
- 12.3.76. The majority of the species encountered during walked transects were relatively common garden or grassland/heathland birds, although it should be noted some species

are BoCC listed or are on the SBL. In addition, Loch Moy supports water birds. This combination of species will only occur in the highlands where wooded valleys developed for agriculture and residential properties mix with the open moorland more typical of the highlands, and where lochs and other forms of open water are present. Such a mix of habitats is not uncommon, but patchy throughout the Scottish highlands.

12.3.77. The wintering bird community is therefore of Authority Level importance.

Breeding Birds

12.3.78. A total of 52 species were recorded during the breeding bird surveys, of which 18 species were confirmed to breed within or near the survey area, with a further 16 registered as having probable or possible breeding status (see Appendix A12.6, Table A3.5). Amongst them, 25 of the species are considered important due to their legal protection, listing on the SBL, and / or listed as Red or Amber List BoCC.

12.3.79. The breeding bird community is composed of common and widespread garden birds, common passerines associated with grassland, heathland and woodland, common breeding waders and also several species of water fowl. (Although, despite the species being fairly common, many are SBL and BoCC listed.) Notable breeding species such as spotted flycatcher, common sandpiper, common crossbill and common gull. This mix of species reflects the mix of habitats (moorland, agricultural land, open water on Loch Moy, etc.) available to breeding birds, and the wet grassland/rush pasture habitat available to waders is of particular note as it allows lapwing and oystercatcher to breed here. Areas which support this mix of habitats are not uncommon in the Scottish highlands, but are patchily distributed and do not cover large areas. Thus, the breeding opportunities afforded by such a mixture of habitats are also patchy in their distribution.

12.3.80. The breeding bird community is therefore Authority Level importance.

Capercaillie

12.3.81. The desk study and field surveys did not return any records or evidence of capercaillie. Consultation with Gareth Marshall of the RSPB indicated that this species is likely to be restricted to the woodland areas south of Slochd Summit, and does not extend into the survey area. Therefore, although some suitable woodland habitat is present within the survey Area, this species is considered likely to be absent based on the results of the desk study and field surveys. The Survey Area is assessed as being of Less than Local importance for this species.

Pine Marten

12.3.82. Two confirmed scats were recorded during the field surveys and the overall habitat suitability was assessed to be sub-optimal, with only three areas of higher suitability recorded. The habitats within the surrounding area, particularly around Loch Moy and to the north east in the Strathnairn region, provide good quality habitat for this species. The Inverness and Nairn Biodiversity Action Plan also notes that the local pine marten population is widespread in woodland areas within the authority area. Therefore, the habitat within the Proposed Scheme is not considered to be core habitat for pine martens and given its sub-optimal nature, is assessed to be of importance for pine marten at a Local scale.

Wildcat

12.3.83. No evidence of wildcat has been recorded within the Study Area during the 2015 and 2016 ecology surveys and no desk study records were received. The closest priority

area for wildcat is located approximately 4km south of the scheme, covering an area around Dulnain. The Study Area contains areas with moderate and high habitat suitability for wildcat, given this and the proximity of the priority area for wildcat to the south the Study Area is considered to be of Authority Area level value for the species.

Notable Species

Fungi

- 12.3.84. The habitat assessment of sites for fungi did not identify any areas supporting outstanding habitat for fungi, although 10 sites of interest were noted. Four waxcap sites held the most potential interest for fungi (TN 1, 2, 3, 4) and a further four locations (TN 5, 8, 9, 10) identified were found to have suitability to support Cairngorms LBAP amber priority fungi species, all these locations are of Authority value for fungi. Three other locations were identified to be of Local value for fungi, TN6, TN7 and TN10.

Invertebrates

- 12.3.85. There are three woodland locations (CNPA Records 357, 378, 382 shown on Figure 12.7e and h) that provide suitable habitat for amber priority listed invertebrates and are assessed to be of Authority value. In addition, five locations (TN2-TN6) with wet heath habitat and one (TN1) with exposed riverine sediments have been identified as being suitable for SBL and CNPA priority species and are assessed to be of Authority value. All species-rich grassland verges and south-facing woodland embankments are assessed to be of Local value for wood ants and social and solitary bees.

12.4. Potential Impacts

- 12.4.1. A detailed impact assessment is provided in Appendix A12.9. No impacts have been identified on designated sites, due to distance these sites are from the Proposed Scheme and the lack of hydrological connectivity. With respect to other receptors potential impacts were identified as follows:

Construction impacts

- habitat loss and habitat degradation as a result of construction activities (e.g. sediment release, pollution events and dust)
- injury or mortality of protected and notable species
- disturbance to protected and notable species
- habitat fragmentation effecting movements of protected and notable species

Operational impacts

- fragmentation (primarily has a result of habitat loss at junction locations) and severance (primarily in relation to watercourses)
- injury and mortality of protected and notable species from vehicle collisions;
- pollution events
- changes to hydrological conditions

- 12.4.2. The specific impacts that are considered significant following the adoption of mitigation measures are detailed in Section 12.6 Residual Impacts below.

- 12.4.3. All other impacts (as fully detailed in Appendix A12.9) have been identified as non-significant assuming the adoption of mitigation measures detailed in Section 12.6.
- 12.4.4. The assessment considered aspects embedded in the design, of relevance to ecology, this includes mammal ledges on culverts, the design of culverts to maintain natural beds and the design of underpasses which are of a suitable size for bat passage.
- 12.4.5. The impact assessment on GWDTE's is provided within Chapter 10: Geology, Soils and Groundwater and Appendix A10.3.

12.5. Potential Mitigation

- 12.5.1. A list of standard mitigation measures has been developed for the entire A9 Dualling programme; those related to ecology are detailed below in Appendix A12.9 Ecological Impact Assessment, along with specific mitigation measures which have also been developed. Specific mitigation measures are presented on the Landscape and Ecological Mitigation Plans, Figure 13.8a-t. The proposed scheme includes embedded mitigation as part of the design such as mammal ledges through culverts and design of culverts with open bottoms to maintain natural beds. Table 12.9 details the programme wide mitigation measures and Table 12.10 details additional measures specific to the Proposed Scheme.

Table 12.9: A9 Standard Mitigation Commitments

Mitigation Item	Description
SMC-E1	Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the ES. The scope of the pre-construction surveys will be confirmed with SNH prior to them being undertaken.
SMC-E2	<p>Prior to construction a suitably qualified (or team of suitably qualified) Ecological Clerk of Works (ECoW) will be appointed and will be responsible for implementation of the Ecological Management Plan. The ECoW will:</p> <ul style="list-style-type: none"> • provide ecological advice over the entire construction programme, at all times as required; • undertake or oversee pre-construction surveys for protected species in the areas affected by the proposed scheme; and ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and • monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the ES. <p>The ECoW will be a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.</p>
SMC-E3	Noise and vibration will be reduced by working back from the river bank where possible or working within a dry area to avoid implications to fish, such as behavioural changes e.g. avoidance of areas or physical damage e.g. to hearing. In addition, soft-start techniques will be applied to piling work procedures to enable sensitive species to evacuate the area.
SMC-E4	Where areas are required to be temporarily dewatered to permit construction activities, fish will be removed by means of electrofishing and relocated prior to dewatering.

Mitigation Item	Description
SMC-E5	Water flow/passage will be sufficiently maintained to permit movement of Atlantic salmon, brook lamprey and brown/sea trout past areas of dewatering and/or significant alteration of water movement during any construction works within the watercourses. Suitable temporary channels may be implemented so that movement between areas of habitat can be maintained.
SMC-E6	The Contractor will obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach applicable conservation legislation necessary to construct the project. Licensing may be for the UK and/or protected species.
SMC-E7	<p>Tree felling and vegetation clearance to be minimised as far as practicable and undertaken outside the core bird nesting season (01 March to 31 August) to avoid damage or destruction of occupied nests or harm to breeding birds. If this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for nesting birds by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey, they will be left in situ for their entire nesting period until the young birds have fledged. Alternative approaches to the work will need to be proposed e.g. leaving an exclusion zone around the nest to avoid disturbance.</p> <p>All cleared vegetation will be rendered unsuitable for nesting birds, for example, by covering or chipping depending on the end purpose of the vegetation, or will be removed from the works area.</p>
SMC-E8	Any tree felling will be carried out by experienced contractors to reduce direct mortality of protected species according to agreed felling methods between contractors and the ECoW.
SMC-E9	Plant and personnel will be constrained to a prescribed working corridor through the use of, where practicable, temporary barriers to minimise the damage to habitats and potential direct mortality and disturbance to animals located within and adjacent to the proposed scheme working corridor.
SMC-E10	The use of construction lighting will be in accordance with BS5489 Code of Practice for the Design of Road Lighting ^{xxi} and follow guidance on lighting (e.g. Bat Conservation Trust (2009) ^{xxii} and Institute of Lighting Engineers (2007) ^{xxiii}). The construction lighting design will take into account the need to avoid illuminating sensitive mammal habitats (e.g. for bats and badgers) in locations such as: adjacent to watercourses; along woodland edges; and, where there is known activity identified through pre-construction ecological surveys (refer to Mitigation Item SMC-E1). Where this is not possible the Contractor will agree any exceptions with SNH.
SMC-E11	<p>During construction trees will be protected in line with guidelines provided in BS 5837 Trees in relation to Construction^{xxiv}. This includes the following:</p> <ul style="list-style-type: none"> • establishment of Root Protection Areas (RPA); • protective fencing will be erected around the RPA to reduce risks associated with vehicles trafficking over roots system or beneath canopies; • selective removal of lower branches of trees to reduce risk of damage by construction plant and vehicles; • prevent soil compaction measures; and • maintain vegetation buffer strips (where practicable).
SMC-E12	Planting will be undertaken to replace any trees that were intended to be retained which are felled or die as a result of construction works. The size, species and location of replacement trees will be approved by Transport Scotland and other relevant stakeholders.

Mitigation Item	Description
SMC-E13	Trenches, holes and pits will be kept covered at night or provide a means of escape for mammals that may become entrapped. Gates to compound areas will be designed sensitively to prevent mammals from gaining access and will be closed at night.
SMC-E14	Temporary mammal-resistant fencing will be provided around construction compounds following a specification agreed through consultation with Transport Scotland.
SMC-E15	The Contractor will describe within the CEMP (Mitigation Item SMC-S1) the strategy to be implemented for the appropriate treatment of invasive, non-native species (INNS). The strategy will set out appropriate construction, handling, treatment and disposal procedures to prevent the spread of INNS in line with recognised best practice.
n/a (note)	Further to the above, the mitigation detailed in Table 21.5 (Road Drainage and the Water Environment), Table 21.7 (Landscape and Visual), Table 21.9 (Air Quality) and Table 21.10 (Noise and Vibration) will be implemented to protect aquatic and terrestrial habitats and species.

Table 12.10: Project Specific Mitigation Commitments

Mitigation Item	Description
P12-E16	A Habitat Protection Plan will be produced pre-construction and agreed with SNH. The working area will be kept to the minimum necessary for construction of the project to reduce habitat loss.
P12-E17	Prior to construction necessary consents for tree felling will be obtained as provided for under the Forestry Act 1967.
P12-E18	The removal of any trees identified for retention with the ES should be avoided. Where any trees that were intended to be retained are identified as requiring felling or die as a result of construction works will be replaced, assessment of the trees at such location should be undertaken. Any changes to the extent of tree removal from that assessed within the ES, should be subject to assessment using the same methods as detailed within the ES to determine the appropriate mitigation requirements. Where required any additional impacts identified will be appropriately mitigated for using the same methods as detailed within the ES. The size and species of replacement trees will be agreed in consultation with SNH and the Forestry Commission, and will take account of management plans to immediately adjacent woodland.
P12-E19	Best practicable means will be employed to avoid the disturbance of sensitive species and habitats with noise, dust and air pollution. Please refer to Standard Mitigation Measures as detailed in Chapter 16: Air Quality and Standard Mitigation Measures as detailed in Chapter 17: Noise and Vibration for further details.
P12-E20	Ponds lost to construction will be replaced as near to their original location as practically possible, or within the nearest suitable habitat, whichever is more ecologically advantageous. This will be undertaken at a ratio of 1 pond loss: 1 pond replacement, ponds replaced will be of a similar size to that lost. SuDS and drainage features shall not act to offset the loss of any pond; however SuDS shall be designed to maximise their biodiversity value, in line with the CIRIA SuDS Manual ^{xxv} .
P12-E21	Construction works (for example, temporary watercourse diversions and in-channel working) to be undertaken taking into account sensitive ecological seasons (e.g. breeding, hibernation or migration seasons) and the potential impact that the type of construction work could have on protected species within that season. Prior to

Mitigation Item	Description
	<p>construction consultation will be undertaken with SNH to confirm the programme of construction works.</p> <p>The key sensitive period for salmonids is mid-October to June, inclusive. However the most acceptable timing will depend on which sensitive species are present and will be agreed with SEPA, Scottish Natural Heritage (SNH) and Findhorn Nairn and Lossie Fisheries Trust. During any river dewatering and/or in-channel working, an ecological watching brief and fish rescue plan will be instigated in consultation with SNH and SEPA.</p>
P12-E22	Mitigation measures to avoid or reduce potential impacts on surface waters will be employed, including adherence to Pollution Prevention Guidelines (PPGs) ^{xxvi} during construction, and appropriate road drainage and runoff treatment.
P12-E23	Any permanent watercourse diversion works (including realignments at crossings) will incorporate design measures that enhance both in-channel and riparian habitat quality e.g. provision of resting pools/spawning habitats for salmonids. Refer to Chapter 11 Road Drainage and Water Environment for key watercourse construction and design mitigation commitments.
P12-E24	Species Protection Plans to be produced pre construction and agreed with SNH. Plans will be produced for the following species: bats, otter, red squirrel, reptiles and water vole and any other species as deemed necessary from the pre-construction surveys.
P12-E25	<p>Appropriate exclusion zones in line with best practice and as agreed with SNH should be maintained.</p> <p>Where exclusion zones of the required size are not possible and if a licence is not needed the amended buffer zone should be agreed with the relevant statutory body.</p>
P12-E26	No working within 50m of watercourses during the hours of darkness, taken to be 30 minutes before sunset to 30 minutes after sunrise. In the event that works must be undertaken within this time period, the nature of the works should be discussed with the ECoW to establish what mitigation measures are required. Works may only take place with the agreement of the ECoW.
P12-E27	Tree felling in areas with red squirrel dreys will be timed outside of the red squirrel breeding season (February to September). Where these timescales cannot be achieved the ECoW will determine an appropriate course of action. All tree felling in locations where dreys are present (active or inactive) will be supervised by the ECoW. A SNH derogation licence must be in place for the removal of all active dreys (and dreys where activity levels cannot be confirmed).
P12-E28	European Protected Species licences will in place for all bat roosts to be removed or disturbed. Any bat roosts to be lost will be replaced with bat boxes (or other suitable roosting feature), to be erected prior to the loss of the roost. The requirement for the replacement roosts will be determined following pre-construction surveys. Six new bat boxes to be located within retained woodland within the land made available for the works as shown on the Landscape and Ecological Mitigation Plans (Figure 13.8a-t) (precise number and location to be determined following pre-construction surveys).
P12-E29	A precautionary method of working (PMW) will be produced prior to construction to detail methodology to follow for habitat clearance in areas of suitable reptile habitat. Pre-construction hand searches of any areas containing suitable reptile habitat, will be undertaken by the ECoW. Any reptiles encountered will be moved to alternative suitable habitat. All vegetation clearance in areas of high suitability for reptiles will be cleared outside of the hibernation period (November to February, subject to seasonal variations). Where these timescales cannot be achieved the ECoW will determine an appropriate course of action.
P12-E30	Permanent otter fencing to be installed 100m either side of watercourse crossings, where indicated on the Landscape and Ecological Mitigation Plan (Figure 13.8a-t), to be installed prior to scheme completion. Design should follow SNH guidance ^{xxvii} .

Mitigation Item	Description
	<p>The recommended specification is as follows: at least 1.2m high galvanised welded mesh (of at least 2.5mm gauge) above ground level, with a maximum mesh size of 100 x 50mm attached to fence posts and topped with barbed wire. Below ground, the mesh should be dug in to a depth of 300mm, or 100mm with a horizontal lap on the otters' side of 300-450mm.</p> <p>Temporary otter fencing must be installed prior commencement of the construction phase, 100m either side of all watercourse crossings where indicated on the Landscape and Ecological Mitigation Plan (Figure 13.8a-t). Specification should follow that of the permanent fencing, where deviations to this are required for constructability purposes, these should be agreed with the ECoW and SNH.</p>
P12-E31	<p>The pond south of Lynebeg (Pond 5) will be lost as a result of the Scheme. A new pond will be constructed in an area to the east of the existing pond.</p> <p>The new pond will be designed to occupy a surface area similar in extent to the existing pond being lost, but will include sloping marginal shelves of gradient no greater than 1:8, ensuring the establishment of an extensive marginal wetland plant assemblage.</p> <p>The new pond may be lined to ensure water retention, subject to ground and soil conditions. In the event pond lining is required, a natural bentonite clay product will be used to ensure the sustained hydrological viability of the replacement pond. Where possible, the new pond will be 'seeded' with translocated material from the existing pond (seed bank, sediment, and/or vegetation where practical) to encourage rapid establishment of similar successional characteristics as the pond being lost.</p> <p>The pond will otherwise be designed following good practice principles as described by SEPA Guidance on good practice in the management and creation of small waterbodies in Scotland^{xxviii}.</p> <p>An ecological watching brief and fish rescue plan will be instigated in consultation with SNH and SEPA during pond dewatering activities.</p>
P12-E32	<p>Offsetting the loss of ecologically important habitats will occur through habitat creation including roadside planting, where appropriate, and has been integrated with landscape planting as shown on Figure 13.8a-t.</p> <p>Landscape planting and newly created habitat will be native species of local provenance, and will comprise a mixture of species.</p> <p>Sowing/planting should be undertaken in the appropriate planting season but as soon as possible following completion of the works to reduce the likelihood of the areas being colonised by invasive, non-native species which are of lower value to wildlife.</p> <p>Replacement habitats will be monitored and managed during the aftercare and operation phase of the proposed scheme.</p> <p>Where practicable habitat creation will to fill in existing gaps in linear vegetation features, adjoin or connect existing blocks of woodland or act as stepping stones between habitat areas.</p>
P12-E33	<p>Planting of new woodland will be undertaken at a variety of locations to mitigate for the loss of non-ancient woodland (see Landscape and Habitat Mitigation Plans, Figure 13.8a-t).</p> <p>Soil will be retained from locations of ancient woodland as identified on the Landscape and Ecological Mitigation Plans, Figure 13.8a-t and reused in areas of woodland planting. Locations for reuse are shown on Figure 13.8a-t.</p>
P12-E34	<p>If an active water vole burrow is identified during pre-construction surveys then it is likely that an SNH derogation licence will be required for any works proposed within 10m of the burrow.</p> <p>Where a licence is required, translocation of water vole from the works area to a receptor site may be required to ensure that water vole are not harmed during construction. The need for and details of the translocation programme will</p>

Mitigation Item	Description
	determined by the ECoW, informed by the update pre-construction surveys, and developed in consultation with SNH.
P12-E35	Aspen woodland will be avoided where possible. If felling is required, deadwood over 75cm circumference will be retained where practicable.
P12-E36	Where retained, deadwood will be placed in a variety of locations and conditions to benefit a number of species. Deadwood should be stored in a location away from the working area to prevent risk of damage and then placed within areas of retained woodland or woodland planting at an appropriate time. The ECoW will provide guidance on suitable locations. Tree stumps will be retained in situ where felled on the edge of working areas where this does not pose a constraint to the works. Edges of woodland will be scalloped where an increase in windthrow risk can be avoided to increase the variety of habitat conditions.
P12-E37	Where practicable top soil from cleared woodland will be stored appropriately for re-use in areas where similar habitat is to be created, see Figure 13.8a-t Landscape and Ecological Mitigation Plan.
P12-E38	Where practicable top soil from species rich grassland affected will be stored appropriately for re-use in areas where similar habitat is to be created, see Figure 13.8a-t Landscape and Ecological Mitigation Plan.
P12-E39	Where practicable top soil from heath lost will be stored appropriately for re-use in areas where similar habitat is to be created, see Figure 13.8a-t Landscape and Ecological Mitigation Plan.
P12-E40	Culverts placed on following watercourses Allt na Frithe, Allt Dubhag, Dalmagarry Burn, Allt na Loinne Mòire, Allt na Slànaich; and Allt Creag Bheithin will be open structures that act to: <ul style="list-style-type: none"> · retain natural bed substrate within the culvert; · ensure no deterioration (and aim to improve) existing water depth and flow provision within the culvert for migratory fish; and · improve river continuity by replacing existing A9 structures with artificial inverts. The watercourse outlet will be designed to provide appropriate resting pools immediately downstream of the culvert entrance. Marginal/riparian planting will also be implemented to provide cover and mitigate the transition from light to dark at the culvert inlet and outlet. This will ensure fish are not discouraged or prevented from entering or exiting the culvert. All culverts, including channel inlet and outlets, will be constructed with reference to SEPA's Good Practice Guides, namely: <ul style="list-style-type: none"> · Engineering in the Water Environment Good Practice Guide: Bank Protection Rivers and Lochs^{xxix}; · Engineering in the Water Environment: Good Practice Guide - River Crossing^{xxx}; and · Position Statement WAT-PS-06-02 - Culverting of Watercourses – Position Statement and Supporting Guidance^{xxxi}.
P12-E41	All vegetation clearance within 250m of ponds 18 and 24 will be undertaken following a Precautionary Method of Working (PMW) for great crested newts. This PMW will be produced by a suitability qualify ecologist and will include details on approaches and timings for vegetation clearance and methods for hand searches of vegetation by an ecologist.
P12-E42	SuD's ponds and drainage channels at Tomatin Junction and SuD's pond adjacent to the Allt Creag Bheithin where water vole have been recorded will be designed sensitively to provide habitat for water vole, see locations shown on Figures 13.8e and 13.8p Landscape and Ecological Mitigation Plans.

12.6. Residual Impacts

- 12.6.1. The impact assessment detailed in Appendix A12.9 assumes the adoption of the mitigation measures detailed above and as such detail is only provided on residual impacts, but for clarity detail on pre-mitigation impact characterisation is provided. Table 12.11 provides a summary of the impact assessment as detailed in Appendix A12.9. Table 12.11 provides a summary of all the ecological receptors for which a residual impact has been identified and details which of these have been identified as significant taking into account the prescribed mitigation measures. All residual impacts identified relate to the construction phase. No residual impacts relating to operation were identified, as discussed in Appendix A12.9. Further details on those impacts identified as significant are provided in Table 12.11 below.

Table 12.11: Summary of Residual Impacts

Receptor	Value (Maximum) ¹¹	Potential Impact and impact descriptor ¹²						Significant Residual (yes/no)
		Habitat loss (inc. loss of foraging)	Loss of resting sites (e.g. roost, den, holt, burrow)	Disturbance	Fragmentation	Severance (e.g. of commuting routes, connections to suitable habitat)	Mortality	
Ancient Woodland	Authority Area	High						Yes
Semi-natural and plantation and broadleaved woodland	Authority Area	High						No
Coniferous plantation woodland and areas of recently felled woodland	Local	High						No
Unimproved acid grassland	Local	High						No
Unimproved neutral grassland	Local	High						No
Marshy grassland	Local	High						No
Dry dwarf shrub heath: acid	Authority Area	High						Yes
Wet dwarf shrub heath and flush habitats	Authority Area	High						Yes
Blanket bog and wet modified bog	Authority Area	High						Yes

¹¹ In some instances different areas of the site may have been assigned different values, for this summary table only the highest value assigned to the receptor is detailed.

¹² No impact is predicted for grey cells

Receptor	Value (Maximum) ¹¹	Potential Impact and impact descriptor ¹²						Significant Residual (yes/no)
		Habitat loss (inc. loss of foraging)	Loss of resting sites (e.g. roost, den, holt, burrow)	Disturbance	Fragmentation	Severance (e.g. of commuting routes, connections to suitable habitat)	Mortality	
including areas of acid / neutral flush								
Watercourses: Allt na Frithe Allt Dubhag Allt na Loinne Mòire Allt na Slànaich Allt Creag Bheithin	Local	High						No
Dalmagarry Burn	Local	Medium						No
Funtack Burn	Regional	Medium						No
Pond 5	Local	High						No
Bats	Local	Medium	Medium	Low			Medium	No
Otter	Local	Low		Low	Low	Low	Medium	No
Water vole	Authority	Medium	Medium	Low		Low	Medium	No
Red squirrel	Local	Medium	Medium	Low		Low	Medium	No
Reptiles	Local	Medium		Low			Medium	No
Invertebrates	Authority	Medium						No
Fungi	Authority	Medium						No

- 12.6.2. Significant residual impacts have been identified on ancient woodland and notable habitats. These impacts will occur at the construction phase.
- 12.6.3. With respect to ancient woodland 5.61 ha of land listed on the ancient woodland inventory will be lost, of this 3.84ha of this land currently supports woodland. This is identified as a significant impact at two locations:
- Area 11: the habitats which will be lost include coniferous plantation woodland, broadleaved woodland, acid grassland, and dry heath. The woodland at this location is generally mature and has a relatively floristically diverse ground-flora.
 - Area 12: this woodland supports Scots pine plantation woodland. The Scots pine woodland within this area has taken on characteristics of a mature woodland, including well developed and diverse ground flora. The Proposed Scheme lies within an area of Scots pine plantation woodland directly adjacent to the existing A9. The trees within this area are not as mature and the ground-flora less developed than areas towards the centre of the woodland.
- 12.6.4. In these locations, the woodlands form part of larger woodland parcels assessed to be of Authority Area importance. However, the majority of woodland that will be lost is Scots pine plantation and there are no ancient or relict trees. It is however possible that the ancient woodland seedbank is still present and the relatively floristically diverse ground flora suggests this. In these locations, the soil will be stripped and re-used within areas of woodland planting within the Proposed Scheme. It is accepted that the loss of ancient woodland cannot be mitigated and as such the loss of these areas has been identified as a significant within the context of the Authority Area. Overall in terms of woodland loss it is noted that with the proposed planting as detailed on the Landscape and Ecology Mitigation Plan there will be no overall net loss of woodland - 53.9ha of woodland will be lost, while 54ha is proposed.
- 12.6.5. With respect to notable habitat loss, areas of dry dwarf shrub, wet heath and flushes and blanket bog and wet modified bog habitats will be lost. In terms of scale the following areas will be lost from each habitat type:
- acid dry dwarf shrub heath (including areas of dry heath / acid grassland mosaic) - 6.38ha
 - wet dwarf shrub heath – 1.34ha
 - blanket bog and wet modified bog including areas of acid / neutral flush – 11.14ha
- 12.6.6. Whilst habitat creation will be undertaken as part of the Proposed Scheme mitigation and depending on the local hydrology areas may transition to these habitats, taking the precautionary approach it is assumed that these habitats will be permanently lost and there is no proposed mitigation to account for their loss due to the practicalities of creating these habitat types. Taking account of this, the losses of these habitats are therefore considered to be significant at an Authority level.

12.7. References

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