Appendix 12.2

Preliminary Ecological Appraisal

Note: This Preliminary Ecological Appraisal (PEA) was previously issued in 2015.

This was in advance of the DMRB Stage 2 design and options assessment for A9 Dualling – Glen Garry to Dalwhinnie.

The full PEA report is now appended as evidence in support of the DMRB Stage 3 Environmental Impact Assessment (EIA) of the Proposed Scheme.

Executive Summary

CH2M HILL has been commissioned by Transport Scotland (TS) to undertake an appraisal of the ecological receptors and constraints within, and adjacent to, the soft estate of the A9 between Glen Garry and Kincraig. This is required to inform Design Teams of legal constraints, and development risks, associated with ecology and nature conservation, such that primary principles on avoidance of adverse effects can be informed and embedded throughout the iterative design stages.

A Phase 1 Habitat Survey was carried out between June and September 2014 to provide an accessible catalogue of the broad habitat types currently within the Study Area. This consisted of a 300m wide survey corridor (i.e. 150m to either side of the existing A9 carriageway), which was extended locally to 500m in areas where receptors were found to connect to notable habitats beyond the Study Area (e.g. woodlands and wetlands).

A preliminary desk study identified the presence of statutorily designated sites along the survey corridor, together with some records for protected species and other species of conservation concern.

The survey recorded a total of 54 Phase 1 habitats within 9 broad habitat types, including a number of habitats listed on Annex 1 of the EU Habitats Directive 1992, as well as potential Groundwater Dependent Terrestrial Ecosystems (GWDTE).

South of Crubenmore, the predominant habitats within the Study Area are dry, acid, dwarf-shrub heath, valley mire, marshy grassland, wet dwarf-shrub heath, unimproved and semi-improved acid grassland.

North of Crubenmore, semi-natural broad-leaved woodland is also abundant, together with species-poor semi-improved grassland.

The survey identified signs for a number of protected species, including Water Vole, Otter, Mountain Hare and Red Squirrel. An abundance of potential habitat for other protected species, such as Pine Marten, was also identified. Other species of conservation concern were also recorded, including Scottish Biodiversity List and red data list species.

Further technical surveys will be required to fully ascertain the potential effects of the Central Scheme on habitat and species. At this stage, control measures have been provided to help inform the primary avoidance approach, and the minimisation of potential effects to ecology and nature conservation.

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Appendix A: Summary of Relevant Wildlife Law

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1 Introduction

1.1 Background

In December 2011, the Cabinet Secretary for Infrastructure and Capital Investment launched the Government's Infrastructure Investment Plan (IIP). This included a commitment to provide a dualled A9 trunk road, between Perth and Inverness, by 2025. The A9 Dualling Programme acknowledges that a safer and more reliable trunk road will help contribute to the sustainable economic growth of Scotland (Scottish Government 2004[1]; Scottish Government 2011[2]).

The A9 is the longest trunk road in Scotland. The area included within the A9 Dualling Programme contains approximately 129km (80 miles) of existing single carriageway and 48km (30 miles) of existing dual carriageway. To help deliver the A9 Dualling Programme, individual Projects are contained within three separate Schemes (see **Table 1-1**).

CH2M HILL has been commissioned by Transport Scotland (TS) to undertake an appraisal of the ecological receptors and constraints within and adjacent to the Central Scheme. Whilst the Central Scheme includes Project 10 (Kincraig to Dalraddy), this is being progressed separately and is at a more advanced stage of development. Therefore, Project 10 is not considered any further within this appraisal.

Table 1-1 - Geographic distribution of Projects within the Central Scheme

Project	Location	Length (km)	Overall (km)
Central Scheme			
7	Glen Garry to Dalwhinnie	10.5km	~ 36km
8	Dalwhinnie to Crubenmore	9.5km	
9	Crubenmore to Kincraig	16 km	
10	Kincraig to Dalraddy*	-	

1.2 Study Area

DMRB[3] Stage 1 has selected a 200m wide online corridor to take forward to DMRB Stage 2 (i.e. route alignment options assessment). Field surveys were therefore extended out to a 300m wide survey corridor to help identify broad habitats within, and directly adjacent to, the Central Scheme (hereafter referred to as the Study Area).

Where habitats within the Study Area were found to be connected to notable receptors (e.g. woodland or wetland connectivity), the survey was locally extended, as required, to 500m (i.e. ≤ 350m additional survey effort).

[1]Scottish Government. (2004) Scotland's Transport Future [online]. Available from < http://www.scotland.gov.uk/Publications/2004/06/stfwp/0> [accessed June 2014].

[2]Scottish Government. (2011) Infrastructure Investment Plan 2011 [online]. Available from <http://www.scotland.gov.uk/Resource/Doc/364225/0123778.pdf> [accessed June 2014].

[3]DMRB – Design Manual for Roads and Bridges. Available online at <http://www.standardsforhighways.co.uk/dmrb/>

Primary interests and/ or notified features (e.g. species) associated with statutory designated sites can be transient in nature, and can travel beyond site boundaries into the surrounding landscape. There is potential for the Study Area to contain supporting habitats for species associated with statutory designated sites.

Using the Sources of Survey Methods (SoSM) Technical Guidance Series (CIEEM 2014)[4]; this ecological appraisal will have regard to the presence of statutory designated sites within a 2km search radius of the Study Area.

As the iterative design process progresses, baseline ecology information will be combined with the findings of detailed desktop reviews and further technical surveys to identify legal constraints, and development risks, associated with ecology and nature conservation.

The scheme and designated sites are shown on **Drawings 12.1 – 12.5** (**Volume 3**).

Objectives

The findings from this Preliminary Ecological Appraisal will inform the *avoidance and assessment of environmental effects* through the DMRB2 and DMRB3 design and environmental assessment stages. Therefore, the objectives are to:

- review existing information to identify ecological receptors within the Study Area;
- undertake an appropriate level of survey to identify ecological receptors within the Study Area (including potential presence of Groundwater Dependent Terrestrial Ecosystems5,6);
- evaluate ecological receptors within the Study Area;
- identify where further surveys may be needed to fully evaluate potential ecological effects; and
- identify preliminary mitigation measures; as well as new benefit opportunities.

All work carried out in the preparation of this appraisal has utilised CH2M HILL's professional knowledge and understanding of current legislation and best practice codes and guidance defined by the Chartered Institute of Ecology and Environmental Management (CIEEM).

[4]CIEEM. (2014) Sources of Survey Methods [online]. Chartered Institute of Ecology and Environmental Management <http://www.cieem.net/sources-of-survey-methods-sosm-> [accessed June 2014].

[5]SNIFFER (2009) WFD95: A Functional Wetland Typology for Scotland - Field Survey Manual. Version 1. ISBN: 978-1-906934-22-4

[6]UKTAG (2004). Guidance on the identification and risk assessment of groundwater dependent terrestrial ecosystems. UK Technical Advisory Group on the Water Framework Directive. Work Programme Task 5a + b. Draft, Version 5.

2 Methodology

2.1 Desk Study

Prior to starting fieldwork, a desk-based review of recent aerial photographs and existing biological information was completed to identify environmental receptors that may be present within the Study Area.

2.1.1 Review of Aerial Photographs

Aerial photography was used to:

- provide an overview of vegetation and possible habitats likely to be encountered on site;
- determine habitat boundaries that can often be unclear on OS maps (e.g. woodland);
- identify features where further investigation during field surveys may be needed; and
- plan access for field surveys.

2.1.2 Review of Biological Information

A preliminary data search was also undertaken to source information on ecology receptors known to occur within the Study Area. Data searches underpin the value of ecological appraisals as they help focus the appraisal on target habitats and species (e.g. statutory designated sites and protected species; as well as other notable habitats and species of nature conservation concern). This leads to a greater understanding of nature conservation issues at local and landscape levels.

The following information sources were consulted to acquire data ≤1km of the Study Area:

- Strategic Environmental Assessment for the A9 Dualling Programme;
- Environmental Statement for Beauly to Denny 400kV Overhead Transmission Line;
- Multi-Agency Geographic Information for the Countryside (MAGIC)[7];
- National Biodiversity Network (NBN) Gateway[8];
- Scottish Natural Heritage 'SiteLink'[9];
- Scottish Natural Heritage 'Interactive Map'[10];
- Perth Museum Biological Records Centre;
- Cairngorm Nature;
- The Highland Biological Recording Group; and

[7]http://magic.defra.gov.uk [accessed June 2014].

[8]http://data.nbn.org.uk [accessed June 2014].

[9]http://gateway.snh.gov.uk/ [accessed June 2014].

[10]http://www.snh.gov.uk/publications-data-and-research/snhi-information-service/map/ [accessed June 2014].

- Scottish Ornithologist's Club (Highland Bird Recorder).

High-level species data was acquired through the A9 Dualling Programme SEA (e.g. Badger, Deer, Otter, Red Squirrel and Scottish Wildcat). Given that current design information is of a strategic level, a full data search has not undertaken at this stage (i.e. there was not an extensive search of records from local recorders of all relevant species and did not include non-statutory designated sites).

2.2 Field Survey

2.2.1 Phase 1 Habitat Survey

A Phase 1 Habitat Survey was undertaken between June and September 2014. The habitats were classified according to the Handbook for Phase 1 habitat survey: a technique for environmental audit (JNCC, 2010) to include:

- Phase 1 Habitat Maps using standardised colours and codes to indicate broad habitat types; and
- descriptions of features to identify features of nature conservation importance (i.e. Target Notes).

Nomenclature for flora follow those within Stace (2010). Dominant plant species and the locations of any notable plant species were recorded.

Note was taken of the more conspicuous fauna, and any evidence of, or potential for the presence of protected or notable species. Non-Native Invasive Species (NNIS), such as Japanese knotweed (*Fallopia japonica*), were noted when encountered.

Target Notes (TN) were used to provide supplementary information on features too small to map, or supplementary details, for example relating to species composition, structure and management.

In addition to the standard Phase 1 survey, the presence of other potential constraints, such as severe erosion areas, steep-sided slopes, and man-made or natural features were also documented.

Wetland habitats that meet or are likely to meet UK Technical Advisory Group's (UKTAG) criteria[11] as Ground Water Dependent Terrestrial Ecosystems (GWDTE) are considered separately (see Section 4.2.10).

2.2.2 Habitat Assessment for Protected and Notable Species

Habitats were assessed for their potential to support protected and notable species. This was carried out at the same time as the Phase 1 Habitat Survey. Due regard was given to the following receptors, given their protection through wildlife law and biodiversity planning policy:

- European Protected Species;
- UK Protected Species;

[11]UKTAG (2004). Guidance on the identification and risk assessment of groundwater dependent terrestrial ecosystems. UK Technical Advisory Group on the Water Framework Directive. Work Programme Task 5a + b. Draft, Version 5.

- Scottish Biodiversity List (Species); and
- Cairngorm Nature Action Plan (Key Species).

Where relevant, the nomenclature for species accounts follows Harris & Yalden (2008)[12]. Obvious field signs were recorded for target species in line with current CIEEM guidance[13] and, where relevant, the DMRB. Incidental sightings of protected species were also recorded when observed.

2.3 Limitations

It must be noted that the accuracy of biological data provided by the NBN Gateway and local wildlife groups can be unknown. This could be due to the expertise and identification skills of the observer. In addition, datasets may be incomplete and a lack of records for a specific geographical area or species group may not necessarily indicate the absence of the species.

Surveys were completed within the optimal time of year; although populations of animals and plants are often transient in nature, and a single survey visit can only provide a general indication of species present at that time. Although evidence of a species may not be recorded, it does not mean that the species may not be present at a more favourable time of year (e.g. vernal species in spring or lack of Otter spraints following periods of flood). This report takes full account of these limitations.

[12]Harris, S., and Yalden, D. (2008) (4th edn.) Mammals of the British Isles. Southampton: Mammal Society.

[13]CIEEM. (2014) Sources of Survey Methods [online].Available from < http://www.cieem.net/sources-of-survey-methods-sosm- > [accessed June 214]

3 Legislation and Planning Policy

3.1 General

The value of ecological receptors can be determined from the protection habitats and species receive through legislation and planning policy. This appraisal follows the evaluation methods presented by DfT (2010)[14], which integrates current evaluation standards specified by the CIEEM and DMRB. This has been summarised in **Table 3–1**. Where relevant, the assessment and recommendations take account of the protection and value of habitats and species.

Table 3-1 - Summary of relevant legislative and biodiversity frameworks

Habitats	Species
International	
Ramsar sites notified through the Convention on Wetlands of International Importance especially as Waterfowl Habitat	Critically Endangered, Endangered or Vulnerable on the IUCN Red List
European	
Special Protection Areas (SPA) notified through the Council Directive 79/409/EEC on the conservation of wild birds	Legally protected by European law (i.e. listed on Annex 1 of Council Directive 79/409/EEC
Special Areas of Conservation (SAC) notified through the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora	Species listed on Annex II of the Habitats Directive (e.g. SAC qualifying species).
Habitats listed on Annex I of the Habitats Directive (e.g. SAC qualifying habitats).	Species listed on Annex IV of the Habitats Directive (otherwise known as European Protected Species)
National	
National Nature Reserves (NNR) notified through the National Parks and Access to the Countryside Act 1949.	Species contained within Schedules 1, 5 and/or 8 of the Wildlife and Countryside Act 1981 (as amended).
Sites of Special Scientific Interest (SSSI) notified through the Nature Conservation (Scotland) Act 2004	Protection of Badgers Act 1992
Ancient Woodland Inventory (AWI) Sites	SBL (Priority Species)
SBL (Priority Habitat)	Red or Amber listed Birds of Conservation Concern
	Other Nationally Rare &/or Nationally Scarce Species
Regional	
Local Nature Reserves (LNR) notified through the National Parks and Access to the Countryside Act 1949	Local BAP Priority Species
Local BAP Priority Habitats	Notable Invertebrates
Local	
Nature conservation designations notified through local planning policy (i.e. Country Parks)	Other species not included in the above.
Other habitats not included in the above.	

A detailed summary of relevant wildlife law, as identified in **Table 3–1**, is provided in **Appendix A**.

[14]DfT. (2010) 'Ecology and Nature Conservation: Criteria for Impact Assessment' [online]. Interim Advice Note 130/10. Department for Transport. Available from < http://www.standardsforhighways.co.uk/ians/pdfs/ian130.pdf> [accessed June 2014].

The purpose of planning policy is to help achieve sustainable economic development (DCLG 2012[15]). It seeks to provide guidance on how a Local Authority will determine the effects of a development proposal on ecology and nature conservation receptors.

In addition, planning policy is often provided in response to a legal duty placed on a Local Authority through legislation (e.g. conserve and enhance biodiversity). Therefore, planning policy is a material consideration to planning decisions.

To facilitate the iterative DMRB design and assessment process, planning policy most relevant to the Central Scheme is provided below.

3.3.1 Scotland's National Transport Strategy

The National Transport Strategy (NTS) details the Scottish Government's commitment to the sustainable economic growth (Scottish Government 2006[16]). Developing the transport system is seen as an important component of increasing economic growth as well as providing an opportunity to respond to global environmental threats, such as climate change and preservation of the natural environment. As such, the NTS is focused on three main issues:

- Improved journey times and connections - making it quicker, easier and more reliable for passengers to travel between our towns and cities and across our global markets;
- Reduced emissions - making sure that Scotland takes a lead in the future of sustainable transport; and
- Improved quality, accessibility and affordability - ensuring everyone across Scotland has high quality public transport choices.

3.3.2 Cairngorms National Park

The Central Scheme falls almost entirely within the Cairngorm National Park; therefore, ecology and nature conservation policies contained in the **Local Plan** apply to the relevant Projects within the Central Scheme.

Policy 1: Natura2000 Sites

Development likely to have a significant effect on a Natura2000 site will be subject to an appropriate assessment in accordance with the Conservation (Natural Habitats, &c.) Regulations 1994.

[15]DCLG. (2012) National Planning Policy Framework [online]. Department for Communities and Local Government. Available from <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf> [accessed June 2014].

[16]Scottish Government. (2006) Scotland's National Transport Strategy [online]. Available from <http://www.scotland.gov.uk/Resource/Doc/157751/0042649.pdf> [accessed June 2014].

Policy 2: National Natural Heritage Designations

Development that would adversely affect the Cairngorms National Park, a Site of Special Scientific Interest, National Nature Reserve or National Scenic Area will only be permitted where it has been demonstrated that:

a) the objectives of designation and the overall integrity of the designated area would not be compromised; or

b) any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social or economic benefits of national importance and mitigated by the provision of features of commensurate or greater importance to those that are lost.

Policy 3: Other Important Natural and Earth Heritage Sites and Interests

Development that would adversely affect an ancient woodland site, semi-natural ancient woodland site, Geological Conservation Review site, or other nationally, regionally or locally important site recognised by the planning authority will only be permitted where it has been demonstrated that:

a)the objectives of the identified site and overall integrity of the identified area would not be compromised; or

b) any significant adverse effects on the qualities for which the area or site has been identified are mitigated by the provision of features of commensurate or greater importance to those that are lost.

Policy 4: Protected Species

Development that would have an adverse effect on any European Protected Species will not be permitted unless:

a) there are public health, public safety or other imperative reasons of overriding public interest;

b) there is no satisfactory alternative solution; and

c) the development will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Policy 5: Biodiversity

Development that would have an adverse effect on habitats or species identified in the Cairngorms Local Biodiversity Action Plan, UK Biodiversity Action Plan, or by Scottish Ministers through the SBL, including any cumulative impact will only be permitted where:

a) the developer can demonstrate to the satisfaction of the planning authority, that the need and justification for the development outweighs the local, national or international contribution of the area of habitat or populations of species; and

b) significant harm or disturbance to the ecological functions, continuity and integrity of the habitats or species populations is avoided, or minimised where harm is unavoidable, and appropriate compensatory and/or management measures are provided and new habitats of commensurate or greater nature conservation value are created as appropriate to the site.

3.4 Biodiversity

3.4.1 Scottish Biodiversity List

The current framework for biodiversity action planning in Scotland is provided through the '*Scottish Biodiversity List*' (Scottish Government 2013a)[17] and the '*2020 Challenge for Scotland's Biodiversity - a strategy for the conservation and enhancement of biodiversity in Scotland*' (Scottish Government 2013b)[18].

The Scottish Biodiversity List (SBL) identifies habitats and species of principal importance to Scotland's biodiversity. To assist the Scottish Government with their biodiversity duty to '*further the conservation of biodiversity*', habitats and species are categorised into:

- conservation action needed;
- avoid negative impacts; and
- watching brief.

Whilst habitats and species identified on the SBL may not receive legal protection, they are often included in biodiversity planning policy for their intrinsic local, regional and/ or national nature conservation value.

3.4.2 Cairngorms Nature Action Plan

A specific biodiversity partnership has been established to recognise the unique assemblage of habitats and species located within the Cairngorm National Park. 'Cairngorms Nature' is the strategic partnership body in place *to "…safeguard and enhance the outstanding nature in the Cairngorms National Park"*. The '*Cairngorms Nature Action Plan 2013 – 2018*' (CNAP) outlines local biodiversity planning aims and advice for next five years.

Whilst habitats and species identified in the Nature Action Plan may not receive legal protection, they are recognised in biodiversity planning policy for their intrinsic local, regional and/ or national nature conservation value. Priority habitats and species that represent the unique within the National Park and listed in the Nature Action Plan are summarised in **Table 3–2** and **Table 3–3**.

Table 3-2 - Summary of priority habitats within the Cairngorms Nature Action Plan

Area	Priority Habitats	Key Species
Woodlands	Caledonian Pinewood*	Capercaillie*, Scottish Wildcat*, Twinflower*, One–Flowered Wintergreen*, Green-Shield Moss*, Pine Hoverfly*, Pearl-Bordered Fritillary*, Dark-Bordered Beauty*, Kentish Glory* Wood Ants*.
	Conifer Plantations	
	Birch and Aspen Woodland*	
	Wet and Riparian Woodland*	
	Upland Oak*	

[17] Scottish Government. (2013a) *SBL* [online]. Available from <http://www.scotland.gov.uk/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL> [accessed June 2014].

[18] Scottish Government. (2013a) *2020 Challenge for Scotland's Biodiversity - A Strategy for the conservation and enhancement of biodiversity in Scotland* [online]. Available from < http://www.scotland.gov.uk/Publications/2013/06/5538> [accessed June 2014].

Area	Priority Habitats	Key Species
Wetlands	Upland Flushes, Fens & Swamps*	Lapwing*, Scarlet-Splash Fungus*, Northern Damselfly*, Northern Silver-Stiletto Fly*, Freshwater Pearl Mussel* Northern February Red Stonefly*.
	Lowland Fens*	
	Wet Grassland	
	Rivers*	
	Lochs & Ponds	
	Acid Grassland	
Wetlands	Unimproved Neutral Grassland	
	Upland Hay Meadow	
	Upland Calcareous Grassland*	
	Montain Heath and Willow Scrub*	
	Arctostaphylos Heath	
	Calaminarian Grassland and Rocky Outcrops*	
Others	Montane and Moorland	Golden Eagle*, Alpine Blue Sow Thistle, Tufted Saxifrage*, Powdered Sunshine Lichen, Small Dark Yellow Underwing*, Mining Bee*, Violet Oil Beetle*.
	Upland Heathland*	
	Blanket Bog*	
	Montane Scrub	
	Grassland	

(*) denotes SBL Priority Habitat / Species

Table 3-3 - Summary of priority species within the Cairngorms Nature Action Plan

Taxon	Scientific Name	Common Name
Mammals	*Arvicola amphibius*	Water Vole*
	Felis silvestris	Scottish Wildcat*
	Lepus timidus	Mountain Hare*
	Sciurus vulgaris	Red Squirrel*
Birds	*Charadrius morinellus*	Dotterel*
	Falco columbarius	Merlin*
	Tetrao urogallus	Capercaillie*
	Vanellus vanellus	Northern Lapwing*
Reptiles	Lacerta (Zootoca) vivipara	Common Lizard*
	Vipera berus	Northern Adder*
Invertebrates	*Anarta cordigera*	Small Dark Yellow Underwing*
	Andrena marginata	A Mining Bee*
	Coenagrion hastulatum	Northern Damselfly*
	Blera fallax	Pine Hoverfly*
	Brachyptera putata	Northern February Red Stonefly*
	Endromis versicolora	Kentish Glory*
	Formica spp.	Wood Ants (x4)*
	Margaritifera margaritifera	Freshwater Pearl Mussel*
	Meloe violaceus	Violet Oil Beetle*
	Spiriverpa lunulata	Northern Silver Stiletto Fly*
Flora	*Buxbaumia viridis*	Green Shield Moss*
	Cytidia salicina	Scarlet Splash Fungus*
	Hygrocybe punicea	Crimson Waxcap Fungus
	Linnaea borealis	Twinflower*
	Moneses uniflora	One Flowered Wintergreen*

(*) denotes SBL Priority Species

4 Baseline Conditions

4.1 Site Context

The stretches of single carriageway of the A9 between Glen Garry and Kincraig lie at an altitude of between 450m at the Drumochter Pass to 222m at Kincraig. In terms of habitat and wildlife it can be considered an upland site. The road lies within the Cairngorms National Park and runs past and, occasionally through, designated sites of international importance for nature conservation.

4.1.1 Project 7 (Glen Garry to Dalwhinnie)

The A9 passes through the Drumochter Hills, crossing the Pass of Drumochter at an altitude of 450m, before descending to an altitude of 380m at the junction with the A889 (the road into Dalwhinnie).

Pass of Drumochter is located to the north of the existing A9, which is situated on the lower, south-west facing slopes of A'Bhuidheanach Bheag (a mountain 936m in height).
To the south-west of the road lie the marshes of Allt Dubhaig and the upper reaches of Glen Garry, with the Sow of Atholl (803m in height) beyond. To the north of the pass, the road descends into the valley of the River Truim, with the watercourse and associated floodplain situated to the west and generally steeply rising ground to the east.

The Highland Mainline railway lies to the west of the existing A9, approaching to within 20m of the road opposite Creagan Doire Dhonaich (724m). At this point, the HML crosses the River Truim and continues to the west of the watercourse for the remainder of the Project.

The landscape is very open and habitats are dominated by heath, mire, marshy grassland and acid grassland. The area is sparsely populated with scattered properties.

4.1.2 Project 8 (Dalwhinnie to Crubenmore)

The A9 in this Project runs parallel to Glen Truim with the slopes of Creag Raudh (658m) and Leacainn (527m) to the east and the River Truim with its floodplain to the west. The road exhibits a very gradual descent from about 380m at the A889 junction to about 330m at Crubenmore.

The HML crosses the River Truim to the north of Dalwhinnie. Both the HML and A9 are located to the east of the watercourse for the remainder of the Project. The HML approaches to within 50m of the A9 around Cuaich and again at Crubenmore.

A 2.5km long aqueduct is present within the southern extent near Dalwhinnie, which connects the Allt Cuaich, to the east of Cuaich, to the River Truim at Dalwhinnie.

Project 8 is very open, dominated by heath, mire, marshy grassland and acid grassland; although agricultural improvements appears more widespread in this area than the adjacent Projects The area is sparsely populated with scattered properties.

4.1.3 Project 9 (Crubenmore to Kincraig)

The A9 ranges in altitude from about 285m at the southern end, north of Crubenmore, to 222m at Kincraig. The southern extent starts next to an area of existing dual carriageway to the south of Ralia, near to where the River Truim connects into the River Spey. The existing A9 is located to the south of the River Spey until it crosses the watercourse at Ruthven Barracks, Kingussie.

The HML crosses underneath the existing A9 to the immediate north of the River Spey crossing, which continues to the east of the existing A9 for the remainder of the Project.

Woodland is more widespread that the Projects located to the south (i.e. 7 and 8), and interspersed with pastoral farmland. Whilst still located within a rural landscape, the area is more densely populated due to the proximity of Kingussie.

A summary of statutory designated sites that are present within 2km of the Central Scheme is presented in **Table 4–1**.

Table 4-1 - Summary of statutory designated sites within, or adjacent to, the Central Scheme

Name	Designation	Distance	Qualifying features
Drumochter Hills	SSSI	Within Study Area – Project 7. The A9 passes through the SSSI.	• Breeding bird assemblage • Fluvial geomorphology • Montane assemblage of habitats • Vascular plant assemblage
Drumochter Hills	SAC	Within Study Area – Project 7	• European dry heaths • Alpine and boreal heaths • Sub-Arctic *Salix* spp. scrub • Siliceous alpine and boreal grasslands • Blanket bogs • Northern Atlantic wet heaths with *Erica tetralix* • Species-rich *Nardus* grasslands • Hydrophilous tall herb fringe communities • Siliceous scree of montane to snow levels • Siliceous rocky slopes with chasmophytic vegetation
Drumochter Hills	SPA	Within Study Area – Project 7.	• Dotterel (*Charadrius morinellus*) • Merlin (*Falco columbarius*)
River Spey	SAC	Within Study Area – Projects 8 and 9. The A9 crosses the SAC at 4 points – the River Spey north of Ruthven Barracks and 3 tributaries (Dunachton Burn, Raitt's Burn and Inverton Burn).	• Sea lamprey (*Petromyzon marinus*) • Atlantic Salmon (*Salmo salar*) • Otter (*Lutra lutra*) • Freshwater Pearl Mussel (*Margaritifera margaritifera*)
Insh Marshes	SAC	Within Study Area – Project 9.	• Oligotrophic to mesotrophic standing waters. • Transition mires and quaking bogs. • Alluvial forests with alder and ash. • Otter
Creag Dhubh	SSSI	900m to the west of the A9 near Ralia – Project 9.	• Upland birch woodland
Loch Etteridge	Geological SSSI	>1km outside the Study Area (between Projects 8 and 9) to the east of a dualled section of the A9.	• Quaternary geology and geomorphology
River Spey – Insh Marshes	SSSI	Within Study Area – Project 9. The A9 passes through the SSSI north of Ruthven Barracks.	• Flood-plain fen. • Mesotrophic loch. • Vascular plant assemblage. • Osprey (*Pandion haliaetus*) (breeding) • Whooper swan (over-wintering) • Otter • Arctic charr (*Salvelinus alpinus*)
	SPA	Same boundary as for SSSI	• Wigeon (*Anas penelope*) (breeding) • Osprey (breeding) • Spotted crane (*Porzana porzana*) (breeding) • Wood sandpiper (*Tringa glareola*) (breeding) • Hen harrier (*Circus cyaneus*) (over-wintering) • Whooper swan (*Cygnus cygnus*) (over-wintering)

Name	Designation	Distance	Qualifying features
	Ramsar	Boundary same as SSSI	• High-altitude, slow-flowing river, a mesotrophic loch, floodplain mire and gravel fan. • Assemblages of nationally-rare and nationally-scarce plants and invertebrates. • Otter. • High value assemblage of wetland breeding birds. • Whooper swan (over-wintering).
Insh Marshes	National Nature Reserve	Within Study Area	• Refer to River Spey – Insh Marshes SSSI Citation.

4.2 Habitats

The Phase 1 Habitat Survey has identified a total of 54 habitats within 9 broad habitat types. The dominant habitat types found within Projects 7 and 8 are heath (in particular, dry dwarf shrub heath), valley mire and marshy and acid grassland. These habitats are also frequent within Project 9, but Project 9 is also much more wooded, with widespread areas of coniferous plantation and both semi-natural and broad-leaved plantation woodland. In the vicinity of Insh Marshes, swamp is also much more abundant than in Projects 7 and 8.

Farming activity is more in evidence in Project 9 as well, and this is reflected through the increased presence of improved and semi-improved grasslands. Species-poor semi-improved grassland is the most extensive habitat in Project 9.

Although not a dominant habitat by area, running water is an abundant habitat feature throughout. Acid flush also constitutes a very frequently encountered habitat, particularly in Projects 7 and 8, although a relatively minor component by area.

Maps showing broad habitat types within the Central Scheme, as identified during the Phase 1 Habitat Survey, are presented in **Drawings 12.6 – 12.10a** (**Volume 3**). A summary on the distribution of habitats within the Central Scheme is presented in **Appendix B**, which includes approximate areas of each broad habitat type within each Project. Target Notes (TN) providing descriptions of notable habitat features or species sightings are provided in **Appendix C**.

4.2.1 Woodland and scrub

Broadleaved semi-natural woodland

This habitat is almost entirely confined to Project 9 where it is the second most extensive habitat type. Between Crubenmore and Kingussie woodland is typically dominated by birch species (*Betula spp*.), with occasional aspen (*Populus tremula*), rowan (*Sorbus aucuparia*) and willow species (*Salix* spp.) over a field layer of acid grassland (e.g. TN92 and 123) or heath (e.g. TN79).
Significant areas appear to be of fairly recent origin, having succeeding naturally from heath and/or acid/marshy grassland (e.g. TN83, 86, 98, 100 and 134).

Towards Kincraig, large areas of the habitat show a greater diversity of tree species.
Birch species generally remain widespread, often with an abundance of natural regeneration, but with frequent sessile oak (*Quercus petraea*), including many over-mature and Veteran Trees, and locally frequent aspen and hazel (*Corylus avellana*) coppice (e.g. TN143).
The ground layer is often characterised by abundant bryophytes, with the field dominated by wood-sage (*Teucrium scorodonia*), bugle (*Ajuga reptans*), hedge woundwort (*Stachys sylvatica*), bracken (*Pteridium aquilinum*) and bitter vetch (*Lathyrus linifolius*).
The presence of old, defunct stone walls and the abundance of birch saplings suggests many of these

areas may once have been pastoral farmland with parkland trees; and are included within the Ancient Woodland Inventory[19].

In the vicinity of the River Spey and Insh Marshes, areas of wet woodland also occur, frequently dominated by alder (*Alnus glutinosa*) (e.g. TN111A and 118).
Willow species are often co-dominant, including crack willow (*Salix fragilis*) (e.g. TN115) over marshy grassland or swamp (e.g. TN154).
Along some streams, for example Raitt's burn (TN136) and Dunachton Burn (TN162) the alder is joined by occasional to frequent downy birch (*Betula pubescens*), sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and bird cherry (*Prunus padus*), over elder (*Sambucus nigra*) and a ground layer of dog's mercury (*Mercurialis perennis*).

Only a small amount of the habitat type is present in Project 8 at the extreme northern end along the banks of the river Truim at Crubenmore. It consists of alder dominated wet woodland and upland birch woodland. The habitat type is absent from Project 7.

Broad-leaved plantation woodland

Stands of this habitat are almost entirely confined to Project 9 and constitute a particularly common habitat along the A9 road verges.
The habitat typically consists of even-aged birch over acid grassland (TN78) or dry heath (TN99).

Coniferous plantation woodland

Coniferous plantation woodlands are a feature of all three Projects, typically dominated by Scot's pine (*Pinus sylvestris*), with occasional stands of larch (*Larix spp*.) and sitka spruce (*Picea sitchensis*).

Many of the stands are only semi-mature and densely planted with a poor ground layer, but occasional mature stands of Scot's pine plantation woodland are also present, over a more diverse field layer, including heather (*Calluna vulgaris*), cowberry (*Vaccinium vitis-idaea*), chickweed wintergreen (*Trientalis europaea*) and wood sorrel (*Oxalis acetosella*) (e.g. TN6, 37A, 87).

Mixed semi-natural woodland

One small area of this habitat is present in Project 9, consisting of birch, sycamore, larch and beech (*Fagus sylvatica*) over locally abundant rhododendron (*Rhododendron ponticum* (TN138)).

The woodland probably originates from plantation, but has developed a fairly semi-natural character.

Mixed plantation woodland

Mixed plantation woodland is almost entirely confined to Project 9.

[19] SNH. (2014) *A guide to understanding the Scottish Ancient Woodland Inventory (AWI)* [online]. Scottish Natural Heritage. Available from <http://www.snh.gov.uk/docs/C283974.pdf> [accessed June 2014].

The exception is an area of plantation woodland consisting of birch and Scot's pine along the A9 verge at Crubenmore in Project 8.

Mixtures of Scot's pine and birch are also typical of the A9 verge habitat in Project 9 (e.g. TN94, 153 and 159), but other mixes are also present, including alder and larch (TN110).
Away from the soft estate, the mixed plantation woodland tends to have a greater diversity of tree species, including lime (*Tilia spp*.), horse chestnut (*Aesculus hippocastanum*), rowan and aspen.

Scrub

Small areas of dense/ continuous scrub are an occasional feature in Projects 7, 8 and 9.
The shrub layer generally consisting of willow species over marshy grassland or fen (TN46A and 149), but areas of dry scrub dominated by common gorse (*Ulex europaeus*) or broom (*Cytisus scoparius*) are also present.

Scattered scrub is widespread in Projects 7, 8 and 9, particularly along open verges of the A9.

Species present include broom, gorse, willow species and, occasionally, juniper (*Juniperus communis*).

Scattered trees

Immature and semi-mature scattered conifers, generally Scot's pine, and broad-leaved trees, generally birch and less frequently rowan, are a common feature in grassland and heathland habitats along the A9 road verge.

These species are also often found to be colonising areas of heath and unmanaged grassland, particularly in Project 9 (e.g. TN79).

Mature scattered broad-leaved trees are largely confined to Project 9, including alder in a field by the river Spey (TN111), lime, beech, sycamore, horse chestnut and elm along tracks and roads in the vicinity of Raitt's burn (TN137) and aspen and oak in the vicinity of the Highland Wildlife Park (TN146 and 147).

4.2.2 Grassland and marsh

Acid grassland

Acid grassland is one of the most widespread habitats in all three Projects.

Overall, there is a roughly even split between areas identifiable as semi-improved and areas with no signs of agricultural improvement, but the latter are concentrated in the upland areas around the Drumochter pass in Project 7.

The unimproved acid grassland is typically characterised by abundant sweet vernal grass (*Anthoxanthum odoratum*), sheep's fescue (*Festuca ovina*) and heath bedstraw (*Galium saxatile*), with varying abundances of mat grass (*Nardus stricta*), wavy-haired grass (*Deschampsia flexuosa*), heath rush (*Juncus squarrosus*), tormentil (*Potentilla erecta*), heath wood-rush (*Luzula multiflora* ssp. *multiflora* and ssp. *congesta*), carnation sedge (*Carex panicea*), mouse-ear hawkweed (*Pilosella officinarum*), heath spotted-orchid (*Dactylorhiza maculata*), selfheal (*Prunella vulgaris*), eyebright (*Euphrasia* agg.), ribwort plantain (*Plantago lanceolata*), common bird's-foot-trefoil (*Lotus corniculatus*) and devil's-bit scabious (*Succisa pratensis*) (e.g. TN2, 77A and 89).

Semi-improved examples of the habitat become increasingly dominant as the A9 descends through Projects 8 and 9, with increasing abundance of species such as Yorkshire fog (*Holcus lanatus*) and white clover (*Trifolium repens*). In these areas, unimproved grassland is often confined to the steeper slopes of fields (e.g. TN103).

Neutral grassland

Neutral grassland is largely confined to Project 9, with the vast majority showing signs of agricultural improvement; particularly extensive areas occur in the Spey valley, on the edge of Insh Marshes, just to the south of the A9 crossing over the river (TN111, 113, 114 and 116).

More species-rich areas support frequent to abundant common knapweed (*Centaurea nigra*), yellow-rattle (*Rhinanthus minor*), bird's foot trefoil, sweet vernal grass, red fescue (*Festuca rubra* agg.), Yorkshire fog, timothy (*Phleum pratense*), red clover (*Trifolium pratense*), eyebright, lady's bedstraw (*Galium verum*), yarrow (*Achillea millefolium*), devil's bit scabious, ragwort (*Senecio jacobaea*), common bent (*Agrostis capillaris*) and common cat's ear (*Hypochaeris radicata*).

Calcareous grassland

Calcareous grassland occurs in small, localised patches in all three Projects.
Unimproved areas most often occur adjacent to exposed rock (e.g. TN2), thin soils where base-rich bedrock or strata lie near the surface (e.g. TN49), or in association with the embankments of old tracks, roads or other linear, man-made structures, such as the aqueduct in Project 8 (e.g. 10, 20 and 55).

Recorded species include lady's bedstraw, wild thyme (*Thymus polytrichus*), quaking grass (*Briza media*), eyebright, fairy flax (*Linum catharticum*), glaucous sedge (*Carex flacca*), field gentian (*Gentianella campestris*) and northern bedstraw (*Galium boreale*) and, in Project 9 in the vicinity of Lochan an Tairbh, common rock-rose (*Helianthemum nummularium*) (TN102 and 107).

More extensive areas of semi-improved calcareous grassland are present in Project 8 within a broad meander of the River Truim (TN67) and near to Lochan an Tairbh in Project 9 in an area previously used as forestry plantation (TN108).
These areas are less species-rich than the unimproved areas, but are characterised by frequent wild thyme and lady's bedstraw.

Marshy grassland

Extensive areas of this habitat are a feature of all three Projects, often in a mosaic with acid grassland, valley mire and wet heath (e.g. TN3, 8, 36, 42, 43, 60, and 101).
The habitat is generally characterised by frequent to dominant purple moor-grass (*Molinia caerulea*) and/or rushes, in particular, sharp-flowered rush (*Juncus acutiflorus*) and compact rush (*J. conglomeratus*).

Other, frequently encountered species include carnation sedge, deer sedge (*Trichophorum cespitosum*), marsh violet (*Viola palustris*), Northern marsh-orchid (*Dactylorhiza purpurella*), heath spotted-orchid, common lousewort (*Pedicularis sylvatica*), marsh lousewort (*P. palustris*), common butterwort (*Pinguicula vulgaris*), bog asphodel (*Narthecium ossifragum*), bog myrtle (*Myrica gale*), water avens (*Geum rivale*), heath rush and devil's-bit scabious. Cotton grasses (*Eriophorum* spp.) and bog mosses (*Sphagnum* spp.) are also locally frequent.

In Projects 8 and, in particular, Project 9 more mesotrophic examples of the habitat also occur (e.g. TN47, 66, 133 and 140), with abundant tufted hair-grass (*Deschampsia cespitosa*), soft rush (*Juncus effusus*) and meadowsweet (*Filipendula ulmaria*).

4.2.3 Tall herb and fern

Bracken

Areas of dense bracken occur only within Project 9 and the northern-most end of Project 8 (e.g. TN127, 147).

Tall ruderal

Stands of rosebay willowherb (*Chamerion angustifolium*) are a common feature along the A9 road verges, particularly in Projects 7 and 8.

Occasional patches of nettle (*Urtica dioica*) and common ragwort also occur in Project 9.

4.2.4 Heathland

Dry dwarf shrub heath - acid

Dry dwarf shrub heath is a common feature of all three Projects and constitutes the most extensive habitat within the Study Area.

The habitat is typically dominated by heather (e.g. TN12, 22, 30 and78) with frequent to abundant bilberry (*Vaccinium myrtillus*) and bell heather (*Erica cinerea*). Crowberry (*Empetrum nigrum*), cowberry and bearberry (*Arctostaphylos uva-ursi*) are occasional to locally dominant. Cross-leaved heath (*Erica tetralix*) is occasional.

Other, commonly encountered species include petty whin (*Genista anglica*), raspberry (*Rubus idaeus*), heath bedstraw, tormentil, hard fern (*Blechnum spicant*), alpine lady's mantle (*Alchemilla alpina*) and stag's-horn clubmoss (*Lycopodium clavatum*).
In Project 8, significant areas of the habitat are managed for red grouse by burning.
These areas exhibit an evident pattern of muirburn, with strips of heath having been burnt at various intervals (e.g. TN71 and 72). They are often relatively species-poor.
Dry heath often occurs in an intimate mosaic with acid grassland (e.g. TN13).

Dry dwarf shrub heath - basic

This habitat is much more restricted than acid heath, but occurs in small, localised patches in Projects 7, 8 and 9 where base-rich rock outcrops near the surface, such as an area which has developed over shingle by the river Truim (TN42).

The habitat is characterised most readily by the abundance of wild thyme.

Wet dwarf shrub heath

Wet dwarf shrub heath occurs in Projects 7, 8 and 9, but is most abundant in Project 8 and relatively uncommon in Project 9.

Heather is generally abundant, but the habitat is distinguishable from dry heath by the greater abundance of cross-leaved heath, purple moor-grass and bog mosses, particularly compact bog-moss (*Sphagnum compactum*), together with heath rush, cotton grasses and deer sedge.

In Project 8, the diversity of some areas appears to have been negatively affected by muirburn (e.g. TN65).

The habitat often occurs as a mosaic with acid and marshy grassland and with flushes (e.g. TN15, 32 and 51).

4.2.5 Mire

Bog

Unmodified bog (blanket bog and raised bog) consists of *Sphagnum*-rich vegetation, lying on peat more than 0.5 m deep, with the water table at, or just below, the surface and no input of water from the surrounding land.

Although areas of deep peat were abundant in Projects 7, 8 and 9 within the study area, the majority were considered to be predominantly surface and ground water fed and, therefore, classed as fen (discussed below).
A few distinct areas of unmodified bog were identified, all in Project 7:

- An area of raised bog (TN42A), approximately 1 ha in extent, lies between the A9 road verge and the river Truim about 2km to the north of Drumochter Lodge.
  Accumulated peat has formed a distinctly raised dome.
  Bog mosses are abundant to dominant, together with abundant heather, cross-leaved heath, deer sedge and bog asphodel (Narthecium ossifragum).
- An area of raised bog (TN33A), also approximately 1 ha in extent, about 2km to the south of Balsporran Cottages, between the railway and the young river Truim.
- An area of blanket bog on the lower western slopes of the head of the Truim valley just to the south of TN33A. It is isolated from the A9 by both the intervening railway and the river Truim.
- An area of raised bog within a large valley mire complex between the road and railway at the Pass of Drumochter (TN30). This area is also about 1 ha in extent.

Other, smaller areas of raised bog are also likely to be present within the many large valley mire complexes of the Study Area.

Modified bog

Small areas of modified bog were identified in Projects 7 and 8, generally in association with more extensive, intact fen habitat.

They are characterised by a scarcity or absence of bog-mosses. Exposed areas of peat are frequent in areas of dry modified bog. Wet modified bog is often dominated by purple moor-grass.

Acid / neutral flush

Flushes are a frequent habitat within the Study Area of Projects 7 and 8, but less frequently encountered in Project 9.

They generally occur as small areas on sloping ground where there is some water movement through heath and grassland communities.

They often form an integral part of much more extensive fen communities, when they are mapped as such (see below).

They typically support frequent bog mosses and/or sedges, including carnation sedge, flea sedge (*Carex pulicaris*), yellow sedge (*Carex viridula* ssp. *oedocarpa*) and star sedge (*Carex echinata*), rushes, especially heath rush, compact rush and sharp-flowered rush, and species such as common butterwort, round-leaved sundew, common lousewort, starry saxifrage (*Saxifraga stellaris*), bog myrtle and bog asphodel.

Fen

Fens are defined as minerotrophic mires, meaning their water supply comes mainly from streams or springs/ flushes. They are usually over peat more than 0.5m deep.

Fen is an extensive habitat in all three Projects, but is particularly widespread in Projects 7 and 8, where it is second only to heathland in terms of extent.

It most often occurs between the A9 road and the rivers Truim and Spey, fed by streams and flushes above.

Drainage through to the river beyond is often impeded by hummocks and less permeable substrates.

The vast majority of the fen habitat within the Study Area was considered to be valley mire and is mapped as such on the habitat plans (e.g. TN33 and 34), but the distinctions between valley mire, basin mire and flood-plain mire are based on topographical rather than vegetational criteria.

Valley mire develops along the lower slopes and floor of a valley, receiving water from springs and seepages on the valley sides and feeding a central watercourse.
A few small areas of basin mire, which develop in a water-logged basin, were also recorded (e.g. TN105 and 120).

One small area of flood-plain mire was recorded immediately to the west of the river Truim at the southern end of Project 8.

This type develops on a river or stream floodplain which is waterlogged and typically inundated periodically.

The fen habitat within the Study Area typically supports a range of acidophilous species, including bog mosses, cottongrasses, sharp-flowered rush, deer sedge, carnation sedge, bog myrtle, bog asphodel, common lousewort, round-leaved sundew and cross-leaved heath. Locally abundant species include heather, devil's bit scabious, marsh cinquefoil (*Potentilla palustris*), purple moor-grass and meadowsweet.

Only areas with a minimum peat depth of 0.5m were mapped as fen, but no attempt was made to measure the full depth of the peat, with the exception of Project 8.
A peat depth of 2.9m was measured in the vicinity of Dalwhinnie (TN50), but a 1m depth is more typical in this Project.

4.2.6 Swamp, marginal and inundation

Swamp

Small areas of nutrient-poor, or oligotrophic, swamp are present in Projects 7, 8 and 9.
They typically occur in small hollows or in standing water bodies and are dominated by bottle sedge (*Carex rostrata*).

However, more extensive areas of more nutrient-rich swamp also occur within Project 9, particularly on the edge of Insh Marshes, where stands dominated by reed canary-grass (*Phalaris arundinacea*) and common reed (*Phragmites australis*) occur.

Marginal and inundation

Marginal vegetation along watercourses and waterbodies is a feature throughout, typically comprising a range of marshy grassland and swamp species, such as purple moor-grass, rushes, wild angelica (*Angelica sylvestris*) and meadowsweet.

The meanders of the rivers Truim and Spey, together with a number of larger tributaries, such as the Allt Coire Chuirn, support broad shingle beds with inundation vegetation.
Heavy scouring keeps many of these shingle banks largely devoid of vegetation, but less disturbed areas, such as those along the Allt Coire Chuirn (TN40), can support a wide range of scattered short perennials, including wild thyme, alpine lady's mantle, foxglove (*Digitalis purpurea*), selfheal, sheep's sorrel (*Rumex acetosella*), mountain sorrel (*Oxyria digyna*), bog pimpernel (*Anagallis tenella*), yellow saxifrage (*Saxifraga aizoides*) and the SBL species mossy saxifrage (*S. bryoides*).

4.2.7 Open water

Standing water

Large areas of open, standing water are absent from Projects 7 and 8.
Small, oligotrophic pools, typically less than 2m across are occasional, and mainly occur within mire habitats.

Some larger areas of standing water are present within the floodplain of the river Truim, but they have been entirely colonised by bottle sedge and so are classed as swamp.
More substantial areas of open standing water, both nutrient-poor (oligotrophic) and moderately nutrient-rich (mesotrophic), are confined to Project 9, such as Lochan an Tairbh (TN107), the ponds at Glebe Nature Park in Kingussie (TN120), a series of ponds on the edge of Insh Marshes, west of Ruthven Barracks (TN113 and 114) and in the vicinity of Loch Insh (TN152).

These waterbodies support a variety of emergent plant species, including bog pondweed (*Potamogeton polygonifolius*), bogbean (*Menyanthes trifoliata*), water horsetail (*Equisetum fluviatile*), cottongrasses, bottle sedge and bog mosses.

Running water

Running water is a major feature of Projects 7, 8 and 9.
The A9 skirts the floodplain of the River Garry at the southern-most end of Project 7, the River Truim north of the Drumochter Pass in Project 7 and in Project 8, and the River Spey in Project 9.

Numerous watercourses feeding into these Rivers are crossed by the A9 throughout.
Many are less than 2m wide; although the A9 also crosses several larger burns with broad channels, such as the Allt Coire Mhic-sith (TN5) and the Allt Coire Chuirn (TN40) in Project 7, and the Burn of Inverton (TN106) and Raitt's Burn (TN136) in Project 9.

The upland streams of Projects 7 and 8 are likely to be oligotrophic with bog pondweed and alternate water-milfoil (*Myriophyllum alterniflorum*) within the watercourse.
No in channel vegetation was noted in the River Spey in Project 9.

4.2.8 Rock exposure and waste

Inland cliff

Narrow bands of cliffs, typically 1 to 2 metres in height, occur very occasionally in Projects 7, 8 and 9, usually in the form of road cuttings (e.g. TN66), but also occasionally along small riparian ravines (TN5).

The road cuttings are typically only sparsely vegetated with such species as mouse-ear hawkweed, heather and hawkweed species (*Hieracium spp*.), but where flushes occur above the rock face, the rock may be colonised by a wider range of species typical of mire communities.

Scree

Significant areas of scree are confined to the eastern peripheries of the Study Area on the steep slopes A'Bhuidheanach Bheag, just to the north of Drumochter Pass in Project 7.
They are sparsely vegetated with a range of ferns, including male fern (*Dryopteris filix-mas*) and hard fern, heather, bell heather, raspberry and goldenrod (*Solidago virgaurea*), together with a range of bryophytes, especially *Grimmia* spp. and lichens.

Smaller areas of scree are very occasional in Project 9 in areas of enclosed pasture (TN85).
These areas support very few vascular plants.

Other exposures

Within the Study Area, this habitat includes localised slippages along small, riparian ravines, exposing the underlying substrate (e.g. TN8), which is generally only sparsely vegetated with such species as colt's-foot (*Tussilago farfara*).

In Project 9, a number of piles of stones / boulders of uncertain origin have also been placed in this category (e.g. TN127). These support a range of lichen species.

Quarry

One active, limestone quarry is present (Meadowside Quarry) to the east of the Highland Wildlife Centre between Kingussie and Kincraig.

Spoil

Small areas of spoil consisting of hardcore or soil are present in Projects 8 and 9.
More established areas of hardcore spoil have become partially vegetated with common ephemeral/ short perennial species, such as colt's-foot.

4.2.9 Miscellaneous

Arable

Small areas of arable farmland, principally for *Brassica* crops, are entirely confined to Project 9.

Amenity

Small areas of amenity grassland, dominated by a limited range of grasses including perennial rye-grass (*Lolium perenne*), are present around a few of the occasional residences in each Project.

A more extensive area of the habitat, in the form of a sports' field, is present in the vicinity of Kingussie.

Walls

Stone walls are a scarce resource in Project 7 and uncommon in Project 8, with the exception of an area of old, ruined shielings (farm buildings) at Lechden (TN61).
Stone walls and the ruins of stone walls are a little more common in Project 9, particularly in farmland and woodland between Kingussie and Kincraig.

Many of these walls support a diverse range of lichens and bryophytes (e.g. TN124, 137, 139).

Dry ditches

Dry ditches are a common feature in Projects 7 and 8, but particularly in Project 8, with over 10km recorded.

They can be divided into two types:

- (1) those within the A9 soft estate, often concrete-lined, carrying rainwater along and under the road
- (2) those with a mineral or peaty substrate, usually within heathland, marshy grassland and mire habitats (grips) in the adjacent land.

Dry ditches in Project 9 are relatively uncommon. Dry ditches typically support a range of marshy grassland and fen species.

Buildings

Occasional buildings (residential and farm) occur within the Study Area, most frequently in Project 9. A number have potential to provide roosting opportunities for bats.

Bare ground

Substantial areas of bare ground have recently been created within the Study Area of Project 7 to the east of the A9 to provide new access tracks and pylon platforms for the Beauly to Denny 400kV Overhead Transmission Line.
These are currently devoid of vegetation, but likely to be colonised by dry acid grassland and heath in due course.
Smaller, occasional patches of bare ground are also present in Projects 8 and 9.

4.2.10 Ground Water Dependent Terrestrial Ecosystems

The Phase 1 Habitat Survey recorded a large number of wetland areas within the Study Area. Many of the associated habitats have the potential to either meet the criteria for GWDTEs either in full or in part. A total of five types of potential GWDTE have been recorded, including:

1) Flushes

A total of 76 discrete flushes of sufficient size to map were identified in the Study Area of Project 7, 23 in Project 8 and 6 within Project 9.

Many more occur as in integral part of valley mire systems (see below), or areas too small to map, especially within wet heath and marshy grassland.

2) Marshy grassland

Marshy grassland is widespread across Project 7, 8 and 9. It is often found within close proximity to the margins of rivers, burns and/ or springs.

It has also been recorded in areas where surface water was not visible, which suggests underlying substrates may be poorly drained.

3) Wet heath

Wet heath often occurs as a mosaic with flushes and springs on slopes above the A9, especially within Projects 7 and 8.

Like marshy grassland, around springs and burns the wet heath appears to be influenced by surface water, but more extensive areas of wet heath generally extend well above spring and flush lines and across extensive intervening areas and are, therefore, likely to be dependent upon the movement of ground water, rather than surface water (e.g. poor drainage).

4) Unmodified bog

One area of blanket bog and three areas of raised bog were identified, all within Project 7.

Two areas of raised bog lie in close proximity to the A9 (TN30 and 42A), the other two areas of bog lie on the opposite side of the mainline railway.

In addition to these potential GWDTEs, it is likely that other, smaller areas of raised bog occur as a mosaic within fen – valley mire.

5) Fen – valley mire

Acidic, bog-moss-rich fen is one of the most widespread and extensive habitats within the Study Area. Flushes around their upper slopes generally form an integral part of the habitat.
Below the flushes, the mires are in general substantially dependent upon surface water feeding down from the flushes and burns, together with impermeable areas of substrate impeding drainage to the river.

However, two areas of raised bog were identified within the habitat in Project 7 (TN30 and 33A) and it is probable that many other areas of potential GWDTE mire also occur as an intimate mosaic within the more extensive, predominantly surface water fed valley mire systems.

4.3 Protected Species

The data search provided records of protected species from a range of information sources including biological record centres and documents associated with statutory designated sites (e.g. Natura2000 Data Forms and SSSI Citations). The Phase 1 Habitat Survey also recorded incidental evidence of protected species where encountered during field surveys.

Where relevant, desktop information has been combined with evidence collected from the field to identify the known, and potential, presence of protected species within the Study Area.

Birds

The data search has identified records of species listed on *Schedule 1* of the Wildlife and Countryside Act 1981 (as amended) within and/ or in proximity to the Study Area:

- Golden Eagle (*Aquila chrysaetos*) – Project 9
- Scaup (*Aythya marila*) – Project 9
- Dotterel – Projects 7 and 8
- Hen Harrier –Projects 7, 8 and 9
- Marsh Harrier (*Circus aeruginosus*) – Project 9
- Whooper swan – Project 9
- Merlin – Projects 7, 8 and 9
- Peregrine (*Falco peregrinus*) – Projects 7, 8 and 9
- Brambling (*Fringilla montifringilla*) – Project 9

- Black-throated Diver (*Gavia arctica*) – Projects 7, 8 and 9
- Red-throated Diver (*G. stellata*)
- Common Crossbill (*Loxia curvirostra*) – Projects 7, 8 and 9
- Scottish Crossbill (*Loxia scotica*) – Project 9
- Spotted Crake – Project 9
- White-tailed Eagle (*Haliaeetus albicilla*) – Project 9
- Red Kite (*Milvus milvus*) – Project 9
- Osprey – Projects 8 and 9. An osprey was sighted flying up the river Truim in Project 8.
- Crested Tit (*Parus cristatus*) – Project 9
- Snow Bunting (*Plectrophenax nivalis*) – Projects 7, 8 and 9
- Western Capercaillie – north of Project 9
- Wood Sandpiper – Project 9
- Greenshank (*Tringa nebularia*) – Project 9
- Redwing (*Turdus iliacus*) – Projects 7, 8 and 9
- Fieldfare (*Turdus pilaris*) – Projects 8 and 9
- Barn owl (*Tyto alba*) – Projects 7 and 9. The remains of a dead Barn Owl were recorded in Project 7 (TN43).

Records exist near or within the Study Area for the following bird species listed on schedule 1 part 2 of the Wildlife and Countryside Act 1981 (as amended):

- Greylag Goose (*Anser anser*) – Project 9
- Goldeneye (*Bucephala clangula*) – Project 9

In addition, records exist for a large number of SBL and Cairngorms Nature Action Plan species, including:

- In Projects 7, 8 and 9:
  Skylark (*Alauda arvensis*), Swift (*Apus apus*), Short-eared Owl (*Asio flammeus*), Dunlin (*Calidris alpina*), Lesser Redpoll (*Carduelis cabaret*), Hen Harrier, Hooded Crow (*Corvus cornix*), Kestrel (*Falco tinnunculus*), Spotted Flycatcher (*Muscicapa striata*), Curlew (*Numenius arquata*), Golden Plover (*Pluvialis apricaria*), Red Grouse (*Lagopus lagopus scotica*), Black-headed Gull (*Larus ridibundus*), Snow Bunting, Song Thrush (*Turdus philomelos*), Ring Ouzel (*Turdus torquatus*) and Lapwing;
- Projects 7 and 8:
  Twite (*Carduelis flavirostris*), Siskin (*Carduelis spinus*), Dotterel (*Charadrius morinellus*) and Common Tern (*Sterna hirundo*);
- Projects 8 and 9:
  Tree Pipit (*Anthus trivialis*), Linnet (*Carduelis cannabina*), Cuckoo (*Cuculus canorus*), Reed Bunting (*Emberiza schoeniclus*), House Sparrow (*Passer domesticus*), Bullfinch (*Pyrrhula pyrrhula*) and Woodcock (*Scolopax rusticola*);
- Projects 9 only:
  Scaup, Barnacle Goose (*Branta leucopsis*), Common Rosefinch (*Carpodacus erythrinus*), Marsh

Harrier, Whooper Swan, Yellowhammer (*Emberiza citrinella*), Brambling, Herring Gull (*Larus argentatus*), Black-tailed Godwit (*Limosa limosa*), Grasshopper Warbler (*Locustella naevia*), Grey Partridge (*Perdix perdix*), Wood Warbler (*Phylloscopus sibilatrix*), Hedge Accentor (*Prunella modularis*), Starling (*Sturnus vulgaris*), Black Grouse (*Tetrao tetrix*), Spotted Crake, Wood Sandpiper and Greenshank.

Potential bird nesting habitat was identified throughout the Study Area in the form of:

- reeds and marshy grassland vegetation;
- scrub;
- hedgerows and trees; and
- grassland and heath.

A number of incidental records for protected and SBL species were also made during the course of the survey, including Lapwing and Skylark in Projects 7, 8 and 9, with Lapwing chicks recorded in Project 8 (TN64), Spotted Flycatcher in Project 9 (TN94) and Black-headed Gull and Common Tern in Projects 7 and 8.

An osprey was also recorded in Project 8, flying up the river Truim while being mobbed by a Black-headed Gull.

The remains of a Barn Owl were recorded in Project 7, probably killed through a vehicle collision (TN43).

Bats

There are several recent (post 2000) records for bats near or within the Study Area:

- Daubenton's bat (*Myotis daubentonii*) - 1 record west of the Project 8 Study Area (in Dalwhinnie) and within Project 9.
- Common Pipistrelle bat (*Pipistrellus pipistrellus*) just east of the Project 8 Study Area and 1km west of Project 9.
- Brown Long-eared bat (*Plecotus auritus*) 1km north of the Project 8 Study Area and within Project 9.

In addition, numerous structures and trees were identified as offering bat roost potential, including:

- Bridges and culverts with gaps or cracks –
  Project 7 – TN17; Project 8 – TN48; Project 9 – TN121 and 122.
- Buildings – Project 7 – Drumochter Lodge (TN37A);
  Project 9 – Ptarmigan Lodge (TN87) and an unnamed cottage and outhouse (TN91)
- Trees with rot holes, cracked limbs etc. –
  all in Project 9 – in birch (TN92, 97 and148), in alder (TN111 and 111A), in black poplar (*Populus nigra s.l.)* (TN157), in aspen (TN146 and 151), in oak (TN143, 144, 147, 150, 155, 156, 159, 160 and 161), and in various tree species, including lime, horse chestnut, beech, sycamore and Norway spruce (*Picea abies*) (TN135, 137 and 163).

No evidence for the presence of bats were found in the above trees or structures, but no detailed searches were undertaken. A number of bats including Common Pipistrelle, Daubenton's and Brown Long-eared bats are SBL species; and all species of bat and their roosting places are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

Otter

Recent records exist for Otter within or near the Study Area in Projects 7, 8 and 9.
Signs of Otter, principally in the form of spraints, were recorded in Projects 7, 8 and 9.
A probable Otter slide was also recorded in Project 9 in the vicinity of the A9 crossing of the River Spey (TN115). Potential habitat for Otter is widespread throughout the Study Area.

The River Truim and River Spey, which lie within 50m of the existing A9 in places, form part of the River Spey SAC and Otter are one of the qualifying features of this SAC.
In addition, some tributaries crossed by the A9 also form part of the SAC.
Otters and their breeding sites and resting places are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

Scottish Wildcat

Recent records for Scottish Wildcat exist in the vicinity of Creag Dhubh, approximately 2km to the west of the southern part of Projects 9.

No evidence for the presence of wild cat was recorded during the Phase 1 survey, but the mosaic of upland heath, grassland and woodland cover which exists throughout the Study Area provide potential habitat for species.

Scottish Wildcats are classed as European protected species (EPS) and are fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and are listed as a priority species on the SBL and within the Cairngorms Nature Action Plan.

Water Vole

Two recent records for Water Vole exist within the Study Area of Projects 7 and three records in Projects 8.

Signs of Water Vole were also recorded in Project 8 in the form of burrows along the river Truim (TN46A) and droppings and runs around a small ditch within a mire (TN50A).
Further north, an adult Water Vole was recorded walking along the bank of the Allt Garbh (TN76) close to its culvert under the A9.

Many of the watercourses which cross the Study Area have potential as habitat for Water Vole.

Water Voles are protected by the Wildlife and Countryside Act 1981 (as amended).
They are protected against damage to, destruction of, and obstruction of access to any structure or place used for shelter or protection.

They are also protected against disturbance whilst occupying such a structure.

Red Squirrel

Numerous recent records exist for Red Squirrel within the Study Area of Project 9 and one old record from the 1990s occurs in the southern part of Project 7 at Dalnaspidal.
Two dead adult Red Squirrels were also recorded during the present survey in Project 9 along the B9152 road, which runs parallel to the A9 north-east of Kingussie (TN137 and 139).

There is an abundance throughout of potential habitat within Project 9 and some potential habitat in Project 8 (in particular, plantation woodland at Dalnaspidal (TN6) and at Drumochter Lodge (TN37A)).

Potential habitat within Project 8 is more limited: largely confined to the northern-most part of the Study Area at Crubenmore.

Other woodlands within Project 8 are likely to be too small or isolated to provide good quality Red Squirrel habitat.

Red Squirrels are listed as a priority species on the Cairngorms Nature Action Plan. The species and its dreys are fully protected under *Schedule 5* of the Wildlife and Countryside Act 1981 (as amended).

Pine Marten

Recent records exist for Pine Marten within 3 separate 1km grid squares in the Study Area of Project 9 at Ralia, Newtonmore and Kingussie.
CH2M HILL (2013)[20] also reports Pine Marten scats at several locations within the Study Area of Project 8.

The mosaic of heath, woodland and exposed rock habitat found within the Study Area, together with the presence of old buildings, provide potential habitat for Pine Marten.
Pine Martens are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), making it an offence to kill, injure or take a wild Pine Marten, damage, destroy or obstruct access to any structure or place which such an animal uses for shelter or protection (a nest or den), or disturb an animal when occupying such a structure.

Badger

No definitive signs of Badger (*Meles meles*) were identified during this survey, but possible runs (TN91) and snuffle holes (TN112) were recorded within Project 9, which offers an abundance of potential habitat for Badger throughout.

Badgers and their setts are protected from disturbance under the Badger Protection Act 1992.

Since the survey period, 'Scottish Badgers' has provided information on RTA locations and known setts within proximity to the A9. This information has since been transferred to GIS format.

Mountain Hare

There are numerous recent records for Mountain Hare within the Study Areas of Projects 7 and 8, but only three records in Project 9 to the south of Newtonmore.
In addition, a number of adult mountain hares were observed during this survey in Project 7 (TN26 and 31) and Project 8 (TN69).

The Mountain Hare is a SBL species and is a priority species in the Cairngorms Nature Action Plan.

The species is protected from harm under the Wildlife and Countryside Act 1981 (as amended) between 1st March and 31st July.

[20] CH2M HILL (2013). *Ecological Appraisal - A9 Dualling – Dalwhinnie to Crubenmore*. Transport Scotland.

Brown Hare

There are several recent records for Brown Hare (*Lepus europaeus*) in Project 9.
In addition, a number of adult Brown Hares were observed during this survey in Project 9 (TN92, 98, 101 and 109).

The Brown Hare is a SBL species. The species is protected from harm under the Wildlife and Countryside Act 1981 (as amended) between 1st February and 30th September.

Reptiles

Recent records for Adder exist near Dalnaspidal at the southern end of Project 7 and approximately 2km to the west of Project 8.

Common Lizard was recorded in Projects 7, 8 and 9 during this survey, but is particularly abundant in Project 7, where it was recorded in at least eight separate localities.

The mosaic of woodland edge, heathland, wetland and grassland habitats provide potential habitat for reptiles throughout.

Both Adder and Common Lizard are SBL species.

All native reptiles are protected from being killed, injured or taken under the Wildlife and Countryside Act 1981 (as amended).

Great Crested Newts

No recent records have been provided for Great Crested Newts (*Triturus cristatus*) within or near the Study Area.

The nearest records, dating from 1985, are at Kinveachy, approximately 15km north-west of Project 9.

Potentially suitable ponds are present within 500m of Project 9, but consultation with Scottish Natural Heritage (SNH) suggest that the species is highly unlikely to be present and, therefore, is not considered further.

Fish

Atlantic Salmon are present within the River Truim and both salmon and sea lamprey are qualifying features of the river Spey SAC.

Records for river lamprey (*Lampetra fluviatilis*) also exist in the River Spey in Project 9.
Both salmon and lamprey species are protected by European legislation and are listed on Annex II and V of the Habitats Directive.

They are therefore protected in the UK under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

In addition, salmon are also protected under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

Freshwater Pearl Mussel

The Freshwater Pearl Mussel is listed as a priority species in the Cairngorms Nature Action Plan and the River Spey (and its tributary, the River Truim) is designated as a SAC partly due to the presence of the

freshwater pearl mussel, which is protected by European legislation and is listed on Annex II and V of the Habitats Directive.

It is therefore protected in the UK under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

Green shield-moss

Green shield-moss is a SBL, Cairngorms Nature Action Plan and Annex II species in the Habitats Directive, receiving full protection in the UK through its inclusion on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).
The species occurs in only four known localities in the UK, two of which are within the Cairngorms National Park.

The species is very specific in its habitat requirements in the UK, being restricted to well-decayed wood, particularly conifer logs, in damp, sheltered places in woodland.
The closest known record to the Study Area is in Rothiemurchus forest, approximately 10km to the north-east of Kincraig in Project 9.

Although nearly 70 hectares of conifer plantations were recorded within the Study Area, mature, semi-natural conifer woodland is absent.

Moreover, the conifer plantations within the Study Area are considered to be insufficiently mature to offer the abundance of decaying wood the moss requires.
Therefore, it is considered highly unlikely that the species is present and it is not considered further.

4.4 Other species of conservation concern

Mammals

Numerous records for European Hedgehog (*Erinaceus europaeus*) occur in Projects 8 and 9, but are particularly numerous in the latter Project.

No detailed mammal surveys were undertaken during the Phase 1 Habitat Survey.

No incidental sightings of European Hedgehog were recorded during the ecology walkover survey; however, there is potential habitat for the species throughout the Central Scheme.

European Hedgehog is a SBL species.

Amphibians

Several records have been provided to indicate Common Toad (*Bufo bufo*) is may occur within Projects 8 and 9.

No detailed amphibian surveys were undertaken during the Phase 1 Habitat Survey.
No incidental sightings of amphibians was recorded during the ecology walkover survey; however, there is potential habitat for the species throughout the Central Scheme.
Common Toad is a SBL species.

Invertebrates – Beetles (Coleoptera)

Records have been provided to indicate that two SBL species of beetle are known to occur within the vicinity of Insh Marshes (Project 9):

- *Cercyon melanocephalus*; and

- *Cyphon ochraceus*.

No incidental records were made for beetles during the ecology walkover survey. No detailed invertebrate surveys were undertaken during the Phase 1 Habitat Survey.

Potentially suitable terrestrial habitat is also widespread within the Study Area for the violet oil beetle, a Cairngorms Nature Action Plan and SBL species, but the nearest known record is near Aviemore, approximately 10km to the north-east of Project 9.

Invertebrates – Butterflies and Moths (Lepidoptera)

Records have been provided to indicate that seven SBL species of butterfly are known to occur within or in the vicinity of the Study Area:

- Northern brown argus (*Aricia artaxerses*) – near Project 9 (in the vicinity of Kingussie)
- Pearl-bordered fritillary (*Boloria euphrosyne*) – near Project 9 (in the vicinity of Loch Insh and Insh Marshes)
- Small pearl-bordered fritillary (*B. selene*) – Projects 7, 8 and 9
- Small heath (*Coenonympha pamphilus*) – Projects 7, 8 and 9
- Large heath (*C. tullia*) – Project 7 (at the northern end – OSGR NN6583) and 2km to the west of Project 8 (near Dalwhinnie)
- Small blue (*Cupido minimus*) – near Project 9 (Kingussie)
- Small mountain ringlet (*Erebia epiphron*) – near Project 8 (2km west of the southern end).

Small pearl-bordered fritillary was also recorded during the present survey in Project 7 (TN30).

Potential habitat for most of the above species occurs in abundance in the Study Area. The exceptions are Northern brown argus and small blue. The larval food-plant of the former, common rock-rose, was recorded in only two localities in Project 9 (TN102 and 107). The larval food-plant of the latter, kidney vetch (*Anthyllis vulneraria*), was not recorded.

Records have been provided to indicate several SBL and/ or Cairngorms Nature Action Plan species of moth are known to occur within or in the vicinity of the Study Area:

- Kentish glory - at northern end of Project 9;
- Small dark yellow underwing - several records at the southern end of Project 9;
- Narrow-bordered bee hawk-moth (*Hemaris tityus*);
- Netted mountain moth (*Macaria carbonaria*);
- V-moth (*M. wauaria*);
- Cousin german (*Protolampra sobrina*);
- Argent and sable (*Rheumaptera hastata*); and
- Sword-grass (*Xylena exsoleta*).

No incidental records were made for moths during the ecology walkover survey.
No detailed invertebrate surveys were undertaken during the Phase 1 Habitat Survey.

Potential habitat for the above species occurs in abundance in the Study Area.
For instance, the larval food-plant of small dark yellow underwing and netted mountain moth is bearberry, which was recorded in Projects 7, 8 and 9.

Invertebrates – Bees and Wasps (Hymenoptera)

Records have been provided to indicate that three SBL species of bee are known to occur within or in the vicinity of the Study Area:

- A mining bee (*Andrena ruficrus*)
- Mountain bumble bee (*Bombus monticola*)
- Moss carder –bee (*B. muscorum*)

No incidental records were made for Hymenoptera during the ecology walkover survey.
No detailed invertebrate surveys were undertaken during the Phase 1 Habitat Survey.
Potential habitat exists for all these species in the Study Area.

Invertebrates – Stoneflies (Plecoptera)

Records have been provided to indicate that Northern February red stonefly, a SBL and Cairngorms Nature Action Plan species, is known to occur within the vicinity of the River Truim near Dalwhinnie (Project 8) and the River Spey near Newtonmore (Project 9).

No detailed invertebrate surveys were undertaken during the Phase 1 Habitat Survey.
No incidental sightings of Northern February red stonefly was recorded during the ecology walkover survey; however, there is potential habitat for the species throughout the Central Scheme.

Vascular Plants

No Cairngorms Nature Action Plan species of vascular plant have been recorded within or in the vicinity of the Study Area, but a number of records for SBL species are held on the NBN Gateway, or were recorded during the course of the Phase 1 Habitat Survey, as follows:

- Juniper (*Juniperus communis*) – Project 7 (NBN Gateway). Scattered plants were also recorded during the Phase 1 survey in Project 8 and 9, including along the road embankments.
- Downy willow (*Salix lapponum*) – Project 7 (NBN Gateway).
- Holly fern (*Polystichum lonchitis*) – near Project 9 (north of Kingussie) (NBN Gateway).
- Mossy saxifrage – Project 7. The species was recorded along the Allt Coire Chuirn in Project 7 (TN40), close to the existing A9.

In addition to the above, a number of UK red data list (RDL)[21], nationally scarce, or rare or scarce species listed in the Cairngorms Rare Plants Register (CRP)[22] were also recorded during the course of the Phase 1 Habitat Survey:

- Cowbane (*Cicuta virosa*) – Nationally scarce; CRP: Scarce. Recorded at one locality on the edge of Insh Marshes (TN154).
- Great sundew (*Drosera anglica*) – RDL: Near threatened; CRP: Scarce. Recorded in one locality in Project 7 (TN34).
- Petty whin – RDL: Near threatened. CRP: Common. Recorded in numerous localities in Projects 7, 8 and 9.
- Field gentian – RDL: Vulnerable. CRP: Frequent. Recorded in Projects 7, 8 and 9 (TN10, 55 and 73).
- Mossy saxifrage – RDL: Vulnerable. CRP: Scarce. Recorded at TN40 in Projects 7.

In addition, the CRP lists a number of other taxa with populations in the Cairngorms National Park (CNP) considered to be of high or very high UK significance. A number of populations of these were noted during the Phase 1 Habitat Survey, as follows:

- Alpine lady's-mantle – High significance, common in CNP. Several records in Project 7 and 8.
- Bearberry – High significance, common in CNP. Recorded in Projects 7, 8 and 9.
- Creeping lady's-tresses (*Goodyera repens*) – High significance, local in CNP. Recorded once in Project 9, north of Ralia (TN87).
- Mountain sorrel – High significance, local in CNP. Recorded twice in Project 7 on a shingle bank of the Allt Coire Chuirn (TN40) and the river Truim (TN42).
- Alpine bistort (*Persicaria vivipara*) – High significance, common in CNP. Recorded twice in Project 7 (TN2 and 14).
- Yellow saxifrage – High significance, common in CNP. Four locations in Project 7.
- Starry saxifrage – High significance, common in CNP. Two locations in Project 7.
- Chickweed wintergreen – High significance, common in CNP. In woodland at Dalnaspidal in Project 7.

The CRP notes that the CNP is exceptionally important for hawkweeds (*Hieracium* agg.), a taxonomically difficult genus. The register includes 125 species of hawkweed, of which 15 are Endemic to the CNP, with a further 52 endemic to Scotland, and an additional 34 endemic to Great Britain. Species from the

[21] Amphlett, A. (2012). *The Flora of the Cairngorms National Park – An Annotated Checklist.* British Botanical Society of the British Isles.

[22] Amphlett, A. (2013). *The Flora of the Cairngorms National Park – A Rare Plant Register.* British Botanical Society of the British Isles.

aggregate, which were not in flower at the time of the survey, were recorded on exposed rocks along an A9 road cutting in Project 8 (TN69) and on exposed rocks (possibly of a former quarry) in Project 9 (TN156).

Bryophytes

Records have been provided to indicate that Showy bristle-moss (*Orthotrichum speciosum*) has, a SBL species, is known to occur in woodland near Insh Marshes (in 1998), the River Spey (in 1998) and Glen Gynack (in 2010). No detailed bryophyte surveys were undertaken during the Phase 1 Habitat Survey.

No incidental sightings of Showy bristle-moss was recorded during the ecology walkover survey; however, there is potential habitat for the species throughout the Central Scheme.

Fungi

Two SBL and/ or Cairngorms Nature Action Plan species of macro-fungi have been recorded within or in the vicinity of the Study Area:

- Crimson waxcap fungus – two recent records at Creag Dhubh to the west of Project 9.
- Scarlet splash fungus – two recent records in Project 9 (Insh Marshes)

The crimson waxcap fungus is a species of unimproved and semi-improved grassland.
Potential habitat for the species is widespread within the Study Area of Projects 7, 8 and 9.

The species was recorded during follow up work to the Phase 1 Habitat Survey in October 2014 in fields in Project 7 (TN2) and Project 8 (TN67). The Scarlet splash fungus occurs on willow species in wet woodland habitats, which are widespread in Project 9 in the vicinity of Insh Marshes, but relatively scarce elsewhere within the Study Area.

There is, however, potential for a large number of other key Cairngorms woodland species of fungi[23] to be present within ancient, broad-leaved woodland habitat adjacent to the A9 within Project 9.
No detailed fungi survey was undertaken during the Phase 1 Habitat Survey.

Lichens

Records have been provided to indicate that 20 SBL species of lichen are known to occur within or in the vicinity of the Study Area, primarily in Project 9 (unless otherwise stated), as follows:

Arthonia anombrophila, A. patellulata, Bacidia vermifera, Candelariella superdistans, Cladonia uncialis subsp. *uncialis* (Projects 8 and 9), *Diplotomma pharcidium, Fuscopannaria ignobilis, Lecania cyrtella* (Project 8), *Lecanora populicola, Lecidella flavosorediata,* Lungwort (*Lobaria pulmonaria*), *Lobaria scrobiculata, Nephroma laevigatum*, *Ochrolechia szatalaensis,* Mealy-rimmed Shingle lichen (*Pannaria*

[23] Cairngorms National Park (2002). *The Cairngorms Local Biodiversity Action Plan 2002-2013*.

conoplea), *Parmeliella britannica*, *Peltigera collina*, *Ramalina fraxinea*, *Rhizocarpon cinereovirens* (Project 8) and *Sticta sylavtica.*

No detailed lichen surveys were undertaken during the Phase 1 Habitat Survey.
Incidental sightings of Lungwort (*Nephroma laevigatum*), Mealy-rimmed Shingle lichen (*P. conoplea*) and a lichen (*P. collina*) were recorded within Project 9 at Raitt's burn (TN136).

Rich lichen assemblages were noted in woodland areas and stone walls within Project 9; therefore, there is potential habitat for the species of conservation interest to occur throughout the Central Scheme.

4.5 Non-Native Invasive Species (NNIS)

The following vascular plant NNIS have been recorded within the Study Area:

- Garden monk's-hood (*Aconitum sp*.) – one plant recorded along the track to Dalnaspidal estate, on the edge of the Study Area.
- Pink purslane (*Claytonia sibirica*) – recorded within mixed plantation woodland in Project 9 (see TN110).
- Montbretia (*Crocosmia x crocosmiiflora*) – recorded by a farm access track in Project 9 (see TN158).
- Lupin (*Lupinus* spp.) – recorded predominantly on road verges within rank grassland or tall herb (TN5, 78, 155).
- Cherry laurel (*Prunus laurocerasus*) – in plantation woodland (TN90)
- Firethorn (*Pyracantha spp*.) – recorded along the wooded embankment adjacent to Ralia café (TN78).
- Rhododendron – recorded in five localities within Project 9 (TN78, 90, 138, 158, 163).
- Snowberry (*Symphoricarpos albus*) – recorded by a farm access track (TN137).

The following potentially NNIS was also recorded within the Study Area:

- Rabbit (*Oryctolagus cuniculus*) – extensive warrens of the species were recorded at several localities in Project 9 (TN112, 119, 121, 126 and 135). The warrens had caused significant erosion of embankments at a number of these localities.

5 Conclusions

5.1 Statutory Designated Sites

5.1.1 Natura2000

Natura2000 sites are nature conservation designations of **international importance** for a range of habitats and species that they support.

A number of Natura2000 sites are located partly within or directly adjacent to the Central Scheme:

- Drumochter Hills SPA/ SAC;
- River Spey SAC;
- River Spey – Insh Marshes Ramsar/ SPA; and
- Insh Marshes SAC.

The A9 crosses the River Spey SAC at the Burn of Inverton (TN106), Raitt's burn (TN136) and Dunachton Burn (TN162), all in Project 9. In addition, the River Spey SAC extends up to the existing A9 at Allt Coire Bhotie in Project 7 (TN42A) and Allt Cuaich in Project 8 (TN64).

Given the legal protection afforded to the statutory designated sites, permanent or temporary land-take from within the above receptor sites shall be avoided in the first instance.

Where land-take cannot be avoided (e.g. constraints with other environmental issues such as flooding), detailed discussion with the relevant statutory consultee shall be undertaken as part of the Habitats Regulations Appraisal (HRA).

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), will be required to confirm no Likely Significant Effects (LSE) or Adverse Effect on Site Integrity (AESI) to any Natura2000 site; and the scope of these surveys will be agreed with the relevant statutory consultee.

5.1.2 National Designations

National Nature Reserves (NNR) are recognised as the best examples of natural heritage features designated within Sites of Special Scientific Interest (SSSI). Both NNRs and SSSIs are nature conservation designations of **national importance**.

A number of NNRs and SSSIs are located partly within or directly adjacent to the Central Scheme:

- Drumochter Hills SSSI (biological (birds, plants and habitats) and geomorphology features);
- Loch Etteridge SSSI (geodiversity features);
- River Spey SSSI (biological (species) features);
- River Spey-Insh Marshes SSSI (biological (species and wetland habitat) features); and
- Insh Marshes NNR (managed by RSPB).

Given the legal protection afforded to NNRs and SSSIs, permanent or temporary land-take from within the above receptor sites shall be avoided in the first instance.

Where land-take cannot be avoided (e.g. constraints with other environmental issues such as flooding), detailed discussion with the relevant statutory consultee shall be undertaken to minimise disturbance to the NNR / SSSI.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may be required to confirm that natural heritage features will not be damaged; and the scope of such surveys will be agreed with the relevant statutory consultee.

Where a SSSI is an underlying feature of a Natura2000 site, potential effects must be considered as part of the HRA.

New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of species found within nearby statutory designated sites; as well as wider biodiversity.

5.2 Habitats

A preliminary evaluation of habitats recorded within the Study Area is presented below. Further survey requirements may be needed to fully evaluate the potential effects of the Central Scheme. These are summarised in **Appendix D**.

Habitats within Natura2000 sites and SSSIs, which are a qualifying feature and reason for designation, are taken to be of **international** and **national importance** respectively, and are not evaluated again in the following accounts.

5.2.1 Woodland and scrub

Semi-natural broad-leaved woodland is widespread within Project 9. Substantial areas of this habitat have been identified as ancient in the Ancient Woodland Inventory (SNH 2014a)[24].

Many of these woodlands support a diverse ground layer and include many large mature tree standards, especially sessile oak. Within the Study Area, the habitat includes three types which are included on the SBL: upland birch woodland, wet woodland and upland oakwood.

Much of the wet woodland in the vicinity of Insh Marshes also falls within the Annex I habitat, alluvial forests with *Alnus glutinosa* (alder) and *Fraxinus excelsior (ash)*. This is a qualifying feature of the Insh Marshes SAC, but not a primary reason for site selection.

Much of the upland oakwood may fall within the Annex I habitat old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.

For these reasons, the wet woodland habitat within Insh Marshes SAC is considered to be of **national importance**.

[24] SNH. (2014a) *A guide to understanding the Scottish Ancient Woodland Inventory (AWI)* [online]. Scottish Natural Heritage. Available from <http://www.snh.gov.uk/docs/C283974.pdf> [accessed June 2014].

Elsewhere, ancient and wet woodland stands are considered to be of **regional importance**. Other stands of secondary woodland are considered to be of **local importance**.

Broad-leaved plantation woodland is also abundant within Project 9, particularly along the road verges. These woodlands are largely dominated by birch and are less diverse, in terms of structure and species, than semi-natural stands. Nevertheless, many mature stands are tending to develop a more semi-natural character within the Study Area, aided by their frequent proximity to ancient, semi-natural stands. In general; however, the habitat is readily replaceable in the medium term. It is considered to be of **local importance**.

Coniferous plantation woodland is generally densely planted within the Study Area with a poor ground layer and structure. Immature and densely planted stands are considered to be of **local importance**.
Occasional mature stands with a more developed ground layer are considered to have **local importance**.

With the exception of wet woodland willow scrub within Insh Marshes SAC, which is considered to be of **national importance** (see above), areas of willow scrub are generally small and fragmented within the Study Area. This greatly limits the range of species the habitat can support. For this reason, the habitat is considered to have **local importance**.

Areas of dry scrub are even more fragmented and are readily re-creatable in the short term. They are considered to have **local importance**.

The majority of scattered trees are immature and readily replaceable in the short to medium term. They are considered to have **local importance**. However, some mature and veteran scattered trees are present within Project 9 which potentially support a much more diverse range of species.

Mature trees are considered to have **local importance**, but Veteran Trees in the Study Area are considered to be of **national importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where woodland and scrub receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Ancient Woodland Inventory Sites, Tree Preservation Orders and Veteran Trees;
- Minimise loss, fragmentation and/ or isolation of semi-natural woodland and mature trees;
- Where losses are unavoidable, a National Vegetation Classification (NVC) survey of woodland during the growing season (including Spring to identify vernal and lower plants) may help identify vegetation communities of high nature conservation value; and
- Root Protection Zones in accordance with the current British Standard will help avoid incidental damage and/ or disturbance to woodland and trees to be retained.

5.2.2 Grassland and marsh

Acid grassland is a frequent habitat type within the Study Area, both as extensive stands and also in intimate mosaics with other moorland habitat types, such as wet and dry heath. The presence and diversity of upland acid grassland is strongly influenced by grazing pressure, but few areas appear to be heavily grazed within the Study Area, and many areas support a diverse range of species, particularly in Project 7.

Two types of acid grassland, both well-represented within the Study Area, are included in the SBL: *Juncus squarrosus-Festuca ovina* grassland and *Nardus stricta-Galium saxatile* grassland. Consequently, areas of species-rich unimproved and semi-improved acid grassland are considered to be of **regional importance**.

Neutral grassland is an uncommon habitat within the Study Area. It only occurs in small, fragmented stands in Project 7 and 8, though usually in association with other grassland communities, but more extensive areas of semi-improved habitat are present in Project 9. Collectively, the habitat is considered to have **regional importance**.

Calcareous grassland within the Study Area includes small areas of the Annex 1 habitat species-rich grassland with mat-grass in upland areas. This habitat is a qualifying feature of the Drumochter Hills SAC, but not a reason for site selection. Within the Study Area, the habitat type is generally fragmented or semi-improved. Unimproved stands are considered to have **regional importance**. Species-rich semi-improved areas are considered to be of **local importance**.

Marshy grassland is one of the dominant habitats within the Study Area. Extensive areas are species-rich, incorporating habitat included within the purple-moor grass meadows Annex I habitat and the purple moor-grass and rush pasture SBL habitat. Many areas are also considered to be ground-water dependent, at least in part. Species-rich areas within the Study Area are considered to be of **regional importance**.

Species-poor semi-improved grassland, improved grassland and species-poor, purple moor-grass or rush dominated marshy grasslands are considered to have **local importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where grassland and marsh receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Priority Habitats (e.g. SBL or Cairngorms Nature Action Plan);
- Where losses are unavoidable, a National Vegetation Classification (NVC) survey of grassland and marsh during the growing season may help identify vegetation communities of high nature conservation value; and
- New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of habitats and species found within nearby statutory designated sites; as well as wider biodiversity.

5.2.3 Tall herb and fern

Tall herb and fern habitat within the Study Area generally occurs in fragmented, species-poor stands, most frequently along the road verges and the embankments of the mainline railway. The habitat is readily re-creatable in the short term and is considered to have **local importance**.

No specific control measures have been identified to safeguard tall herb and fern.

5.2.4 Heathland

Dry, acid, dwarf shrub heath is included within the European dry heath habitat type listed in Annex I of the Habitats Directive and is a qualifying feature of the Drumochter Hills SAC. The dry heath vegetation is itself reasonably robust, but can be affected by activities like grazing, trampling, burning and physical disturbance of soils.

Within Project 8, the dry dwarf-shrub heath has often been modified by muirburn, and areas of the habitat have also been affected by construction activities of the Beauly to Denny 400kV Overhead Transmission Line. Within the Study Area upland heathland species are all well represented in many areas, particularly in Project 7, and may be regarded as being in a favourable condition.

Unmodified areas of the habitat outside the Drumochter Hills SAC are considered to be of **regional importance**, with stands currently impoverished by muirburn, grazing and/ or construction activities considered to be of **local importance**.

Dry, basic dwarf shrub heath is also included in the Annex I European dry heath habitat. The habitat is generally small and fragmented within the Study Area. The majority was recorded in Project 8 where it has often been significantly affected by muirburn. Relatively little was recorded in Project 7, but small, isolated stands may have been over-looked within the pre-dominant dry acid heath vegetation.

Due to the fragmented nature of the habitat within the Study Area it is considered to be of **regional importance**.

Wet dwarf shrub heath falls within the Annex I habitat wet heathland with cross-leaved heath. The habitat is a qualifying feature for the Drumochter Hills SAC, but not a primary reason for site selection. As with dry heath habitat, within Project 8 the wet dwarf shrub heath has often been modified by muirburn, which has had a detrimental impact upon its structural and species diversity and, in particular, on the abundance of bog-mosses. However, other areas, particularly where they occur in mosaics with mire habitat, are diverse and considered to be in favourable condition.

Unmodified areas of the habitat outside the Drumochter Hills SAC are considered to be of **regional importance**, with stands currently impoverished by muirburn and/or grazing considered to be of **local importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where heathland receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Priority Habitats (e.g. SBL or Cairngorms Nature Action Plan);
- Where losses are unavoidable, a National Vegetation Classification (NVC) survey of heathland during the growing season may help identify vegetation communities of high nature conservation value; and
- New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of habitats and species found within nearby statutory designated sites; as well as wider biodiversity.

5.2.5 Mire

One area of blanket bog and three areas of raised bog were identified, all within the Drumochter Hills SSSI in Project 7. Active raised bogs, degraded raised bogs and blanket bogs are all Annex I habitats in the Habitats Directive.
The recorded examples all appear to be active and are considered to be of **international importance**.

Acid/ Neutral flushes are a frequent habitat within the Study Area, particularly in Project 7 and 8. They constitute part of the upland flushes, fens and swamps habitat on the SBL.

In Project 9 of the Study Area, grazing pressure has at some localities resulted in species impoverishment. Nevertheless, the majority of flushes are diverse, with many extensive examples. The habitat within the Study Area is therefore considered to be of **regional importance**.

Fen habitat also falls within the upland flushes, fens and swamps habitat on the SBL. The fen habitat within the Study Area includes many very extensive and diverse areas. Some areas are likely to include Annex I habitat transition mires and quaking bogs as part of a complex of mire habitat types.

This habitat is a qualifying feature of the Insh Marshes SAC, but the Phase 1 survey results suggest it is also likely to be present within the Truim valley. NVC survey would be required to determine the extent of the habitat.
Within Project 8, areas of the habitat are adversely affected by drainage and muirburn, but still support a diverse range of species.

Fen habitat outside designated areas is considered to be of **regional importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where mire receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Priority Habitats (e.g. SBL or Cairngorms Nature Action Plan);
- Where losses are unavoidable, a National Vegetation Classification (NVC) survey of mire during the growing season may help identify vegetation communities of high nature conservation value; and
- New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of habitats and species found within nearby statutory designated sites; as well as wider biodiversity.

5.2.6 Swamp, marginal and inundation

Swamp habitat falls with the SBL habitats upland flushes, fens and swamps, and reedbed. In the Study Area, it often occurs as a mosaic within mire habitats or on the margins of standing waterbodies. Stands of the habitat within Projects 7 and 8 are generally small and fragmented and dominated by bottle sedge.
Along with marginal vegetation, these habitats are considered to be of **local importance**.

More extensive and diverse stands within Project 9 are considered to be of **regional importance**.

A number of watercourses within the Study Area support inundation vegetation on shingle banks. These are generally sparsely vegetated, but less disturbed areas often support a diverse range of plant species, including species locally or scarce in the context of the national park and included on the red data list nationally.
The habitat is considered to be of **regional importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where swamp, marginal and inundation receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Priority Habitats (e.g. SBL or Cairngorms Nature Action Plan);

- Where losses are unavoidable, a National Vegetation Classification (NVC) survey of swamp, marginal and inundation during the growing season may help identify vegetation communities of high nature conservation value; and
- New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of habitats and species found within nearby statutory designated sites; as well as wider biodiversity.

5.2.7 Open water

The standing waterbodies within the Study Area are oligotrophic (nutrient-poor) to mesotrophic (moderately nutrient-rich) and fall within the Annex I habitat type: clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels.

The habitat is a qualifying feature of the Insh Marshes SAC. Mesotrophic lakes and oligotrophic and dystrophic lakes are also SBL habitats. Outside Insh Marshes SAC, the habitat is considered to have **regional importance**.

Running water habitat is almost exclusively oligotrophic within the Study Area. Rivers are a SBL habitat and the Rivers Truim and Spey, and associated tributaries, are high quality examples, largely unpolluted and relatively free from flow modifications. For these reasons, the habitat is considered to be of **regional importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where open water receptors will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from Priority Habitats (e.g. SBL or Cairngorms Nature Action Plan);
- Where losses are unavoidable, an appropriate National Vegetation Classification (NVC) / River Corridor survey of open water may help identify vegetation communities of high nature conservation value;
- New benefit opportunities should be explored to identify if habitats can be enhanced to support the favourable conservation status of habitats and species found within nearby statutory designated sites; as well as wider biodiversity); and
- Implementation of best practicable means during construction (e.g. pollution control).

5.2.8 Rock exposure and waste

Inland cliffs generally occur as road cuttings within the Study Area, although a few very small areas were also identified in association with tributaries of the River Truim. They are generally only sparsely vegetated with a limited range of species, but do have potential to provide habitat for scarce plant species, such as certain species within the hawkweed aggregate. They are considered to have **local importance**.

Scree slopes within Project 7 fall within the Annex I habitat siliceous scree of montane to snow levels. This is a qualifying feature of the Drumochter Hills SAC, but not a primary reason for site selection. The habitat forms part of the Drumochter Hills SSSI assemblage of montane habitats; however, and is considered to be of **national importance**.

Elsewhere, within Project 9, examples of the habitat are small and fragmented, supporting few, if any, vascular plants and only a limited range of bryophytes and lichens. Together with other exposures, such as bank slippages, they are considered to have **local importance**.

5.2.9 Miscellaneous

Dry ditches are a widespread habitat and generally support a range of species typical of marshy grassland. They are; however, generally artificial and can impact negatively on the habitat quality of nearby areas of marshy grassland, wet heath and mire. Their narrow, linear nature also means they are prone to edge effects which are likely to limit species diversity. They are considered to have **local importance**.

Stone walls are also an artificial habitat, but within the Study Area they often support a diverse range of lichens and bryophytes. They are considered to have value at the **local** level.

Arable, amenity grassland, buildings, ephemeral/ short perennial and bare ground habitats within the Study Area are limited in extent and support only a limited range of plant species, if any. They are considered to be of **local importance**.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where stone wall receptors will be affected by the Central Scheme:

- Avoid permanent or temporary loss of stone walls supporting Priority Species (e.g. SBL or Cairngorms Nature Action Plan);
- Where losses are unavoidable, an appropriate National Vegetation Classification (NVC) may help identify vegetation communities of high nature conservation value; and
- Implementation of best practicable means during construction (e.g. demolition by hand, sensitive storage, re-build in suitable like-for-like location to access similar exposure to the elements).

5.2.10 Ground Water Dependent Terrestrial Ecosystems (GWDTE)

Potential GWDTEs were identified during this survey in the form of flushes, mires, marshy grassland and wet heath. Further survey will help confirm the presence and extent of GWDTE (e.g. NVC and hydro-geomorphology).

GWDTE are protected under the Water Framework Directive and, where likely to be impacted by A9 works, SEPA's guidance must be sought.

5.2.11 Protected Species

A preliminary evaluation of species recorded within the Study Area is presented below. Further survey requirements may be needed to fully evaluate the potential effects of the Central Scheme. These are summarised in **Appendix D**.

Birds

Woodland, scrub and grassland habitat within the Study Area boundary provides potential nesting bird habitat. These features are likely to offer limited potential for wintering habitat for bird species other than widespread passerines (e.g. Robin).

Woodland, scrub, grassland and open water habitats located adjacent to the Study Area (i.e. outwith the 300m wide study buffer) are likely to provide potential breeding, wintering and roosting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify breeding territories and the conservation status of the breeding bird assemblage

within potential habitats to be affected by the Central Scheme. Technical surveys can also be used to identify the conservation status of non-breeding bird assemblages.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential breeding bird habitats will be affected by the Central Scheme:

- Avoid permanent or temporary land-take from statutory designated sites (e.g. Natura2000 and SSSI) and habitats supporting qualifying species (e.g. wader foraging habitat);
- Avoid permanent or temporary land-take from known nesting sites (e.g. those species that re-use their nests);
- Minimise disturbance to breeding and non-breeding birds by timing works appropriately; possibly under supervision of an Environmental Clerk of Works (ECoW).

Bats

Woodland, trees, buildings and structures (e.g. bridges) within and directly adjacent to the Study Area provide potential summer (breeding) and winter (hibernating) roosting bat habitat.

Terrestrial habitats and open water within and directly adjacent to the Study Area are likely to provide potential foraging and commuting habitat.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify bat roosts within potential habitats to be affected by the Central Scheme (e.g. tree removal or demolition of structures).

Technical surveys can also be used to identify bat activity including important foraging and commuting habitats that may support bats species that use multiple roosting sites during a season.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential rooting bat habitats will be affected by the Central Scheme:

- Avoid loss of known roosting sites and important foraging / commuting habitats;
- Avoid fragmentation and/ or isolation of roosting bats from important foraging / commuting habitats;
- Minimise disturbance to roosting bats by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting roosting bats under supervision of an Bat Licensed Environmental Clerk of Works (ECoW); and
- New benefit opportunities should be explored to identify if habitats can be enhanced to support roosting bats (e.g. provision of summer or winter roost bat boxes).

Otter

Watercourses within and directly adjacent to the Study Area provide suitable Otter foraging and commuting habitats. Marginal vegetation provides suitable sheltering and commuting habitats. Woodland, trees and rocky outcrops provide potential Otter holt habitats.

Otter are also known to use man-made structures when passing through their range (e.g. culverts); however, poorly designed features can displace animals over roads during flood events that may result in animal road mortality.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Otter holts within potential habitats to be affected by the Central Scheme (e.g. woodland removal).

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Otter holts will be affected by the Central Scheme:

- Avoid loss of Otter holts; and avoid fragmentation and/ or isolation of known Otter holts from important foraging / commuting habitats;
- Minimise disturbance to Otter holts by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting Otter holts under supervision of an Environmental Clerk of Works (ECoW).

Scottish Wildcat

Woodland, scrub, grassland and rocky outcrops within and directly adjacent to the Study Area provides potential Scottish Wildcat denning, foraging and commuting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Scottish Wildcat dens within potential habitats to be affected by the Central Scheme (e.g. woodland removal).

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Scottish Wildcat dens will be affected by the Central Scheme:

- Avoid loss of Scottish Wildcat dens; and avoid fragmentation and/ or isolation of known dens from important foraging / commuting habitats;
- Minimise disturbance to Scottish Wildcat dens by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting dens under supervision of an Environmental Clerk of Works (ECoW).

Water Vole

Watercourses and burns within and directly adjacent to the Study Area may provide potential Water Vole burrow and foraging habitats. Marginal vegetation provides suitable sheltering and commuting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Water Vole burrows within potential habitats to be affected by the Central Scheme (e.g. site clearance). The scope should also be extended to record any Non-Native Invasive Species (NNIS) encountered during field surveys.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Water Vole burrows will be affected by the Central Scheme:

- Avoid loss of Water Vole burrows; and avoid fragmentation and/ or isolation of known burrows from important foraging / commuting habitats;
- Minimise disturbance to Water Vole burrows by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting burrows under supervision of an Environmental Clerk of Works (ECoW).

Red Squirrel

Woodland within and directly adjacent to the Study Area provides potential Red Squirrel drey, foraging and commuting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Red Squirrel dreys within potential habitats to be affected by the Central Scheme (e.g. woodland removal). The scope should also be extended to record any NNIS encountered during field surveys.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Red Squirrel dreys will be affected by the Central Scheme:

- Avoid loss of Red Squirrel dreys; and avoid fragmentation and/ or isolation of known dreys from important foraging / commuting habitats;
- Minimise disturbance to Red Squirrel dreys by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting dreys under supervision of an Environmental Clerk of Works (ECoW).

Pine Marten

Evidence of Pine Marten was found within the Study Area for Project 8 (Dalwhinnie to Crubenmore). Woodland within and directly adjacent to the Study Area is likely to provide potential Pine Marten denning, foraging and commuting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Pine Marten dens within potential habitats to be affected by the Central Scheme (e.g. woodland removal).

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Pine Marten dens will be affected by the Central Scheme:

- Avoid loss of Pine Marten dens; and avoid fragmentation and/ or isolation of known dens from important foraging / commuting habitats; and
- Minimise disturbance to Pine Marten dens by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting dens under supervision of an Environmental Clerk of Works (ECoW).

Badger

Woodland, scrub and grassland within and directly adjacent to the Study Area provides potential Badger sett, foraging and commuting habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify Badger setts within potential habitats to be affected by the Central Scheme (e.g. woodland removal).

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential Badger setts will be affected by the Central Scheme:

- Avoid loss of Badger setts; and avoid fragmentation and/ or isolation of known setts from important foraging / commuting habitats;

- Minimise disturbance to Badger setts by timing works appropriately; or possibly acquire an SNH Licence to facilitate works affecting dens under supervision of an Environmental Clerk of Works (ECoW).

Mountain Hare and Brown Hare

Heathland and grassland within and directly adjacent to the Study Area provides potential Brown and Mountain Hare habitats.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify receptors within potential habitats to be affected by the Central Scheme (e.g. woodland removal). The scope should also be extended to record any NNIS encountered during field surveys.

In addition to the A9 Dualling Programme Design Guide, works should seek to avoid loss of Hare habitats; and avoid fragmentation and/ or isolation of known habitats from important foraging / commuting habitats to be affected by the Central Scheme.

Reptiles

Heathland and grassland within and directly adjacent to the Study Area provides potential reptile foraging and commuting habitats. Given the extent of the Central Scheme, a reptile mitigation strategy (agreed in writing with the relevant statutory consultee) could be implemented during the construction phase to safeguard the conservation status of reptiles within the Study Area.

Fish

Open water and water courses within and directly adjacent to the Study Area provides potential fish spawning habitat (Salmon, Trout and Lamprey).
Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify breeding grounds within potential habitats to be affected by the Central Scheme (e.g. installation or demolition of culverts). The scope should also be extended to record any NNIS encountered during field surveys.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential fish spawning habitat will be affected by the Central Scheme:

- Avoid working in water during breeding seasons; and
- Implementation of best practicable means during construction (e.g. pollution control).

Freshwater Pearl Mussel

Open water and water courses within and directly adjacent to the Study Area provides potential Freshwater Pearl Mussel habitat.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify important mussel beds within potential habitats to be affected by the Central Scheme (e.g. installation or demolition of culverts). The scope should also be extended to record any NNIS encountered during field surveys.

In addition to the A9 Dualling Programme Design Guide, the following measures should be taken where potential mussel beds will be affected by the Central Scheme:

- Avoid working in water; and
- Implementation of best practicable means during construction (e.g. pollution control).

5.3 Other species of conservation concern

Later DMRB design stages are likely to involve more detailed desktop studies and consultation exercises with key stakeholders. Using information collected to date, a preliminary evaluation of species recorded within the Study Area is presented below.

Further surveys may be required to fully evaluate the potential effects of the Central Scheme. These are summarised in **Appendix D**.

Mammals

No species-specific recommendations are made for other mammal species, but the potential for habitat severance and the risk of road collisions should be taken into account for all terrestrial mammals, including small mammals, such as hedgehog, and large mammals, such as red deer (*Cervus elaphus*), a species which is common throughout and which represents a significant hazard to vehicle travellers.

These potential impacts can best be mitigated through the provision of enhanced underpasses intended for Non-motorised Users (NMU).

Where the road lies in deep cuttings, consideration should also be given to the creation of green bridges; an effective method of maintaining habitat connectivity and allowing free movement.

Amphibians

Common toad is known to occur within Projects 8 and 9. New roads can present a risk to amphibians where migration routes are severed. Gully pots can also trap amphibians and lead to their deaths.

With the possible exception of new link roads and junctions, the new carriageway will be in line with the existing A9 and should not, therefore, cause further severance of existing migration routes.

However, culvert design at watercourse crossings should seek to facilitate easy passage for fauna, including amphibians. Low-level fencing may help direct amphibians away from the road and towards enhanced culverts along new link roads and junctions.

Use of gully pots should be avoided wherever possible, or provided with a means of escape for amphibians and other fauna.

Aquatic Invertebrates

Risks of impacts to notable aquatic invertebrate species and assemblages are considered to be low, subject to appropriate safeguards set out in the above sections.

No species-specific measures have been identified at this stage.

Terrestrial Invertebrates

There is potential for a range of notable terrestrial invertebrate species and assemblages to be impacted by the proposed scheme.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify important invertebrate habitats within areas to be affected by the Central Scheme (e.g. site clearance). The scope should also be extended to record any NNIS encountered during field surveys.

Vascular plants and bryophytes

The Phase 1 Habitat Survey has identified a number of Priority Habitats listed on the SBL and/ or Cairngorms Nature Action Plan.

Where other unimproved and/ or semi-natural habitats are identified as at risk from permanent or temporary land-take from the Central Scheme, a National Vegetation Classification (NVC) survey may help identify vegetation communities of high nature conservation value.

The scope should also be extended to record any NNIS encountered during field surveys; as well as lower plants within potentially species-rich areas identified during DMRB Stage 2.

Fungi

Crimson waxcap and scarlet splash fungus have been recorded in the vicinity of the Study Area.

There is potential for a range of notable fungi species to be impacted by the proposed scheme.

Technical surveys, carried out in line with the current professional standard (CIEEM 2014), may help identify important fungi species within areas to be affected by the Central Scheme (e.g. site clearance). The scope should also be extended to record any NNIS encountered during field surveys.

5.4 Summary

The Study Area supports statutory designated sites, as well as broad habitats of notable ecological value, including upland heath, unimproved and marshy grassland, acid flush, mire and upland birch woodland, many of which are SBL habitats and some of which are listed under Annex I of the Habitats Directive.

These habitats also support a wide range of protected and notable species; as well as potential GWDTE.

Further survey will help will enable the design to minimise potential adverse effects by identifying receptors of nature conservation value.
Additional information will also enable subsequent ecological assessments to make more informed determinations of potential ecological impacts and identify more appropriate mitigation.

The Central Scheme should seek to avoid causing a nett decrease in biodiversity and design new benefit opportunities into the iterative DMRB design and assessment process. This may include:

- avoiding designated sites and habitats of high nature conservation value;
- use of SuDS to avoid adverse effects on the water environment (e.g. changes to water quality);
- improved species permeability through enhanced structures and NMU crossings;
- use of locally-sourced native seedbanks for landscaping works; and
- habitat restoration.

Appendix A Summary of Relevant Wildlife Law

A.1 Statutory Designated Sites

A.1.1 Ramsar Sites

Ramsar Sites are wetland habitats of **international importance**, due to their designation under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (otherwise known as the Ramsar Convention). These habitats are designated in recognition of their high biological diversity and the wider ecosystems services they deliver (i.e. clean water, tourism). In the UK, most Ramsar Sites are also designated as Sites of Special Scientific Interest; thus receiving statutory protection at the national level.

A.1.2 Special Protection Areas

Special Protection Areas (SPAs) are habitats of **European importance**, due to their classification under Council Directive 79/409/EEC on the conservation of wild birds (otherwise known as the Birds Directive). The UK Government (i.e. JNCC) provide the relevant nature conservation agency (i.e. SNH) with SPA selection criteria to identify SPAs to provide protection, management and control of rare or vulnerable species of bird (Annex I) and for regularly occurring migratory species of bird (Annex II) and protection of wetlands, particularly wetlands of international importance.

A.1.3 Special Areas of Conservation

Special Areas of Conservation (SACs) are habitats of **European importance**, due to their notification through Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (otherwise known as the Habitats Directive). In response to Article III, the UK Government (i.e. JNCC) must assist the European Community establish a network of important high quality habitats to make significant contributions to the conservation of habitats (Annex I) and species (Annex II).

A.1.4 Natura2000 Network

Under Article III of the Habitats Directive, SACs are combined with SPAs to form a coherent ecological network known as Natura2000. The purpose of Natura2000 is to identify natural habitat types and species habitats to be maintained and restored to a favourable conservation status in their natural range (i.e. the biogeographic region of the European territory). The collective Natura2000 network is regarded to be of **international importance**.

In Scotland, Natura2000 includes any of the following designations:

- Ramsar Site;
- Special Protection Areas (including potential Special Protection Areas); and
- Special Area of Conservation (including candidate Special Area of Conservation).

A.1.5 Habitats Regulations Appraisal

Article VI of the Directive states that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.

The LPA is the Competent Authority responsible for the final determination of the HRA. SNH are responsible for advising and monitoring the nature conservation interests of designated sites. To ensure the right level of details is acquired and, to minimise the potential risk of delay to a project, the HRA may require a great deal of collaboration and innovation from Design Consultants.

A.1.6 National Nature Reserves

National Nature Reserves (NNRs) are habitats of **national importance**, due to their notification through the National Parks and Access to the Countryside Act 1949. They are established to recognise the very best examples of natural and semi-natural habitats within the UK. NNRs are managed to conserve their habitats or to provide special opportunities for scientific study of the habitats communities and species represented within them. In addition they may be managed to provide public recreation that is compatible with their natural heritage interests.

A.1.7 Site of Special Scientific Interest

Sites of Special Scientific Interest (SSSI) are habitats of **national importance**, due to their notification through the Nature Conservation (Scotland) Act 2004; and previously through the Wildlife & Countryside Act 1981. Under Section 3, and using detail selection guidelines development by the UK Government (i.e. JNCC), the nature conservation agency (i.e. SNH) must notify as SSSI areas of land that considered to be of national importance for their fauna or flora or their geology or geomorphology (i.e. plants, animals, rocks and landforms). SNH (2014b)[25] recognise SSSIs as the essential building blocks of Scotland's protected areas for nature conservation; and many SSSIs are also an underlying designation of Ramsar Sites, SPAs, SACs and NNRs.

Section 13 of the 2004 Act states that any operation which is likely to damage any natural feature specified in an SSSI notification must not be carried out without prior consent ion writing from SNH.

[25] SNH. (2014b) Sites of Special Scientific Interest [webpage]. Available from < http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/sssis/> [accessed June 2014].

A.1.8 Ancient Woodland Inventory Sites

Ancient and semi-natural woodland is an important and irreplaceable national resource that should be protected and enhanced, as should other native and long established woodlands (SNH 2014c)[26]. During the SEA process, SNH advised that woodland recorded within the Ancient Woodland Inventory (AWI) should be regarded as high value, scarce habitat of **national importance**.

A.1.9 Local Nature Reserve

Local Nature Reserves (LNRs) are habitats of **regional importance**, due to their notification through the National Parks and Access to the Countryside Act 1949. They are established and managed by Local Authorities to recognise locally important natural heritage features. They also provide opportunities for local people to access and learn about habitats and species near where they live.

A.2 Groundwater Dependent Terrestrial Ecosystems

GWDTE are wetlands that are dependent on groundwater from superficial deposits (figure 2) and as such are recognised within the Water Framework Directive (WFD) for protection. They are protected under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 from the effects of abstractions, impoundments, pollution and engineering.

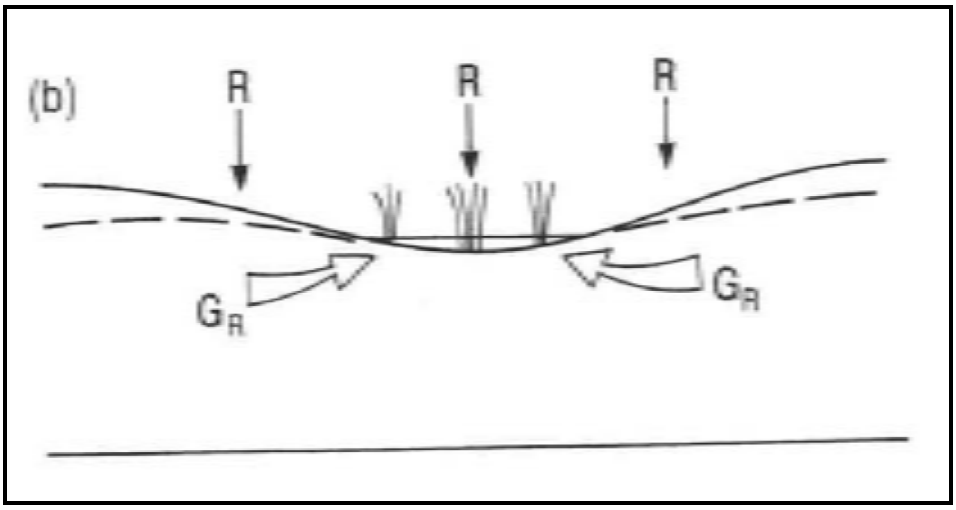


Figure 2: Diagrammatic representation of a groundwater fed wetland on permeable strata (where GR = groundwater and R = rainfall). Lloyd et al 1995

[26] SNH. (2014c) Trees and Woodland [webpage]. Available from < http://www.snh.gov.uk/planning-and-development/advice-for-planners-and-developers/woodlands/> [accessed June 2014].

As identified by SEPA[27] it is often hard to establish whether or not any individual wetland is dependent upon groundwater or surface water bodies. Frequently wetlands consist of a mosaic of groundwater, surface water and rain fed wetlands.

In order to meet the requirements of the WEWS and to facilitate the identification of Scottish wetlands, SEPA has published a methodology to classify wetlands, SNIFFER (2009)[28], which was used during the initial survey, together with draft guidance from the WFD UK Technical Advisory Group (UK TAG, 2004)[29].

A.3 Species

A.3.1 European Protected Species

European Protected Species comprise animals and plants listed on Schedule 2 and Schedule 4 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

B3.1.1 Animals

Regulation 39 states that it is an offence to:

- deliberately capture, injure or kill an EPS;
- deliberately disturb an EPS, including in particular any disturbance which is likely (a) to impair their ability - (i) to survive, to breed or reproduce, or to rear or nurture their young; or (ii) hibernate or migrate, where relevant; or (b) to affect significantly the local distribution or abundance of the species to which they belong.
- damage or destroy a breeding site or resting place of an EPS; and
- possess, control, transport, sell, exchange a EPS, or offer a EPS for sale or exchange.

Given that EPS may return to breeding sites and resting places each year, confirmed habitats are protected even when the EPS is not present.

B3.1.2. Plants

Regulation 43 states that it is an offence to:

[27]Scottish Environment Protection Agency (SEPA) Delivering SEPA's Functions to Protect Wetlands – Guidance on Monitoring and Protection of Wetlands (MT (08) 45).

[28]SNIFFER (2009) WFD95: A Functional Wetland Typology for Scotland - Field Survey Manual. Version 1. ISBN: 978-1-906934-22-4

[29]UKTAG (2004). Guidance on the identification and risk assessment of groundwater dependent terrestrial ecosystems. UK Technical Advisory Group on the Water Framework Directive. Work Programme Task 5a + b. Draft, Version 5

- deliberately pick, collect, cut, uproot or destroy a wild plant of a European protected species;
- keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild plant of a European protected species, or any part of, or anything derived from, such a plant.

B3.1.3 Licensing

A Development Licence, issued by SNH, is likely to be required to facilitate any activities that could affect an EPS. Development Licences are only issued for a specific purpose and where SNH are satisfied that there is no satisfactory alternative (i.e. works are for health and safety or for overriding reasons of public interest) and that the favourable conservation status of the EPS population will not be detrimentally affected.

B3.1.4 Uncontrolled Species Reintroductions

Whilst Article 22 of the Directive makes provisions for Member States *to study the desirability to reintroduce species in Annex IV [European Protected Species] that are native to their territory*, there have been deliberate and uncontrolled releases of European Protected Species to the wild in Scotland (i.e. Eurasian Beaver). In response, SNH must be notified of any observations and/or field signs relating to such a species in relation to the A9 Dualling Programme.

A.3.2 UK Protected Species

B3.2.1 Birds

UK Protected Species are those listed on Schedule 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended). Section 1 of the Act states that it is an offence to:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird;
- disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturbs dependent young of such a Schedule 1 bird.

It is not possible to licence works affected nesting birds for development purposes; therefore, work should avoid the nesting bird season (i.e. March to August inclusive).

B3.2.2 Animals

Section 9 of the Act states that it is an offence to:

- Intentionally, or recklessly, kill, injure or take a Schedule 5 species;
- possess or control a Schedule 5 species;
- intentionally, or recklessly, or recklessly damage, destroy or obstruct access to a structure used by a Schedule 5 species; and

- intentionally, or recklessly, or recklessly disturb a Schedule 5 species whilst is occupies a structure used by a Schedule 5 species.

B3.2.3 Plants

Section 13 of the Act states that it is an offence to:

- intentionally picks, uproots or destroys any wild plant included in Schedule 8; or
- not being an authorised person, intentionally uproots any wild plant not included in Schedule 8.

B3.2.4 Non-Native Invasive Species

Section 14 of the Act states that it is an offence to:

- release or allow to escape into the wild any animal (or hybrid) which is of a kind which is not ordinarily resident in and is not regular visitor to Great Britain in a wild state state; or
- plant or otherwise cause to grow any plant in the wild at a place outwith it's native range.

B3.2.5 Licensing

A Development Licence, issued by SNH, may be required to facilitate activities that could affect a UK Protected Species. Development Licences are only issued for a specific social, economic or environmental purpose and where SNH are satisfied that there is no satisfactory alternative.

A.4 Other Species

A.4.1 European Badger

The European Badger is native to the UK; and has been subject to historical persecution. In response, the animal's welfare is safeguarded under the Protection of Badger Act 1992 (as amended).

Under Section 1 through Section 5, it an offence to:

- willfully kill, injure, take or attempt to kill a Badger;
- possess a dead Badger or any part of a dead Badger;
- cruelly ill-treat a Badger;
- use Badger tongs in the course of killing, taking or attempting to kill a Badger;
- dig for a Badger;
- possess, sell or offer for sale any live Badger;
- mark, tag or ring a Badger.
- damage to a sett or any part of it;
- destruction of it;

- sett access to be obstructed, or any entrance of it;
- a dog to enter it; and
- disturbance to a Badger when it is occupying it.

A Development Licence, issued by SNH, may be required to facilitate activities that could affect Badger and their setts. Development Licences are only issued for a specific purposes.

A.4.2 Deer

Red and Roe Deer are native to the UK, whilst Fallow and Sika Deer are both 'naturalised' species following deliberate release to the wild (i.e. escape from parkland). Whilst none of these species are protected from a nature conservation perspective (SNH 2014d)[30], deer populations are subject to ongoing management to control risks to biodiversity (i.e. damage to woodland) and animal welfare (i.e. sensitivity to road mortality).

[30] SNH. (2014d) Scotland's Deer [webpage]. Available from <http://www.snh.gov.uk/about-scotlands-nature/species/mammals/land-mammals/deer/> [accessed June 2014].

Appendix B Summary of Phase 1 Habitat Survey

B.1 Summary of Habitat Distribution

Habitat	Area (Ha)	Distribution within Projects		
		7	8	9
A. Woodland and Scrub				
A1.1.1 Broad-leaved semi-natural woodland	78.57	0.17	1.44	76.96
A1.1.2 Broad-leaved plantation	26.43	0.72	0.25	25.47
A1.2.1. Coniferous semi-natural woodland	0.13	0	0	0.13
A.1.2.2 Coniferous plantation	68.72	37.02	4.61	27.10
A1.3.1 Mixed semi-natural woodland	0.76	0	0	0.76
A1.3.2 Mixed plantation	10.83	0	1.20	9.63
A2.1 Dense / continuous scrub	5.26	1.51	0.30	3.45
A2.2 Scattered scrub	0.37	0.19	0	0.18
A3.1 Broad-leaved parkland/ scattered trees	0.43	0.07	0.18	0.18
A3.2 Coniferous parkland/ scattered trees	0.62	0.57	0	0.05
A4.2 Recently-felled woodland – coniferous	0.79	0.73	0	0.05
B. Grassland and Marsh				
B1.1 Acid grassland – unimproved	67.36	37.11	17.60	12.65
B1.2 Acid grassland - semi-improved	65.58	9.96	23.83	31.89
B2.1 Neutral grassland – unimproved	0.82	0.24	0.18	0.39
B2.2 Neutral grassland - semi-improved	21.46	0.10	0.93	20.43
B3.1 Calcareous grassland – unimproved	2.67	1.70	0.89	0.08
B3.2 Calcareous grassland - semi-improved	6.19	0	5.08	1.11
B4 Improved grassland	31.27	0	0	31.27
B5 Marsh / marshy grassland	124.97	42.71	35.85	46.40
B6 Poor semi-improved grassland	115.06	2.76	10.61	101.69
C. Tall Herb and Fern				
C1.1 Bracken – continuous	6.89	0	0.27	6.62
C3.1 Other – tall ruderal	9.31	4.47	1.55	3.29
D. Heathland				
D1.1 Dry dwarf shrub heath – acid	176.44	56.94	60.80	58.70
D1.2 Dry dwarf shrub heath – basic	1.61	0.25	1.33	0.03
D2 Wet dwarf shrub heath	70.50	26.26	38.39	5.85
D5 Dry heath / acid grassland mosaic	96.81	45.33	38.20	13.28
D6 Wet heath / acid grassland mosaic	36.46	17.76	10.05	8.65
E. Mire				
E1.6.1 Blanket bog	1.41	1.41	0	0
E1.6.2 Raised bog	4.37	4.37	0	0
E1.7 Wet modified bog	2.39	0.61	1.78	0
E1.8 Dry modified bog	0.70	0.70	0	0
E2.1 Acid / neutral flush	13.95	7.97	4.44	1.54
E3.1 Fen – valley mire	133.64	59.28	49.33	25.03
E3.2 Fen – basin mire	0.22	0	0	0.22
E3.3 Fen – flood-plain mire	0.44	0.44	0	0
F. Swamp, Marginal and Inundation				

Habitat	Area (Ha)	Distribution within Projects		
F1 Swamp	15.33	0.42	1.14	13.77
F2.2 Inundation vegetation	4.82	2.50	1.90	0.41
G. Open Water				
G1 Standing water	3.2	0.00	0.00	3.20
G2 Running water	28.54	11.27	10.01	7.26
I. Rock Exposure and Waste				
I1.1.2 Inland cliff - basic	0.14	0	0.14	0
I1.2.1 Scree – acid / neutral	1.85	1.78	0	0.07
I1.4.1 Other exposure – acid / neutral	0.01	0	0	0.01
I2.1 Quarry	5.56	0	0	5.56
I2.2 Spoil	0.36	0	0	0.36
J. Miscellaneous				
J1.1 Arable	1.23	0	0	1.23
J1.2 Amenity grassland	2.18	0.21	0.06	1.90
J1.3 Ephemeral / short perennial	0.33	0.03	0	0.29
J3.6 Buildings	0.29	0.14	0	0.16
J4 Bare ground	6.46	5.79	0.06	0.61

B.2 Summary of Notable Species and NNIS

Species	Location and applicable target notes
Mammals	
Badger (potential)	Project 9: 91, 112
Bats (potential roosting sites)	Project 7: 17, 37A; Project 8: 48; Project 9: 87, 91, 92, 97, 111, 111A, 121, 122, 135, 137, 143, 144, 146, 147, 148, 150, 151, 155, 156, 157, 159, 160, 161, 163
Brown Hare	Project 9: 92, 98, 101, 109
Mountain hare	Project 7: 26, 31; Project 8: 69
Otter (evidence)	Project 7: 4, 5, 17, 37B, 40, 42A, 45; Project 8: 46A, 48, 64; Project 9: 115
Otter (potential)	Project 9: 119, 136
Pine Marten (potential)	Project 7: 5, 37; Project 8: 61; Project 9: 90, 123, 135, 136, 143, 154
Red deer	Project 7: 13; Project 9: 89, 104
Red Squirrel (potential)	Project 7: 37; Project 9: 87, 90, 136, 146
Red Squirrel (road kill)	Project 9: 137, 139
Roe deer (road kill)	Project 9: 128
Water Vole	Project 8: 46A, 50A, 76
Birds	
Barn owl (road kill)	Project 7: 43
Buzzard (road kill)	Project 8: 56; Project 9: 158
Lapwing	Project 8: 64; Project 9: 126
Spotted flycatcher	Project 9: 94
Reptiles	
Common Lizard	Project 7: 11, 22, 24, 30, 33A, 37, 41, 44; Project 8: 49; Project 9: 146
Invertebrates	
Small pearl-bordered fritillary	Project 7: 30
Vascular Plants	
Cowbane	Project 9: 154
Creeping lady's-tresses	Project 9: 87
Field gentian	Project 7: 10, Project 8: 55, Project 9: 73
Great sundew	Project 7: TN34
Hawkweed species	Project 8: 69; Project 9: 156
Juniper	Project 8: 46, 51;

Species	Location and applicable target notes
	Project 9: 131, 153
Mossy saxifrage	Project 8: 40
Mountain sorrel	Project 7: 40, 42.
Petty whin	Project 7: 11, 13, 39; Project 8: 54, 60, 71; Project 9: 84, 85, 101, 102, 107
Fungi and Lichens	
Crimson waxcap	Project 7: 2; Project 8: 67
Fungi (potential)	Project 9: 91, 96, 101, 102
Lichens	Project 9: 77A, 79, 83, 86, 110, 124, 127, 137, 141, 142, 145, 150
NNIS	
Cherry laurel	Project 9: 90
Firethorn	Project 9: 78
Lupin	Project 7: 5; Project 8: 78, 155
Montbretia	Project 9: 158
Pink purslane	Project 9: 110
Rabbit	Project 9: 112, 119, 121, 126, 135
Rhododendron	Project 9: 78, 138, 158, 163
Snowberry	Project 9: 158

Appendix C Target Notes

C.1 Target Notes – Project 7 (Glen Garry to Dalwhinnie)

TN	Description	Photograph
1	A broad, west-facing embankment of the A9 supporting a mosaic of semi-improved acid grassland, tall herb dominated by rosebay willowherb, broom scrub and localised patches of dry heath and calcareous grassland, the latter occurring, in particular, close to the cycle path. In the grassland areas, red fescue is abundant to dominant, with locally frequent sweet vernal grass and crested dog's tail (*Cynosurus cristatus*), frequent bird's-foot-trefoil, colt's foot, yarrow and dandelion (*Taraxacum* agg.), locally frequent sheep's sorrel, occasional tormentil and heath speedwell (*Veronica officinalis*) and locally abundant wild thyme.	
2	An undulating field with unimproved acid grassland on the mounds, together with occasional localised calcareous grassland over thin soils and around exposed rocks. Frequent flushes and marshy grassland occur in the hollows. In acid areas sweet vernal grass is abundant, with frequent crested dog's tail, ribwort plantain, mat grass, heath rush, heath wood-rush, tormentil, germander speedwell (*Veronica chamaedrys*), common sedge (*Carex nigra*), spring sedge (*Carex caryophyllea*) and carnation sedge, locally abundant mouse-ear hawkweed, locally frequent alpine bistort, occasional devil's bit scabious and heath bedstraw and rarely common lousewort. Calcareous areas with frequent glaucous sedge, lady's bedstraw, wild thyme, quaking grass, eyebright, fairy flax and northern bedstraw. Likely, significant fungal interest with the Cairngorms Nature Action Plan species crimson waxcap recorded in October 2014, together with golden waxcap (*H. chlorophana*), scarlet waxcap (*H. coccinea*), snowy waxcap (*H.* virginea), a pink-gill (*Entoloma* sub-section *Leptonia*) and earthy powdercap (*Cystoderma amianthemum*).	 
3	Acid flushes and marshy grassland at the base of the field, dominated by purple moor-grass and sharp flowered-rush, with frequent carnation sedge, deer sedge, marsh violet, fragrant orchid and devil's bit scabious. At the northern end of the field is a small area of old peat cutting with abundant purple moor-grass, deer sedge and carnation sedge, frequent devil's bit scabious, bog asphodel, heath rush, heath wood-rush, star sedge, common sedge, heath spotted-orchid and hare's tail cottongrass (*Eriphorum vaginatum*), occasional to locally frequent common lousewort and occasional common butterwort and bog moss.	
4	Small stream with Otter spraint. The banks consist of abundant purple moor-grass, with frequent carnation sedge, deer sedge and tormentil and locally abundant colt's foot.	

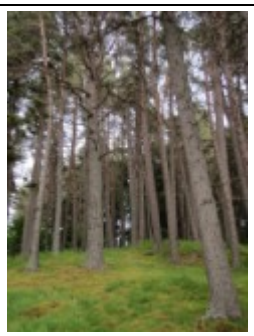
TN	Description	Photograph
5	Allt Coire Mhic-sith stream culvert consists of a concrete structure for the existing A9 crossing immediately adjacent to a stone bridge for the cycle path / farm access crossing. The stream is fast flowing and about 4m wide. A 2m wide concrete track runs alongside the stream through the culvert. The underpass is likely to be of a value for wildlife and old Otter spraints were recorded on the concrete track under the stone bridge. A small area of plantation woodland to the south offers potential cover for Otter and Pine Marten. Small areas of calcareous grassland occur adjacent to the track on the north side of the culvert and small rock exposures along the stream support abundant alpine lady's mantle, wild thyme, heather, heath milkwort, bitter-vetch and mouse-ear hawkweed. The mosaic of rank grassland and tall herb on the nearby west-facing road embankment includes scattered lupin.	
6	Valley mire with abundant bog mosses, frequent purple moor-grass, star sedge, round-leaved sundew, carnation sedge, deer sedge, hare's-tail cottongrass and cross-leaved heath. The adjacent open, mature Scot's pine plantation has a grassy ground layer dominated by sweet vernal grass with frequent chickweed wintergreen. Potential to support Pine Marten.	
7	Very slow moving stream / drain emerging from a 1m wide pipe culvert. The channel supports abundant lesser spearwort (*Ranunculus flammula*), compact rush, bog pondweed and star sedge. The surrounding acid grassland / marshy grassland mosaic is dominated by mat grass and sweet vernal grass, with abundant carnation sedge and daisy (*Bellis perennis*), frequent purple moor-grass, bird's-foot-trefoil and germander speedwell, occasional heath speedwell and heath wood-rush and locally abundant wild thyme where soils are thinner.	
8	Stream (Allt Ruidh nan Sgoilearan) with extensive slippages on the banks and colt's-foot abundant on these largely bare slopes. Localised areas of calcareous grassland occur in the vicinity with frequent to abundant wild thyme, frequent to locally abundant eyebright, crested dog's-tail, daisy and lady's bedstraw, frequent bird's-foot-trefoil and occasional mat grass, fairy flax and alpine lady's mantle. Surrounding grasslands on the slopes are a quite species rich mosaic of acid grassland with abundant mat grass and marshier areas with frequent to abundant purple moor-grass and frequent common lousewort, common butterwort, heath rush and carnation sedge.	
9	Areas of acid flush with frequent to abundant bog myrtle, marsh violet, round-leaved sundew, tormentil, star sedge, carnation sedge, common lousewort, heath milkwort, lesser spearwort and compact rush and occasional bog moss.	
10	Slopes in the immediate vicinity of the cycle track are a mosaic of unimproved acid and calcareous grassland, with abundant mouse-ear hawkweed, yarrow, selfheal and bird's-foot-trefoil, frequent lady's bedstraw, heath woodrush, tormentil, field gentian and fairy flax, occasional to locally abundant wild thyme and autumn hawkbit and occasional yellow rattle, heath speedwell, eyebright and heath grass (*Danthonia decumbens*).	

TN	Description	Photograph
11	Dry acid heath on embankment dominated by heather with frequent bell heather, locally abundant petty whin and occasional, scattered willow, rowan and Scot's pine. Cross-leaved heath is frequent near the top close to the road where the habitat grades into acid grassland, with locally frequent northern marsh-orchid. A Common Lizard was recorded in an area of acid flush to the south with abundant bog myrtle.	
12	A band of mown, acid grassland along the verge dominated by mat grass, with locally frequent lesser spearwort and carnation sedge and occasional common lousewort, heather and yellow sedge. Adjacent to a slope of dry acid heath dominated by heather with frequent tormentil and bird's-foot trefoil and locally frequent cross-leaved heath. A dry drain situated at the bottom of the slope supports occasional bog myrtle, creeping willow (*Salix repens*), deer sedge and heath spotted-orchid and locally frequent colt's foot.	
13	Mosaic of acid grassland (20%) and dry heath (80%), the latter with heather dominant and locally abundant petty whin and stag's-head clubmoss. Grassland areas are dominated by sheep's fescue, with locally abundant mat grass and frequent bird's-foot-trefoil, heath speedwell, sweet vernal grass, eyebright, heath milkwort and heath bedstraw. A deer skeleton was recorded near the area on the opposite side of the road.	
14	A narrow stream valley (Allt Ruidh nan Sgoilearan) with a mosaic of acid grassland and heath on the upper slopes and a small area of species-rich marshy grassland below. The latter with frequent alpine bistort, sweet vernal grass, ribwort plantain, marsh violet, mat grass, carnation sedge, star sedge, compact rush, bog asphodel, common butterwort, bog mosses, common lousewort and selfheal. Drier slopes support abundant heath rush, bilberry, autumn hawkbit (*Leontodon autumnalis*), cowberry, heath bedstraw and tormentil, locally frequent great wood-rush (*Luzula sylvatica*) and rarely wood anenome (*Anenome nemorosa*).	
15	Wet heath interspersed with acid flushes above Scot's pine plantation woodland. Cross-leaved heath and deer sedge are abundant with locally abundant bog mosses, bog asphodel, heath rush, star sedge and carnation sedge.	
16	Acid flush and spring. Water apparently polluted with red oxides. Common cottongrass and yellow sedge are abundant with occasional Northern marsh-orchid. The flush grades into wet heath to the south with abundant cross-leaved heath and carnation sedge, but surrounding habitat is largely dominated by dry heath with occasional patches of acid grassland.	

TN	Description	Photograph
17	Broad culvert for the Allt a' Chaorainn with abundant Otter spraints. Bat potential between concrete blocks within the culvert. Likely to be used as an underpass for Otter, but steep, canalised sides may inhibit terrestrial mammal use. The adjacent road embankment is a mosaic of quite species rich acid grassland (30%) and dry heath (70%). Acid grassland in farmland to the south is relatively species-poor.	
18	Marshy grassland, in part fed by a wet culvert, with abundant wild angelica, devil's-bit scabious, marsh thistle (*Cirsium palustre*) and soft rush, the latter becoming more dominant further down the slope, together with frequent sneezewort (*Achillea ptarmica*), bog stitchwort (*Stellaria alsine*), star sedge, common sedge, yellow sedge, carnation sedge, marsh violet, common cottongrass (*Eriophorum angustifolium*), purple moor-grass, lesser spearwort and cuckoo flower (*Cardamine pratensis*). An area of acid flush to the south of this supports abundant bog mosses and deer sedge, frequent cross-leaved heath, star sedge and carnation sedge and locally frequent common butterwort.	
19	Acid flush below the cycle path with abundant to dominant creeping willow , abundant bog myrtle and carnation sedge, locally dominant bog moss and frequent purple moor-grass, devil's-bit scabious, raspberry, soft rush, marsh violet, yellow sedge, mat grass and bog asphodel.	
20	Narrow band of species-rich calcareous grassland on the banks of the cycle path / former A9. Typically 2m wide, but extending further down the embankment in places, with abundant crested dog's-tail, Yorkshire fog, sweet vernal grass, bird's-foot-trefoil, mouse-ear hawkweed, yarrow and eyebright, frequent wild thyme and occasional black knapweed, moonwort (*Botrychium lunaria*) and fir clubmoss (*Huperzia selago*).	
21	Acid flush at the base of the cycle track embankment with abundant bog myrtle, bog moss and carnation sedge, frequent to locally abundant common butterwort, frequent devil's-bit scabious, heath woodrush, star sedge, bog asphodel, hare's-tail cottongrass, hard rush (*Juncus inflexus*), deer sedge, heath spotted-orchid and yellow sedge and locally frequent round-leaved sundew.	
22	Area of dry heath on the embankment with heather dominant and abundant heath bedstraw, frequent bell heather, raspberry and broom and occasional alpine lady's-mantle, bilberry and hard rush. Common Lizard recorded. The banks of the steep-sided burn to the south, the Allt Fuar Bheann and associated tributaries, include a number of recent slippages of bare earth and peat.	

TN	Description	Photograph
23	Acid flush with abundant carnation sedge, purple moor-grass, devil's-bit scabious, star sedge and deer sedge, frequent compact rush, yellow sedge, common butterwort, bog myrtle, bog mosses, common cottongrass and lesser spearwort, locally frequent round-leaved sundew and bog asphodel and occasional heath milkwort and common lousewort.	
24	Acid flush and wet heath around a small cutting with some exposed rock. Carnation sedge, flea sedge, heath rush, lesser spearwort, common butterwort, cross-leaved heath, heath rush and deer sedge are abundant with occasional bog moss and heath woodrush. Common Lizard recorded.	
25	Recently remade stream banks with dry heath above and planted broad-leaved saplings on the northern side. Exposed rocks along the stream support abundant yellow saxifrage. The soft estate to the north consists of an embankment of dry heath above a narrow band of flat acid grassland with frequent to abundant sweet vernal grass, Yorkshire fog, carnation sedge and lesser spearwort, occasional heath woodrush and, rarely, fragrant orchid. Further north still this band of flat acid grassland broadens to 4m and is regularly mown.	
26	Mountain Hare seen above a narrow dry culvert too small for use as an underpass on an embankment of dry heath.	
27	Small area of elevated dry modified bog with frequent exposed peat, largely dominated by heather, bilberry, cowberry and heath rush, with occasional bog moss, star sedge and purple moor-grass. Extensive wet depressions adjacent to these hags constitute the southern end of an extensive area of valley mire, with abundant to dominant bog mosses, abundant deer sedge and round-leaved sundew, frequent bog asphodel, heather and cross-leaved heath and occasional hare's-tail cottongrass.	
28	Small area of valley mire surrounded by a mosaic of wet heath (60%) and acid grassland (40%). The mire supports abundant bog moss, carnation sedge, cross-leaved heath and bog asphodel. The area has been greatly disturbed due to power line construction and dismantling.	

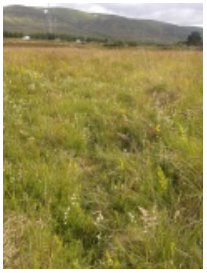
TN	Description	Photograph
29	Acid flush – one of a series in depressions along the top of the road cutting with abundant carnation sedge, yellow sedge and star sedge, frequent bog asphodel, cross-leaved heath and common lousewort, locally frequent round-leaved sundew and occasional fragrant orchid, devil's-bit scabious and common butterwort.	
30	Valley mire and an area of raised bog amongst an abundance of drier heather or fescue dominated hummocks. The valley mire and bog areas support abundant bog moss, bog asphodel, cross-leaved heath and marsh violet, locally abundant devil's-bit scabious, bog myrtle, deer sedge, carnation sedge, marsh cinquefoil and meadowsweet, locally frequent heath spotted-orchid, marsh lousewort, bogbean, common cottongrass, common valerian (*Valeriana officinalis*) and bugle and occasional marsh marigold (*Caltha palustris*). Hummocks of dry heath support abundant to dominant heather, locally dominant bearberry, locally frequent cowberry and occasional bell heather. A Common Lizard was recorded in this area along with several small pearl-bordered fritillary butterflies.	
31	Mosaic of species-rich wet heath and acid grassland on a broad, flat embankment adjacent to the road, probably developed over hardstanding. Mountain Hare recorded in an area of dry heath to the north.	
32	Mosaic of marshy grassland, acid flush and wet heath at the base of the road cutting with abundant carnation sedge, heather, cross-leaved heath, tormentil, heath bedstraw, compact rush and tufted hair-grass, frequent yellow rattle and lesser spearwort and locally frequent bog moss, water avens and devil's bit scabious. Starry saxifrage and bog asphodel are locally frequent to abundant in flushed areas along the cutting.	
33	A narrow band of valley mire, gradually broadening to the north, between the road and the railway, with frequent to locally dominant carnation sedge, locally dominant compact rush, abundant bog myrtle, cross-leaved heath, bog asphodel and sheep's sorrel, locally abundant bog moss, heather, wood anenome, marsh cinquefoil and water avens, frequent devil's bit scabious, bottle sedge and purple moor-grass and occasional marsh lousewort and mat grass.	
33A	An area of raised bog between the railway and the river Truim, with abundant bog moss, heather, deer sedge and bog asphodel, locally abundant carnation sedge, occasional to locally abundant star sedge and occasional heath milkwort, lousewort, round-leaved sundew and bog myrtle. The adjacent river supports abundant alternate water-milfoil and frequent bog pondweed. Common Lizard recorded in the former.	

TN	Description	Photograph
34	A complex of acid flush, valley mire and wet heath with abundant bog moss, deer sedge, bog myrtle, purple moor-grass and bog asphodel, frequent cross-leaved heath and heather, occasional to locally frequent round-leaved sundew and great sundew and occasional common butterwort, carnation sedge, yellow sedge and hare's tail cottongrass. Mammal snap traps are present on ditch crossings.	
35	Band of dry heath/acid grassland developed over made ground. Heather and mat grass are abundant, with frequent cross-leaved heath, heath rush and bare, stony ground, and occasional stag's horn clubmoss and alpine lady's mantle.	
36	Mosaic of marshy grassland, valley mire and wet heath with abundant carnation sedge, common sedge, cross-leaved heath, bog moss, bog myrtle, deer sedge, bog asphodel, marsh violet, frequent hare's-tail cottongrass, occasional common cottongrass and water avens and locally dominant sharp-flowered rush and bottle sedge.	
37	Fairly open Scot's pine plantation with a ground layer of dry and wet heath and some small planted trees of birch and willow. Common Lizard present. Heath dominated by heather with frequent to locally abundant crowberry, frequent compact bog moss and locally frequent cross-leaved heath. Woodland is likely to be sub-optimal for Pine Marten and Red Squirrel since the conifers are fairly young.	
37A	Scot's pine plantation around Drumochter Lodge is more mature than above over a ground layer of locally abundant chickweed wintergreen, wood sorrel and hedge bedstraw and locally frequent heath spotted-orchid, together with some heathy areas dominated by bilberry and cowberry and locally dominant great woodrush. Small, self-seeded rowan saplings are abundant. Drumochter Lodge is a large, tiled house with bat roost potential.	
37B	Otter spraints present on rocks in a small stream (Allt Coire Dubhaig) within plantation woodland close to the road culvert.	

TN	Description	Photograph
38	Narrow band of valley mire / swamp between the road embankment and the cycle path embankment, largely dominated by bottle sedge, with abundant marsh cinquefoil, compact rush, devil's bit scabious and marsh violet and occasional bog asphodel.	
39	Narrow band of flush/mire around a stream with locally dominant common cottongrass, abundant carnation sedge and bog moss and frequent devil's bit scabious, heath rush and compact rush. The surrounding wet heath is dominated by heather with abundant mat grass, frequent bog moss and cross-leaved heath, locally frequent wood anenome and bog asphodel and occasional petty whin.	
40	Broad culvert with abundant Otter spraints. The stream, Allt Coire Chuirn, forms part of the River Spey SAC between the cycle path and the River Truim. It is broad with extensive shingle banks supporting scattered frequent wild thyme, alpine lady's mantle, foxglove, seflheal, sheep's sorrel, mountain sorrel, bog pimpernel, yellow saxifrage and mossy saxifrage, a vulnerable red data list species.	
41	Band of wet heath / marshy grassland within immature conifer plantation (Scot's pine and sitka spruce), the former with abundant bog moss, cross-leaved heath and heath rush. The marshy grassland is dominated by soft rush. Common Lizard recorded.	
42	Area of flush / wet heath and marshy grassland around a spring and stream with abundant cross-leaved heath, heath rush and carnation sedge, locally dominant bottle sedge, frequent bog asphodel and locally frequent marsh lousewort, bog myrtle and lesser spearwort. On the opposite side of the river is a small area of basic heath developed over shingle, with abundant heather and wild thyme and frequent alpine lady's mantle and mountain sorrel.	 

TN	Description	Photograph
42A	An area of raised bog, distinctively domed above surrounding streams and areas of wet heath. Bog mosses are abundant to dominant, with abundant cross-leaved heath, deer grass and bog asphodel and occasional hare's-tail cottongrass. Otter spraints were recorded by the stream culvert at the north-eastern end of the raised bog. This stream is Allt Coire Bhotie and it forms part of the River Spey SAC up to the A9 boundary.	
43	A mosaic of valley mire, wet heath and marshy grassland with bog mosses frequent to locally dominant, abundant cross-leaved heath, bog asphodel, star sedge, deer sedge and heath rush, frequent purple moor-grass, locally frequent sharp-flowered rush and carnation sedge and occasional northern marsh-orchid and common cottongrass. A small area of swamp is dominated by bottle sedge. A dead barn owl (probably a road kill) was found on the road verge adjacent to this area.	
44	Band of mire/flush, slightly degraded, within plantation woodland, with abundant to dominant carnation sedge, abundant deer sedge, frequent heather, cross-leaved heath, bog asphodel and purple moor-grass, frequent to locally dominant common cottongrass and bottle sedge and occasional bog moss. Common Lizard recorded in the mire and in wet heath on the nearby soft estate. Similar, but more extensive and less disturbed valley mire lies to the east of the plantation woodland with frequent round-leaved sundew and occasional common butterwort.	
45	Broad culvert for the Allt Coire nan Cisteachan with Otter spraints. The broad, adjacent verge between the cycle way and road consists of approximately 80% dry heath, together with smaller patches of acid grassland. The former is dominated by heather with frequent cross-leaved heath and heath rush, but bog moss and purple moor-grass are scarce. The acid grassland supports abundant mat grass, sweet vernal grass, heath bedstraw, tormentil, yarrow, sheep's sorrel and heath speedwell.	

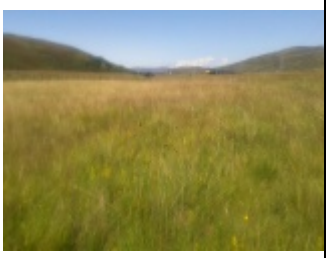
C.2 Target Notes – Project 8 (Dalwhinnie to Crubenmore)

TN	Description	Photograph
46	Mosaic of marshy grassland (20%) and wet and dry heath with heather locally dominant, frequent cross-leaved heath, compact rush, purple moor-grass, tormentil, mat grass and tufted hair-grass, together with frequent scattered willow scrub and rarely juniper. Dry heath, dominated by heather, predominates to the north, with scattered rosebay willowherb.	
46A	Large culvert (>5m high and wide) for the Allt Coire Uilleim with abundant Otter spraints. Abundant Otter spraints also present under the A889 road bridge over the river Truim. Willow scrub along the river's banks offers good Otter resting opportunities. Probable water Vole burrows are present in the river Truim's eastern bank on the far side of the A889 road bridge.	
47	Area of unmanaged marshy grassland with tufted hair-grass and soft rush co-dominant, locally dominant great woodrush and sharp-flowered rush, locally abundant common valerian and Yorkshire fog, frequent wild angelica and occasional devil's bit scabious, compact rush, sneezewort, water avens, marsh thistle, black knapweed and marsh lousewort. Small areas of wet heath occur along the peripheries with frequent cross-leaved heath, bog myrtle and bog moss. Scattered willow occurs throughout, particularly around the peripheries and towards the centre of the marshy grassland. At the northern end is an area of swamp behind a low dam with bottle sedge and water horsetail co-dominant and locally abundant lesser spearwort.	
48	Large box culvert over a tributary of the river Truim (the Allt Coire Bhathaich). Some Otter spraints present. Cracks in the culvert have bat roost potential.	
49	Small band of valley mire to the north of a small dam, with abundant to dominant bog mosses, locally dominant sharp-flowered rush, abundant carnation sedge, locally abundant cross-leaved heath and star sedge, frequent compact rush, bog myrtle, lesser spearwort and wild angelica and occasional sneezewort. At the northern end is a narrow band of calcareous grassland with frequent lady's bedstraw and thyme and locally abundant northern bedstraw in what is otherwise a mosaic of dry acid grassland with abundant wavy hair-grass and marshy grassland with abundant purple moor-grass. Common Lizard was recorded in the area.	 

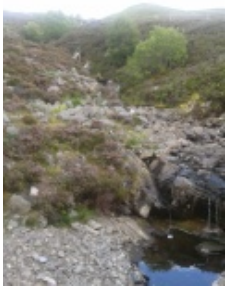
TN	Description	Photograph
50	Areas of species-rich valley mire interspersed with marshy grassland and wet and dry heath. The mire supports abundant bog moss, bog myrtle, bog asphodel, bottle sedge and cross-leaved heath, with frequent to abundant purple moor-grass, locally abundant common cottongrass and locally frequent marsh lousewort and heath spotted orchid. Area of mire on the opposite side of the A9 to the east is more open, with abundant to dominant bog moss, abundant cross-leaved heath, bog myrtle and deer sedge and occasional round-leaved sundew.	 
50A	Water Vole droppings on a piece of polystyrene at the mouth of a small culvert. Runs also present in the surrounding vegetation. The ditch supports locally dominant soft rush and bottle sedge and frequent lesser spearwort.	
51	Mosaic of wet heath and marshy grassland, the latter with locally dominant bottle sedge and compact rush, and abundant tufted hair-grass. The wet heath is generally dominated by heather, but cross-leaved heath and heath rush are abundant, with locally abundant common cottongrass and carnation sedge, occasional to locally abundant bog moss, occasional to locally frequent purple moor-grass and, rarely, common butterwort and juniper.	
52	Areas of wet modified bog at the northern end of a valley mire complex with abundant heather and cross-leaved heath, locally abundant frequent deer sedge, heath rush and bog myrtle, frequent to locally dominant purple moor-grass	
53	Mosaic of wet heath, dry heath and rosebay willowherb tall herb between the road and the aqueduct. Heather is abundant to dominant, with locally frequent cross-leaved heath and frequent to locally dominant cowberry and frequent tormentil and stag's horn clubmoss. Scattered willow and immature Scot's pine and rowan throughout. Small areas of basic heath occur along the slope down to the aqueduct, especially at the northern end of the area, with abundant wild thyme. The aqueduct itself is devoid of vegetation with steep concrete sides and is of very limited nature conservation value. The A9 bridge over the aqueduct is probably unsuitable for roosting bats.	

TN	Description	Photograph
54	Mosaic of valley mire and wet heath with frequent to dominant bog moss, abundant deer sedge, heather and cross-leaved heath, locally abundant bog myrtle, carnation sedge and flea sedge, frequent bog asphodel and occasional round-leaved sundew. Areas of wet heath are similar but with less bog moss and occasional petty whin. Common Lizard recorded. Nearby areas of marshy grassland with frequent purple moor-grass, occasional to locally abundant mat grass, occasional to locally frequent cross-leaved heath, abundant heath rush, locally frequent soft rush and occasional compact rush.	
55	A small area of calcareous grassland/heath between the aqueduct and the road embankment with abundant wild thyme, heath speedwell and mat grass, frequent tormentil, germander speedwell, bird's-foot-trefoil and heather and occasional field gentian. Narrow bands of calcareous grassland are also frequent along the edge of the track running parallel to the aqueduct. An area with abundant eyebright also extends up the road embankment adjacent to the north-east corner of the A9 bridge over the aqueduct. To the north of TN55 is a small area of wet modified bog dominated by purple moor-grass, with occasional cross-leaved heath and bog myrtle. The adjacent road embankment consists predominantly of dry heath (70%) with scattered patches of rosebay willowherb, dry acid grassland and marshy grassland.	
56	An intimate mosaic of wet heath (70%), marshy grassland and small areas of flush. Cross-leaved heath is frequent throughout with locally abundant to locally dominant heather, locally frequent soft rush and hard rush, and frequent purple-moor grass, Yorkshire fog, mat grass and tufted hair-grass. The flushes support abundant common cottongrass and lesser spearwort. A dead buzzard (*Buteo buteo*) (probably a road kill) was found on the road verge adjacent to this area.	
57	A mosaic of dry heath (80%) and acid grassland along the embankment, the former with abundant heather, bell heather, tormentil and wavy hair-grass, locally abundant violet (*Viola* sp.), occasional to locally frequent bearberry, occasional cross-leaved heath, wood anenome, bog myrtle, cowberry, bird's-foot-trefoil and harebell (*Campanula rotundifolia*), with scattered saplings of rowan and Scot's pine. The grassland areas support abundant Yorkshire fog and frequent scattered rosebay willowherb. Heath / acid grassland habitat adjacent to the soft estate is similar but more heather dominated and the acid grassland is more species-rich with abundant sheep's fescue, sweet vernal grass, heath bedstraw, heath milkwort (*Polygala serpyllifolia*), violet, tormentil and cowberry and locally abundant wild thyme and mat grass. A small area of mire is also present around a small watercourse with abundant purple moor-grass, bog moss, bog myrtle and cross leaved-heath.	
58	A mosaic of purple moor-grass dominated grassland (50%) and wet heath (50%). Cross-leaved heath and bog moss are only occasional in the latter, but purple moor-grass is abundant.	

TN	Description	Photograph
59	Embankment with unimproved acid grassland dominant on flat areas (80%) with small patches of dry heath. Dry heath is dominant on the slope to the north-west down to an extensive area of valley mire around the river Truim. The acid grassland includes abundant Yorkshire fog, sweet vernal grass, heath bedstraw, tormentil and yarrow, frequent autumn hawkbit and occasional harebell. Localised calcareous areas are evidenced by locally abundant wild thyme and occasional lady's bedstraw. Potential grassland fungi interest. The dry heath slopes support abundant to dominant heather, frequent bell heather and hard fern. Bog myrtle and carnation sedge are abundant in the adjoining valley mire, with frequent cross-leaved heath and locally dominant sharp-flowered rush.	
60	Species-rich marshy grassland between an embankment of dry heath and the river, with locally dominant sharp-flowered rush, abundant wild angelica and meadowsweet, locally abundant melancholy thistle (*Cirsium heterophyllum*), marsh willowherb (*Epilobium palustre*), bog myrtle, compact rush and marsh violet, frequent carnation sedge, sneezewort, devil's-bit scabious and lesser stitchwort (*Stellaria graminea*) and occasional marsh lousewort, bog moss and cross-leaved heath. Areas of dry acid grassland support abundant mat grass and tormentil. Cowberry and bilberry are abundant on the dry heath embankment with locally dominant bearberry, frequent harebell and heath bedstraw, occasional petty whin and lady's bedstraw and rarely wild thyme. Scattered immature birch and willow are abundant throughout. The area on the opposite side of the river Truim was inaccessible but appears to be dominated by valley mire with a band of marshy grassland along the top of the river bank.	 
61	Old ruined shielings consisting of old stone walls and vestiges of farm buildings covered in a diverse lichen flora. The surrounding field consists of a mosaic of acid grassland (70%) dominated by mat grass and sweet vernal grass, and dry heath (30%). The adjacent Scot's pine plantation is tightly planted with a poor ground layer. Wind-thrown trees are abundant, which could offer suitable den habitat for Pine Marten.	
62	Area of valley mire around to small streams close to the A9, with abundant bog myrtle, cross-leaved heath, purple moor-grass, bog moss and heath rush and occasional round-leaved sundew and bog asphodel.	
63	Small area of valley mire at the base of a dry heath slope with abundant deer sedge, bog moss, heather and cross-leaved heath and locally abundant bog myrtle, purple moor-grass, common cottongrass and hare's tail cottongrass. Adjacent marshy grassland is dominated by soft rush, purple moor-grass and heath rush.	

TN	Description	Photograph
64	Wide bridge over a tributary of the River Truim (the Allt Cuaich). Broad stony bed of the tributary is approximately 10m wide with the stream channel only 2m wide at the time of the survey. The area is likely to be of value to breeding waders and lapwings with chicks were recorded to the west of the bridge. A few old Otter spraints were also recorded under the bridge and gaps in the concrete blocks at the top of the bridge piers offer some bat roost potential. A dry culvert (underpass) is present to the immediate north of the bridge, but this is blocked by livestock fencing. The tributary forms part of the River Spey SAC downstream from the A9.	
65	Slightly degraded area of valley mire possibly due to frequent burning with a number of exposed areas of peat. The area is nevertheless diverse with abundant deer sedge, frequent to abundant bog moss, bog asphodel and round-leaved sundew, locally abundant flea sedge, frequent common and hare's-tail cottongrass, bog myrtle, cross-leaved heath and heath rush and locally frequent carnation sedge. Surrounding wet heath is species-poor, dominated by heather with abundant purple moor-grass, but cross-leaved heath and bog moss are only rare to occasional.	
66	Road cutting with dry heath above dominated by heather with abundant bearberry. Rock faces are only patchily vegetated with fescue, mouse-ear hawkweed, heather, hawkweed species and raspberry. Below the rock face is a fairly marshy band of grassland with abundant Yorkshire fog, frequent soft rush and melancholy thistle, locally frequent wild thyme and occasional heather and cross-leaved heath. Occasional small flushes above the rock face support abundant cross-leaved heath, yellow sedge and bog asphodel, and frequent deer sedge, carnation sedge, bog myrtle, common butterwort and round-leaved sundew.	
67	Calcareous grassland with abundant sweet vernal grass, common bent and red fescue, frequent Yorkshire fog, frequent to locally abundant lady's bedstraw, yarrow and germander speedwell, occasional to locally abundant mat grass, violet and heath bedstraw, frequent wild thyme and ribwort plantain, locally frequent eyebright, wild pansy (*Viola tricolor* ssp. *curtisii*), white clover and heather and occasional harebell, selfheal, common cat's-ear (*Hypochaeris radicata*), mouse-ear hawkweed and black knapweed. The field is less diverse to the south-west. Wild thyme is frequent in patches of heather both in the field and on the A9 embankment, with semi-improved neutral grassland close to the road and typically a band of heath to the rear along the fenceline. The Cairngorms Nature Action Plan species crimson waxcap was recorded in similar habitat to the east on the opposite side of the railway.	
68	Extensive acid flush/valley mire on a slope with wet heath below on the far side of ditches. Heather is abundant to dominant, with abundant bog myrtle, carnation sedge and cross-leaved heath, frequent bog asphodel and hare's tail cottongrass and occasional compact rush and round-leaved sundew.	
69	Wet heath/marshy grassland mosaic, roughly 70% and 30% respectively. The former has abundant heather, deer sedge and cross-leaved heath with locally dominant heath rush, frequent purple moor-grass, bog asphodel, bog myrtle and tormentil, occasional devil's bit scabious, mat grass, bog moss, carnation sedge and green-ribbed sedge. The marshy grassland is similar but purple moor-grass is more abundant and heathers reduced. Some marshy areas exhibit a calcareous influence, with locally frequent lady's bedstraw and wild thyme. Mountain Hare recorded in the area.	

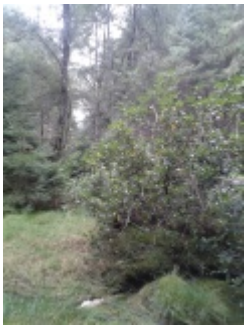
TN	Description	Photograph
70	Widespread flushes on a 30 degree slope with abundant bog myrtle and carnation sedge, frequent star sedge, bog asphodel, cross-leaved heath, heather and round-leaved sundew and occasional common butterwort and round-leaved sundew. The majority of the surrounding heath is dry acid, but one small area with abundant wild thyme is also present. The heath is subjected to regular burning.	
71	Mosaic of dry heath (80%) and acid grassland with some areas of basic heath and calcareous grassland, particularly in the vicinity of ditches characterised by abundant wild thyme. The dry heath is heather dominated and quite species poor, with frequent tormentil and heath speedwell and occasional petty whin. It is subjected to regular burning.	
72	Marshy grassland with frequent cross-leaved heath, abundant carnation sedge, frequent purple moor-grass, locally dominant sharp-flowered rush and compact rush, abundant Yorkshire fog, locally abundant yellow sedge, frequent star sedge, occasional tormentil, locally abundant common cotton-sedge, occasional bog asphodel, devil's-bit scabious and bog myrtle, occasional to locally frequent sneezewort. Grades to wet heath to the north and west and also along some of the A9 embankment.	
73	Mosaic of wet heath and calcareous grassland, the latter with abundant wild thyme, occasional lady's bedstraw, frequent to abundant mat grass, frequent purple moor-grass, sweet vernal grass and ribwort plantain, occasional creeping buttercup (*Ranunculus repens*), frequent tormentil, occasional heath speedwell, lady's mantle (*Alchemilla vulgaris* agg.), wild pansy and violet species. Wet heath with heather and cross-leaved heath abundant, mat grass and purple moor-grass frequent. Similar habitats on raised ground to north with calcareous grassland also supporting locally frequent yellow-rattle, frequent fairy flax and occasional harebell and field gentian. Also small areas of basic heath.	
74	Mosaic of valley mire, flush and marshy grassland with abundant cross-leaved heath, frequent bog-mosses, abundant purple moor-grass, locally dominant sharp-flowered rush, locally dominant bottle sedge, locally abundant round-leaved sundew, frequent to locally abundant bog asphodel, frequent bog myrtle and occasional common butterwort.	
75	Mosaic of mire and wet heath with abundant bog myrtle, heather, cross-leaved heath, carnation sedge, purple moor-grass, bog-mosses and bog asphodel and occasional hard fern and heath rush.	

TN	Description	Photograph
76	Small ravine with a small stream (the Allt Garbh) which disappears under rocks near a large box culvert. Water Vole sighted walking along block stone on its southern bank before disappearing between the block stone. Surrounding habitat consists of dry heath with abundant heather and frequent bearberry, cowberry, raspberry and alpine lady's-mantle.	
77	Exposed rock cutting with mature plantation woodland over dry heath. A stream (the Allt na Ceardaich) passes over this rock face at its northern end (a waterfall about 3m in height) before passing almost immediately through a broad culvert under the A9.	
77A	Stone bridge with bat roost potential. Associated stone walls have a diverse lichen flora, surrounded by acid grassland with localised calcareous grassland around rock exposures. The former includes abundant selfheal, devil's-bit scabious, bird's-foot-trefoil, sweet vernal grass, eyebright and mat grass with frequent common knapweed. The latter is characterised by abundant wild thyme and lady's bedstraw.	

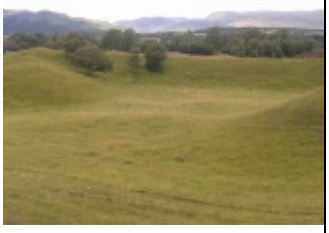
C.3 Target Notes – Project 9 (Crubenmore to Kincraig)

TN	Description	Photograph
78	Small areas of rhododendron throughout a band of open broadleaved plantation woodland adjacent to the A9 and the picnic area, the woodland dominated by silver birch over scattered firethorn, lupin and rank semi-improved acid grassland. Some grey alder (*Alnus incana*) is also present. Further south along the access route to the picnic area are areas of broad-leaved woodland with a more semi-natural character, with downy birch dominant and occasional Scot's pine, aspen and willow over a ground layer dominated by heather and cowberry, with occasional devil's bit scabious. Areas of open dry heath have abundant self-seeded birch saplings.	
79	Broad-leaved woodland dominated by downy birch with occasional aspen, over an understorey of frequent birch and aspen saplings and a ground layer of heather and cowberry. Probably developed from plantation woodland but now semi-natural in character. Many of the mature birch are covered in dense lichen. To the south, more open dry heath areas occur with abundant broom and birch saplings. The road verge consists of a mosaic of dry heath and acid grassland (about 50/50) with numerous self-seeded birch saplings.	
80	Very wet and diverse valley mire with abundant to dominant bog moss, abundant purple moor-grass, water horsetail and cross-leaved heath, locally dominant sharp-flowered rush, locally abundant marsh cinquefoil, carnation sedge, round-leaved sundew and bog myrtle, frequent marsh violet, locally frequent chickweed wintergreen, bog asphodel, star sedge and common cottongrass and occasional heather and cowberry.	
81	Mosaic of valley mire and swamp with abundant to dominant sharp-flowered rush, abundant purple moor-grass and bog myrtle, locally abundant cross-leaved heath, frequent carnation sedge and bog asphodel and occasional bog moss.	
82	Area of valley mire, with abundant bog moss, purple moor-grass and bog myrtle, locally dominant hare's-tail cottongrass, locally abundant heather, deer sedge and carnation sedge, frequent cross-leaved heath, locally frequent common reed and occasional round-leaved sundew. The adjoining woodland is quite immature and dominated by birch, but apparently self-seeded.	
83	Birch dominated semi-natural woodland, fairly recently developed over dry heath of heather and cowberry. Profuse lichen flora on the trunks. A small area of similar habitat is present on the road cutting amongst larch and Scot's pine plantation. A band of dense heather dominated dry heath is present under power lines between the cutting and the birch woodland.	

TN	Description	Photograph
84	A very extensive area of dry heath gradually being colonised by Scot's pine and birch. The heath is heather dominated, with abundant cowberry, bearberry, bell heather and stag's horn clubmoss and frequent petty whin.	
85	A tightly mown 15m wide band of dry heath/acid grassland mosaic between the A9 and a steep slope of dry heath in the process of succeeding to semi-natural birch woodland and scattered broom. Some bare patches of scree are also present on this slope. The mown band includes abundant heath grass, heather, tormentil and heath bedstraw and frequent petty whin and eyebright.	 
86	Ku-Ring woodland. Semi-natural birch woodland with occasional Scot's pine. Diverse lichen flora. Ground layer of heather, cowberry, raspberry and locally frequent devil's bit scabious. Woodland probably developed from dry heath fairly recently.	
87	Ptarmigan lodge. Old stone building with loose slate tiles offering bat roost potential. Mature plantation woodland to the west and along the A9 verges offers suitable Red Squirrel habitat. The ground layer is very mossy with abundant to locally dominant cowberry and, rarely, creeping lady's tresses.	
88	A small band of valley mire feeding a fast flowing stream (at the time of survey). Abundant bog moss, cross-leaved heath, purple moor-grass, common cottongrass and purple moor-grass, frequent heather and locally dominant sharp-flowered rush.	

TN	Description	Photograph
89	Underpass with evidence of use by deer. Formerly intended for livestock, but associated track now with dense, semi-mature, broadleaved woodland comprising birch, rowan and grey willow (*Salix cinerea* agg.). Unimproved acid grassland to the north, near the Caochan Riabhach stream, is dominated by sheep's fescue, with abundant heath bedstraw and devil's bit scabious. Conical waxcap also present.	
90	Areas of rhododendron adjacent to a small fast-flowing stream, in a plantation woodland dominated by Scot's pine, with some mature birch, particularly alongside the minor road. Cherry laurel is also scattered within the woodland. The ground layer is very mossy with locally dominant bilberry. Potentially suitable for Pine Marten and Red Squirrel, but no signs noted.	
91	Cottage with old slate roof with bat roost potential. The associated outhouse also has bat roost potential and lies immediately adjacent to the road verge. Adjacent mixed plantation woodland is about 60% conifer (Scot's pine and sitka spruce) and 40% broadleaved (rowan, aspen and grey willow). A well-worn animal path nearby could possibly be Badger. Semi-improved acid grassland on the broad verge is quite species rich with abundant Yorkshire fog, sweet vernal grass, heath grass, mat grass, common cat's ear, devil's bit scabious, tormentil and carnation sedge, locally abundant yarrow, frequent selfheal and heather, locally frequent yellow-rattle and occasional heath rush and bird's foot trefoil. The habitat may be of fungal interest, with a pink gill *(*sub-section *Leptonia*) recorded.	 
92	Mature birch woodland with some areas of marshy ground and standing water. Diverse lichen flora on the trees. One with cracked limbs and rot holes offers bat roost potential. The grassy ground layer includes Yorkshire fog and purple moor-grass. A Brown Hare was recorded in the adjacent semi-improved field.	
93	Mosaic of marshy grassland (20%) and wet heath (80%), the former dominated by purple moor-grass with abundant bog myrtle and frequent bog asphodel; the latter with abundant heather, cross-leaved heath, frequent to abundant bog myrtle, locally abundant deer sedge, frequent bog asphodel and occasional bog moss. Small areas of flush are characterised by abundant to dominant bog moss and occasional common butterwort.	

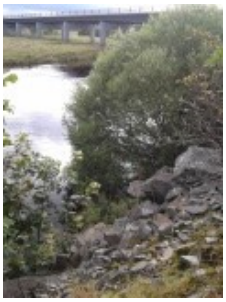
TN	Description	Photograph
94	Extensive area of valley mire feeding a small stream with abundant bog moss, purple moor-grass, bog asphodel, bog myrtle and cross-leaved heath. Areas of shallow open water are also present with common sedge, carnation sedge and common cottongrass. Plantation woodland on the adjacent verge consists of about 80% Scot's pine and 20% birch. Several foraging spotted flycatchers were present along the woodland edge.	
95	Area of wet heath over stony ground with abundant self-seeded immature Scot's pine. Cross-leaved heath, heather and carnation sedge are abundant, with frequent purple moor-grass and compact rush and occasional bog asphodel and deer sedge. Nearby marshy grassland largely dominated by purple moor-grass also includes small areas of swamp dominated by bottle sedge. The nearby valley mire is similar to TN94.	
96	Small area of dry semi-improved acid grassland with a good diversity of fungi (persistent waxcap (*Hygrocybe persistens*), golden waxcap and conical waxcap and a pink-gill species (sub-section *Leptonia*). Floral species include yarrow, white clover, selfheal, Yorkshire fog, mat grass and heath bedstraw and occasional devil's bit scabious and heather.	
97	Area of birch woodland on a steep, north-facing slope with alder dominated wet woodland at its base, including areas of open water with reed canary-grass and water mint (*Mentha aquatica*). Open woodland on the slope includes some very old birches over acid grassland with locally abundant lemon-scented fern (*Oreopteris limbosperma*). Numerous rot holes in the trees offer bat roost opportunities. The woodland is grazed by sheep since no fence separates it from the adjacent semi-improved field.	
97A	Further to the east at the base of the woodland is a band of open water 2-5m wide and about 70m in length which feeds into the river via a narrow 0.5m wide stream to the east. Broad-leaved pondweed (*Potamogeton natans*) is abundant with locally abundant mare's tail (*Hippuris vulgaris*), water horsetail, bog bean and water-milfoil (*Myriophyllum* sp.), frequent marsh cinquefoil and frequent to locally dominant bottle sedge around the edges.	
98	Brown Hare recorded crossing into a dry heath cutting of the soft estate from adjacent species poor semi-improved grassland. The heath is heather dominated with scattered saplings of birch and rowan. On the opposite side of the road is largely semi-mature birch dominated woodland which appears to be developing naturally over heather dominated dry heath.	

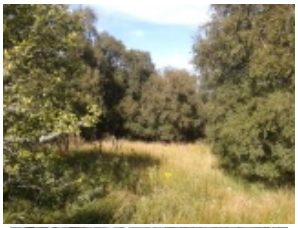
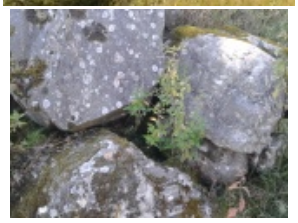
TN	Description	Photograph
99	Road cutting with exposed rock face supporting acid grassland, heather and alder, birch and willow saplings. The cutting is largely dry but a small area of flush is present at the western end supporting abundant cross-leaved heath, round-leaved sundew and bryophytes. The adjacent birch plantation woodland is largely even-aged, but is developing a semi-natural character with a ground layer of abundant to dominant heather.	
100	Mature birch woodland over a ground layer of locally dominant purple-moor grass with occasional bog moss, locally dominant hard fern and scattered heather. Woodland is gradually colonising an area of wet heath/marshy grassland mosaic to the south. The purple moor-grass dominated marshy grassland comprises about 50% of the area, with abundant bog myrtle and occasional bog moss. The wet heath is similar with the addition of abundant cross-leaved heath and heather and frequent bog asphodel.	
101	Mosaic of marshy grassland, basin mire, wet heath and open water with some acid flushes around the peripheries. The marshy grassland is characterised by abundant to dominant sharp-flowered rush and bog myrtle, frequent purple moor-grass, bog asphodel, marsh violet, cross-leaved heath and devil's bit scabious, with scattered willow scrub. Areas of open water support bogbean, common cottongrass and bog pondweed. Small areas of basin mire support abundant bog moss and frequent round-leaved sundew. Flush areas are characterised by abundant carnation sedge and bog asphodel, frequent devil's bit scabious and round-leaved sundew and occasional common butterwort. The surrounding acid grassland is quite species-rich, with only limited signs of improvement. Sweet vernal grass, common bent, white clover, tormentil and yarrow are abundant, with frequent eyebright, harebell and selfheal, frequent to locally abundant devil's bit scabious, locally abundant heath bedstraw and Yorkshire fog, locally frequent heather and occasional to locally frequent petty whin. Two Brown Hares recorded. The grassland is likely to have a diverse fungal flora, with persistent waxcap and a pink-gill (subsect. *Leptonia*) recorded at the time of the survey.	 
102	Undulating field with unimproved grassland in the hollows and gentler slopes and tightly grazed dry heath on steeper slopes. Both habitats are a predominantly acid, but with a localised calcareous influence. The heath is characterised by abundant heather, frequent bell heather and petty whin, locally abundant mouse-ear hawkweed and wild thyme, occasional to locally abundant common rock-rose, locally frequent devil's bit scabious and occasional sweet vernal grass and sheep's fescue. The acid grassland is largely dominated by sweet vernal grass, tormentil and heath bedstraw, frequent harebell and germander speedwell, locally abundant wild thyme and common rock-rose and occasional to locally frequent devil's bit scabious. The grassland is likely to have a diverse fungal flora as indicated by the presence of a pink-gill (sub-section *Leptonia*).	
103	Large pond with soft rush around the edges and locally dominant bottle sedge further in, with scattered emergent water horsetail and branched bur-reed (*Sparganium erectum*). Breeding mallard (*Anas platyrhynchos*) present. Unimproved acid grassland on the surrounding slopes is similar to that described in TN102, but without any calcareous indicators. The grassland is species-poor at the bottom of the slopes and diversity is much lower to the east. The adjacent road verge is a south-facing cutting supporting a 50/50 mosaic of acid grassland (sheep's fescue and heath bedstraw) and heather dominated dry heath.	

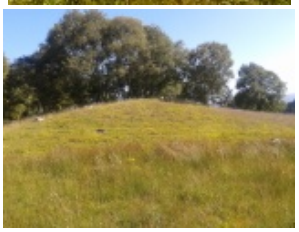
TN	Description	Photograph
104	Large area of marshy grassland dominated by sharp-flowered rush with abundant Yorkshire fog and tufted hair-grass, locally dominant purple moor-grass, frequent sneezewort, marsh violet and marsh bedstraw and occasional cross-leaved heath and devil's bit scabious. Along ditches/channels marsh cinquefoil and bog asphodel are locally abundant, with frequent tormentil and locally frequent bog moss. There was evidence of red deer using the area to rest up. The marsh is interspersed with small elevated areas of acid grassland with abundant sweet vernal grass, common bent, heath bedstraw, tormentil and yarrow, frequent to locally abundant devil's bit scabious, occasional to locally abundant purple moor-grass and eyebright, locally frequent lady's bedstraw and occasional heather and cowberry.	
105	Two waterbodies. The one to the east is dominated by bottle sedge swamp, although open water remains widespread. Basin mire is developing on an island towards the centre and along the western edge, dominated by bog moss and abundant cross-leaved heath. The larger waterbody to the west supports scattered bog bean and water horsetail. The surrounding habitat is a mosaic of heather dominated dry heath (70-80%) and small patches of acid grassland.	
106	Burn of Inverton (part of the River Spey SAC) is a large stream with two large pipe culverts under the A9 and an adjacent dry culvert for livestock. Alder woodland fringing the stream banks offers potentially suitable resting places for Otter, though no evidence was found (possibly due to recent heavy rainfall).	
107	Lochan an Tairbh. A large waterbody fringed with bottle sedge with scattered bogbean further out. Surrounded by a mosaic of unimproved acid and calcareous grassland with abundant rock-rose and frequent to locally abundant lady's bedstraw, in particular close to the shore. Devil's bit scabious is abundant throughout, with frequent violet, sweet vernal grass, heath bedstraw, tormentil, sheep's fescue, harebell, bitter vetch and field pansy. Areas of heath are dominated by heather with frequent bell heather, petty whin and devil's bit scabious. Scattered birch trees and saplings are dotted around the lochan fringes and expanding elsewhere.	
108	Large area of semi-improved calcareous grassland with abundant lady's bedstraw and frequent wild thyme. Red fescue, ribwort plantain and tormentil are abundant with frequent sheep's fescue, sweet vernal grass, germander speedwell, violet, field pansy, harebell and bird's-foot-trefoil, locally frequent wavy hair-grass and devil's bit scabious. The area is formerly plantation woodland but there is no visible evidence on the ground.	

TN	Description	Photograph
109	Fairly species-poor marshy grassland at the base of a steep, north-west facing slope with abundant meadowsweet, tufted hair-grass and marsh bedstraw, occasional to locally abundant sharp-flowered rush, frequent reed canary-grass, locally frequent wild angelica and occasional sneezewort. Surrounding neutral grasslands are rank and fairly species poor, dominated by Yorkshire fog and sweet vernal grass with locally abundant false oat-grass and only occasional to locally frequent devil's bit scabious, creeping buttercup, lesser stitchwort, germander speedwell, tormentil, harebell and common sorrel (*Rumex acetosa*). To the south lies an underpass under the A9 suitable for use by fauna. A Brown Hare was recorded on the track on the far side of this underpass.	
110	Meander of the river Spey running in close proximity to the A9. The adjacent, steep, north-west facing bank is a mosaic of acid grassland and old, open larch plantation woodland. Mature alder with rich lichen flora line the banks offering good resting opportunities for Otter. The rank grassland is dominated by Yorkshire fog with frequent nettle and lady's bedstraw, but is more diverse towards Ruthven road bridge with occasional to locally frequent devil's bit scabious, black knapweed and yellow rattle and frequent yarrow. Mixed plantation woodland on the adjacent road verge is 50:50 larch and alder, the trunks of which support a diverse lichen flora, including old man's beard lichen (*Usnea* sp). The ground layer includes abundant pink purslane.	 
111	Scattered old alder in a semi-improved field adjacent to the river Spey. Many of the alder have rot holes and cracked limbs offering bat roost potential. The grassland to the west is species poor but is more diverse to the north and east with abundant black knapweed and devil's bit scabious and frequent eyebright.	 
111A	Band of old alder woodland including 3 to 4 large specimens with rots holes potentially suitable for roosting bats, with one such tree lying within the soft estate.	

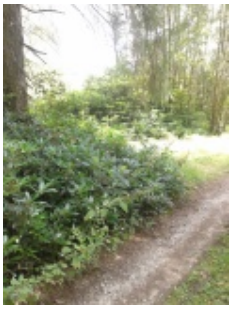
TN	Description	Photograph
112	Possible Badger snuffle holes and runs on the edge of a narrow band of mixed plantation woodland on a steep slope adjacent to the B970 road. But only a rabbit warren and rabbit droppings were recorded in the vicinity. The woodland is semi-mature with a grassy ground layer and comprises about 50% larch and Scot's pine and 50% birch and rowan. The nearby A9 bridge over the B970 is a concrete structure with no significant bat roost potential.	
113	Long pond approximately 8m by 80m with abundant, scattered, emergent water horsetail and fringed by immature alder and soft rush. The surrounding grassland is rank and dominated by Yorkshire fog and small timothy, but with abundant yellow rattle and silverweed and occasional eyebright, common valerian, meadowsweet, tufted vetch, meadow vetchling (*Lathyrus pratensis*), devil's bit scabious and crested dog's tail. The adjacent verge is similar, but with greater abundance of false oat-grass and scattered alder. Two smaller waterbodies lie to the west of the long pond. The closest, at the foot of a large mature alder appears to be at least 0.5m deep and is probably permanent, though largely devoid of emergent vegetation. The second is very shallow and probably present only during times of heavy rainfall.	 
114	Area of open water (probably ephemeral) amongst marshy grassland dominated by tufted hair-grass and soft rush with frequent sneezewort, wild angelica and meadowsweet, locally abundant devil's bit scabious and occasional common valerian. A second water body lies to the north in a breach in the old flood embankment. It is fringed by soft rush and sharp-flowered rush. The surrounding semi-improved neutral grassland is cattle grazed with abundant yellow-rattle and yarrow, occasional to locally abundant eyebright, frequent devil's bit scabious, sneezewort and selfheal and locally frequent lady's bedstraw.	
115	Wet woodland of alder and willow species including crack willow on a large in channel island within the river Spey offering excellent resting up and holt opportunities for Otter, though the area is prone to flooding. A probable Otter slide was recorded on the edge of the south-western side of the island, but the broad channel prevented close inspection and access onto the island.	 

TN	Description	Photograph
116	Species-rich semi-improved neutral grassland around the A9 bridge crossing over the river Spey, with abundant black knapweed, yellow rattle, bird's foot trefoil, sweet vernal grass, red fescue, Yorkshire fog and red clover, occasional to locally abundant eyebright and lady's bedstraw, frequent yarrow, harebell, devil's bit scabious, ragwort, violet and common bent and occasional northern marsh orchid, zigzag clover (*Trifolium medium*) and common cat's ear.	
117	Marshy grassland dominated by soft rush, sharp-flowered rush and tufted hair-grass, with some areas of open water. Creeping buttercup and marsh bedstraw are abundant with frequent sneezewort, lesser stitchwort and autumn hawkbit and occasional meadowsweet and common cat's ear. A similar more extensive area of marshy grassland lies to the south. The adjacent grassland is very grass dominated but notable for the abundance of eyebright. Selfheal is frequent, together with locally frequent autumn hawkbit and occasional yellow rattle.	
118	Small area of alder woodland completely flooded at the time of the survey, with some emergent amphibious bistort (*Persicaria amphibia*) and sweet-grass (*Glyceria* sp.).	
119	Broad band of boulders shoring up the river bank beneath a narrow band of alder, crack willow and sycamore. Potential resting places for Otter and even holts in gaps between the boulders, but no signs noted. Gabion baskets are present along the same bank on the west side of the bridge. Rabbit warrens are abundant on the steep slopes above and these have led to some erosion and land slips.	
120	Glebe Nature Park. A series of duck ponds fringed by marshy grassland, rosebay willowherb and birch/alder woodland. Small areas of species-rich grassland are also present on the site peripheries with abundant devil's bit scabious, sweet vernal grass and common bent and frequent eyebright, mouse-ear hawkweed, yarrow, germander speedwell, lady's bedstraw and tormentil and locally abundant Yorkshire fog and cock's foot (*Dactylis glomerata*). The marshy grassland on the south-western side is dominated by soft rush with abundant common valerian, frequent meadowsweet and nettle and occasional black knapweed and devil's bit scabious. On the peripheries of the easternmost pond the marshy grassland occurs in a mosaic with basin mire, with locally dominant bog mosses, abundant marsh violet and marsh cinquefoil, locally abundant sharp-flowered rush and mat grass and frequent common valerian and cottongrass. Soft rush is dominant on the edge of the open water.	
121	A9 bridge over the railway is largely unsuitable for bats, but potentially suitable gaps were noted at the top of the piers. The surrounding farmland is species poor and heavily grazed by sheep. Rabbit warrens are abundant along the railway banks.	

TN	Description	Photograph
122	Road bridge of concrete and steel. Some gaps between the concrete blocks of the piers which could be used by low numbers of roosting bats.	
123	Semi-natural broad-leaved woodland dominated by birch with open rank grassy areas supporting occasional to locally dominant soft rush, frequent tufted hair-grass, black knapweed and wild angelica and occasional meadowsweet. Old piles of stone, probably the ruins of a farm building, offer potential den habitat for Pine Marten, though no signs were noted. An area of acid grassland on a south-west facing slope lies towards the north-eastern end of the woodland with abundant devil's bit scabious, heath bedstraw, harebell and violet, frequent bird's foot trefoil, occasional scattered bracken and scattered birch trees.	 
124	Dry stone wall with abundant lichens though the wall has recently been remade. The nearby stream is about 0.5m wide, fringed by soft rush and lesser spearwort, with some branched bur-reed in the channel. No evidence of Otter or water Vole and the adjacent culvert is unusable.	
125	Area of acid grassland on a steep hillock in an otherwise species-poor semi-improved field. The acid grassland is characterised by abundant yarrow, sheep's sorrel and sweet vernal grass, locally abundant violet, devil's bit scabious and heath speedwell, frequent harebell, white clover, lady's bedstraw and occasional bird's foot trefoil and common cat's ear. The habitat extends onto the adjacent verge, but closer to the road on flat grassland is more neutral and species-poor grassland with Yorkshire fog, common bent, sweet vernal grass, abundant selfheal, frequent common cat's ear and occasional devil's bit scabious.	
126	Moderately species-rich embankment with very extensive rabbit warrens. Species include abundant common bent, Yorkshire fog, bird's-foot trefoil and germander speedwell, locally abundant creeping thistle, frequent ribwort plantain, ragwort, common chickweed (*Stellaria media*) and occasional sheep's sorrel, yarrow and eyebright. A species-poor flush with abundant carnation sedge and lesser spearwort is present in the adjacent semi-improved species-poor field, which is tightly grazed by horses. A flock of lapwings was present in the field.	

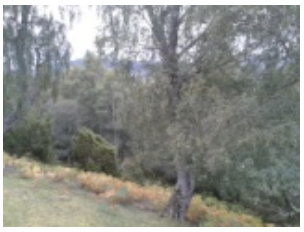
TN	Description	Photograph
127	Pile of stones / boulders in a semi-improved field with a diverse lichen cover. Potentially suitable as a Pine Marten den, though no signs noted. Surrounding habitat consists of bracken and sheep grazed semi-improved acid / species-poor grassland. The more species-rich areas of grassland are characterised by abundant heath bedstraw, yarrow and sweet vernal grass and frequent harebell. An area of open birch woodland with occasional hazel and aspen lies to the west with a ground layer of bracken and acid grassland. Scattered exposed rocks in the grassland are occasional with locally abundant wild thyme and common cat's ear. An old defunct stone wall runs through the woodland.	 
128	Area of marshy grassland dominated by purple moor-grass and sharp-flowered rush with locally frequent cross-leaved heath, bog asphodel, tufted hair-grass and bog myrtle, occasional to locally dominant bog mosses, locally dominant sharp-flowered rush at the base of the verge and frequent marsh violet throughout. A dead roe deer (*Capreolus capreolus*) was found on the verge nearby.	
129	A large heap of manure in a field of semi-improved acid grassland. Grassland with abundant sweet vernal grass, tormentil, yarrow and heath bedstraw and frequent devil's bit scabious. Open birch woodland in the same field shows an absence of regeneration due to grazing by sheep. The adjoining verge is similar in composition to the grassland habitat in the field, but is rank with scattered broom, birch, bracken and heather.	
130	Species-rich marshy grassland / flush on the edge of an extensive area of valley mire with abundant purple moor-grass and carnation sedge, frequent to locally abundant bog asphodel and frequent devil's bit scabious, sharp-flowered rush, sneezewort, tormentil, cross-leaved heath and northern marsh orchid and occasional creeping willow. Adjoining drier grassland is also species-rich with abundant devil's bit scabious, tormentil, yarrow, heath speedwell and sweet vernal grass and frequent violet, bird's foot trefoil and bitter vetch.	 
131	Extensive valley mire with abundant bog myrtle, purple moor-grass, sharp-flowered rush, bog asphodel, cross-leaved heath and bog mosses, with frequent heath rush, occasional tormentil and, rarely, devils'-bit scabious and juniper. A flush in the horse-grazed semi-improved field to the north is similar to TN130, but is heavily poached.	

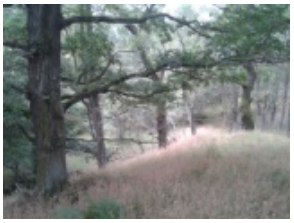
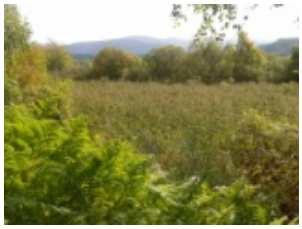
TN	Description	Photograph
132	Shallow pond (<10cm deep) with scattered cottongrasses and bog bean, surrounded by mire dominated by purple moor-grass and bog myrtle, with abundant cross-leaved heath, bottle sedge, bog asphodel, carnation sedge and cottongrass, locally abundant marsh violet and devil's bit scabious and frequent star sedge. Further north towards the road sharp-flowered rush is largely dominant with abundant meadowsweet, wild angelica and marsh violet.	 
133	Quite species poor marshy grassland dominated by sharp-flowered rush, with occasional sneezewort, marsh willowherb and marsh ragwort (*Senecio aquaticus*). A line of mature larch lie to the north at the foot of the verge. Marshy grassland / swamp more diverse around a standing water body to the south with locally dominant soft rush and sharp-flowered rush and abundant marsh cinquefoil, particularly around the peripheries, and sweet grass, bottle sedge and cotton grass in the swamp around the standing water. Access was difficult due to recent heavy rains.	
134	Immature birch woodland developing over acid and marshy grassland centred around a small stream about 0.5m in width, with scattered, immature Scot's pine to the north.	
135	Mature mixed plantation woodland alongside a track on a sandy embankment, including Scot's pine, larch, lime and horse chestnut. Some old trees present with cracked limbs offering bat roost potential. Raised roots also may provide den opportunities for Pine Marten, but these areas are seemingly dominated exclusively by rabbit warrens. On the opposite side of the A9 around the MacPherson memorial is a mature larch plantation woodland which also offers bat roost potential.	
136	Large stream culvert (Raitt's burn) with a dry underpass. The stream forms part of the River Spey SAC. Mature semi-natural broadleaved woodland occurs along the banks upstream, supporting alder, sycamore, ash and elm over elder and a ground layer of dog's mercury. A small area of mature plantation woodland lies adjacent, screening the Mains of Balavil farm buildings from the A9. The intervening rank grassland verge includes marshy areas adjacent to the stream with abundant melancholy thistle and marsh valerian. Opportunities for Otter, Pine Marten, Red Squirrel and bat roost potential, though no signs recorded. The stream had flooded into the adjoining field recently downstream of the culvert depositing large amounts of shingle. This was being moved to the banks with an excavator at the time of the survey.	 

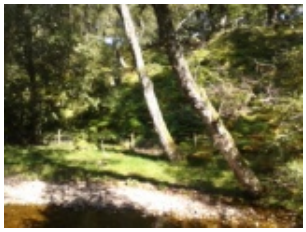
TN	Description	Photograph
137	Old lime, beech, sycamore, horse chestnut and elm line the sides of the B9152 road and adjacent side tracks, including up to the Mains of Balavil, offering excellent bat roost opportunities. The Mains of Balavil farm also offers bat roost potential. Dry stone walls line the Mains of Balavil track and these support a rich lichen and bryophyte cover. Snowberry is present by this wall. A Red Squirrel road kill was found nearby on the B9152.	  
138	Mixed woodland with abundant rhododendron beneath birch, sycamore, larch and beech. The woodland is quite semi-natural in appearance to the south, but grades into plantation to the north with increasing dominance of larch. Rhododendron is also present in the dense mixed plantation woodland south of the A9 and especially along the farm track immediately adjacent to the verge. Broad-leaved trees mainly occur around the edges of this plantation woodland (birch and beech), with dense Western hemlock (*Tsuga heterophylla*) within.	
139	Band of broad-leaved woodland on the verge, quite semi-natural in character, with mature birch, ash, sycamore, rowan and aspen. Ground layer includes bracken, raspberry, male fern and hard fern. A dry ditch with abundant meadowsweet and frequent common valerian, backed by a defunct stone wall, runs along the foot of the A9 embankment adjacent to the B9152 road. The stone wall is partially obscured by vegetated but supports a profusion of bryophytes. A dead Red Squirrel was found on the B road nearby.	
140	Marshy grassland dominated by meadowsweet and marsh horsetail, with frequent wild angelica, common valerian and scattered willow, together with some denser areas of wet woodland particularly along the edge of the B9152 road, comprising alder, birch and willow.	

TN	Description	Photograph
141	Large pile of rocks with many gaps suitable for ground nesting birds in an improved field. Good lichen and bryophyte cover. Marshy grassland occurs to the east largely dominated by soft rush and tufted hair-grass, but with abundant to locally dominant bottle sedge and sweet-grass in more water-logged areas, together with forget-me-not and lesser spearwort.	
142	Dry stone wall with rich lichen cover running parallel to a small stream, both lined by mature birch and occasional hazel. Another pile of stones with good lichen and bryophyte cover is situated nearby. The stream is lined by meadowsweet, male fern and nettle.	
143	Semi-natural birch woodland with locally frequent aspen and occasional to locally frequent hazel coppice. The habitat extends onto the road verge. Ground layer with abundant to dominant fescues and abundant bryophytes, together with frequent wood-sage, bugle, hedge woundwort, bracken, violet, bitter vetch and goldenrod. A large veteran sessile oak lies within 8m of the verge to the west of the stream. Very large oaks and birch over locally frequent hazel and abundant birch and aspen saplings predominate further west. Open areas support acid grassland with abundant devil's bit scabious.	 
144	Very large oak with rot holes situated within the verge. The tree is typical of many within the adjoining semi-natural woodland. A second large oak lies a few metres to the east of the first just on the other side of the fence.	
145	Pile of stones with rich lichen cover on the edge of the woodland boundary. The stone is probably piled up material from an old stone wall.	

TN	Description	Photograph
146	Large old aspen with cracked limbs in semi-improved acid grassland close to the A9 verge on the edge of the Highland Wildlife park / zoo. The acid grassland includes abundant devil's bit scabious, yarrow, tormentil, heath bedstraw, lesser stitchwort, sweet vernal grass, harebell and bitter vetch and occasional eyebright. Common Lizard recorded. Most animal pens are set over a hundred metres back from the A9, but a Heritage Lottery funded breeding pen for Pallas cat lies to the east of the aspen, also immediately adjacent to the verge. The wider park supports Scot's pine plantation with Red Squirrel, semi-natural birch woodland with frequent to locally dominant bracken, and marshy grassland dominated by soft rush and tufted hair-grass.	  
147	Mature oak with rot hole on a south-facing slope between the A9 verge and the Highland Wildlife Park access road. The surrounding habitat is dense/continuous bracken with scattered trees/saplings, principally of birch with some hazel and rowan. The adjacent verge supports mixed plantation woodland (60% birch, 20% larch and 20% Scot's pine).	
148	Mature birch with rot hole approximately 1m from the soft estate. A large oak with cracks in its limbs lies nearby within bracken on the other side of the soft estate fence. Mature oak woodland over bracken lies to the east containing several more trees with bat roost potential.	
149	An area of willow scrub (mainly grey willow) on the edge of an extensive marsh. Only possible to access the edge of the marsh where Yorkshire fog, soft rush and sharp-flowered rush are co-dominant, together with locally dominant stands of reed canary-grass. Meadowsweet and water mint are abundant, with frequent wild angelica, marsh horsetail, marsh cinquefoil, common valerian, marsh valerian, forget-me-not (*Myosotis* sp.), marsh horsetail (*Equisetum palustre*), creeping buttercup, bog pimpernel and skullcap (*Scutellaria galericulata*).	

TN	Description	Photograph
150	Large oak tree with rot holes approximately 1m from the soft estate. The surrounding woodland is similar to areas to the west (TN143 to 145), largely dominated by birch with some hazel and aspen and frequent large mature oaks. The ground layer consists of scattered bracken and locally abundant broom, abundant wood sorrel, bell heather, heather and wood sage, frequent violet, wood anenome and devil's bit scabious, and occasional harebell and primrose. Possible lichen, fungi and bryophyte interest. The verge woodland at least partially originates from plantation, but is developing a semi-natural character with a similar species composition.	
151	Large aspen with a rot hole in its trunk lying within the soft estate boundary. Also with cracked limbs.	
152	Area of open water on the edge of a large swamp dominated by bottle sedge. The water body has scattered pondweed, water horsetail and floating sweet-grass, the banks are lined with meadowsweet, wild angelica and sharp-flowered rush. Close inspection was not possible due to the wet conditions. Small areas of open water on the opposite side support bogbean with bottle sedge swamp. The fringing wet woodland consists of willow, alder, aspen and downy birch.	
153	Mature birch woodland with occasional to, in the east, locally dominant mature oak and locally abundant aspen (also in the east), over abundant juniper and rarely hazel, with a ground layer of scattered bracken, abundant tormentil, bell heather and bryophytes. Subject to some grazing by sheep. Adjacent verge consists of mixed plantation woodland (20% Scot's pine, 80% birch) over dry heath.	
154	Mature oak/birch woodland over scattered bracken and bryophytes. Some oaks with gaps amongst the roots, potentially suitable for Pine Marten. On the opposite side of the B-road is a band of wet woodland and swamp dominated by bulrush (*Typha latifolia*) and yellow flag (*Iris pseudacorus*) between the road and the railway. The wet woodland consists of willow and alder over meadowsweet and common valerian, with the nationally scarce species cowbane also present.	
155	Large oak with cracked limbs on the edge of a verge dominated by lupin, nettle and rosebay willowherb.	

TN	Description	Photograph
156	Rock exposure, possibly an old quarry, supporting an abundance of bryophytes together with locally abundant sheep's sorrel and dog's mercury, and occasional polypody (*Polypodium* sp.) and hawkweed, under a tree cover of rowan and birch. Surrounding woodland is dominated by mature oak (over 100 years old), some with cracked limbs and rot holes, with occasional birch and hazel. The woodland is open with no regeneration due to grazing by sheep. The composition of the woodland in the field to the east is similar, but the oaks are younger.	
157	Mature black poplar with cracked limbs. Two other, younger specimens line the track to the north on the edge of the 150m survey boundary.	
158	Small area of montbretia by a farm access track. Six bushes of rhododendron are also present along the track to the south on the edge of semi-natural oak / birch woodland. The ground layer includes abundant bracken. The remnants of a dead buzzard were found close by along the A9, possibly hit by a car.	 
159	Mature, semi-natural oak/birch woodland on the edge of mature Scot's pine/larch plantation. The ground layer is dominated by grasses, with frequent bugle, violet, wood sorrel and wood sage and locally dominant great wood-rush. Some oaks have cracks and rot holes. The adjacent soft estate consists of young birch plantation woodland with some (approximately 20%) Scot's pine.	
160	Mature oak with cracked limbs just inside the soft estate boundary, on the edge of mature oak/birch woodland, with a ground layer of frequent scattered bracken, hedge woundwort, wood sorrel, violet and wood sage. Wet woodland lies on the opposite side of the B road, between it and the railway, dominated by downy birch, with frequent hazel and willow and occasional alder and aspen, over a ground layer of dog's mercury, meadowsweet, common valerian, reed canary-grass and sedges. To the west is an area of reed-canary grass dominated swamp.	 

TN	Description	Photograph
161	Mature oak with a large cracked limb within oak/birch/hazel woodland with occasional Norway spruce. The ground layer consists of frequent to locally dominant bracken and bilberry and frequent bitter vetch, greater stitchwort and violet. The woodland is quite open but exhibits some regeneration, particularly of hazel. No evidence of recent grazing by livestock.	
162	Dunachton Burn (part of the River Spey SAC) is a roughly 4m wide stream feeding into Loch Insh. It is shallow but likely to be of some value to Otter. It is fringed by wet woodland with abundant alder, frequent birch, locally frequent bird cherry and occasional ash. Extensive semi-natural woodland lies to the east of the B-road and the north of the burn. Between the burn and an access track oak is dominant with frequent birch over abundant to dominant bracken. There is an absence of tree regeneration in this area. Extensive birch dominated woodland lies to the north of the access track, with occasional oak and aspen over frequent to locally dominant bracken.	
163	Large Norway spruce with cracked limbs and trunk. Adjacent to this, rhododendron lines the east side of the track for about 20m. The adjacent area of mature oak woodland with occasional mature birch and rowan is largely devoid of an understorey or any regeneration due to heavy grazing by horses.	
164	Area of wet woodland, flush, mire and marshy grassland, together with small areas of open water. Soft rush, Yorkshire fog and marsh willowherb occurs on the peripheries, with wet woodland to the south dominated by downy birch with occasional grey willow. The extensive areas of flush lie to the west with abundant bog moss and carnation sedge, locally abundant bog asphodel, frequent purple moor-grass and tormentil, occasional to locally frequent lousewort and occasional heather and devil's bit scabious. A localised area of mire with a peat depth in excess of 0.5m is characterised by dominant bog mosses, abundant carnation sedge, yellow sedge and common sedge, frequent round-leaved sundew and occasional bog myrtle, cross-leaved heath and lousewort. The area is grazed by sheep. A small area of wet heath is present in an unmanaged field on the opposite side of the A9 with abundant heather, cross-leaved heath, bog myrtle and heath bedstraw and frequent birch saplings. This is surrounded by tufted hair-grass/soft rush dominated marshy grassland, with locally dominant purple moor-grass.	

Appendix D Summary of Potential Survey Requirements

Species/ Habitat	Survey type	Time of year	Project
Annex I habitats within SSSI/SACs	NVC survey and condition assessments (where existing data is deficient) within and adjacent to the proposed footprint.	June to August	7,8,9
Ancient broad-leaved woodland	National Vegetation Classification (NVC) survey within and adjacent to the proposed footprint.	May to July	9
Species-rich unimproved and semi-improved grassland	NVC survey within and adjacent to the proposed footprint.	June to August	7,8,9
Ground-water dependent terrestrial ecosystems	NVC survey of areas identified as potential GWDTEs (wet heath, marshy grassland and mire habitats) where there is a risk of direct or indirect impact, together with hydro-geological assessments.	June to August	7,8,9
Breeding bird survey	All birds breeding in the Study Area.	March to September	7,8,9
Wintering bird survey	Focusing on wetland birds, particularly whooper swan and hen harrier.	October to March	9
Bats	Bat roost potential of trees and structures.	Any time of year	7,8,9
	Activity surveys – establish foraging and commuting routes.	April to September	7,8,9
Otter	Habitat survey for Otter resting places and signs of Otter to locate resting places and commuting routes.	Any time of year	7,8,9
Scottish Wildcat	Scottish Wildcat survey for suitable den habitat and signs of Scottish Wildcat (paw prints, scat survey etc.).	Optimal season in winter. Surveys possible any time of year.	7,8,9
Water Vole	Habitat survey for water Vole burrows and signs of water Vole to locate territories.	April to September	7,8
Red Squirrel	Transect surveys to identify dreys, squirrel signs and adult squirrels.	Optimal season is in spring. Surveys possible any time of year.	7,8,9
Pine Marten	Scat search and potential den habitat survey.	May to September	7,8,9
Badger	Survey for Badger setts and signs of Badger to locate setts and foraging and commuting routes.	Any time of year	7,8,9
Hare	Assessment of road crossing activity/ provisions.	Spring	7,8
Fish (salmon and lamprey species)	Habitat suitability.	Any time of year	7,8,9
Freshwater Pearl Mussel	Habitat suitability.	Any time of year	8,9

Species/ Habitat	Survey type	Time of year	Project
Terrestrial invertebrates (moths and butterflies, beetles, bees and wasps)	Habitat suitability assessments and targeted surveys for Lepidoptera (butterflies and moths), Coleoptera (beetles) and Hymenoptera (bees and wasps).	Several visits between April and September	7,8,9
Vascular plants	Hawkweed surveys along rock exposures etc.	July to September	7,8,9
	Rare plant surveys of shingle banks where direct or indirect impacts may arise.	July to August	7,8,9
Grassland fungi	Survey of potentially high value grasslands.	Minimum of 3 visits from September to November and/or DNA barcoding of soil samples (any time)	7,8,9
Woodland fungi	Survey of ancient broad-leaved and wet woodland.	Minimum of 3 visits (one in May, two between September and November).	9
Lichens	Survey of ancient woodland, veterans trees and stone walls.	Any time	8,9
Non-Native Invasive Species (NNIS)	Species-specific surveys targeted around known locations.	June to September	9