A9 DUALLING
PERTH TO INVERNESS

Appendix A12.4

Protected Species

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

ATKINS mouchel

Table of contents

Chapter

Tables

1. Introduction

1.1.1 This appendix provides the details of protected species surveys undertaken as part of the DMRB Stage 3 Assessment. This report provides details of specific surveys for great crested newt *Triturus cristatus*, otter *Lutra lutra*, water vole *Arvicola amphibius*, red squirrel *Sciurus vulagris* and pine marten *Martes martes*. Information is also provided on reptiles, wildcat *Felis silvestris grampia* and other amphibians (i.e. smooth newt *Lissotriton vulgaris*, palmate newt *Lissotriton helveticus*, toads and frogs) to discuss the suitability of habitat within the Proposed Scheme and incidental records where these have been made during other surveys.

1.1.2 Detailed badger *Meles meles* surveys were undertaken at DMRB Stage 2 and no badger evidence was found. During the course of the DMRB Stage 3 Assessment, a search for evidence of badger was included within surveys for other protected or notable species and habitats covering the Proposed Scheme and a minimum 50m buffer. No badger evidence was found and, as such, no further details are provided within this report.

1.1.3 Separate appendices have been produced in relation to bats and birds, see Appendices A12.5 and A12.6 respectively. Protected aquatic species (i.e. fresh water pearl mussel *Margaritifera margaritifera*) are considered in Appendix A12.3. Fungi and notable invertebrates are considered in Appendices A12.7 and A12.8 respectively. Deer are considered within Chapter 12 Ecology and Nature Conservation.

1.1.4 This appendix also provides a nature conservation evaluation for those species that have been recorded in the Study Area. The general approach to defining the importance of ecological features follows that of CIEEM (2016). The approach is also in line with advice given in DMRB Interim Advice Note[i].

1.1.5 Ecosystems, habitats and species are assigned levels of importance for nature conservation based on the criteria set out in Table A1.1. The rarity, ability to resist or recover from environmental change, and uniqueness of an ecological feature, function/role within an ecosystem, and level of legal protection or designation afforded to a given ecological feature are all factors taken into account in determining its importance.

Table A1.1: Importance Criteria

Importance	Criteria
International	**Ecosystems and Habitats** Ecosystems or habitats essential for the maintenance of: · internationally designated areas or undesignated areas that meet the criteria for designation; and/or · viable populations of species of international conservation concern. **Species** Species whose presence contributes to: · the maintenance of qualifying habitats, communities and assemblages that occur within internationally designated sites or within undesignated areas that meet the criteria for such designation.

Importance	Criteria
National	**Ecosystems and Habitats** Ecosystems or habitats essential for the maintenance of: · qualifying communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; and/or · viable populations of species of national conservation concern. **Species** Species whose presence contributes to: · the maintenance of qualifying habitats, communities and assemblages that occur within nationally designated sites or within undesignated areas that meet the criteria for such designation; or · the maintenance and restoration of biodiversity and ecosystems at a national level, as defined in the Scottish Biodiversity Strategy (SBS) (Scottish Government, 2013, 2015).
Regional	**Ecosystems and Habitats** Ecosystems or habitats essential for the maintenance of: · communities and assemblages that occur within regionally important sites or localities listed as being of conservation importance in the Highland Biodiversity Action Plan (BAP) or Cairngorms Nature Action Plan (CNAP) (including Local Nature Reserves) or within undesignated areas that meet the criteria for such designation; and/or · viable populations of species of regional conservation concern. **Species** Species whose presence contributes to: · the maintenance and restoration of biodiversity and ecosystems at a regional level, as defined in the Highland BAP or CNAP.
Authority Area	**Ecosystems and Habitats** Ecosystems or habitats essential for the maintenance of: · populations of species of conservation concern within the authority area. **Species** Species whose presence contributes to: · the maintenance and restoration of biodiversity and ecosystems within a relevant area such as Inverness and Nairn Local BAP.
Local	**Ecosystems and Habitats** Ecosystems or habitats essential for the maintenance of: · populations of species of conservation concern within the local area (for example a Local Nature Reserve (LNR)). **Species** Species whose presence contributes to: · the maintenance and restoration of biodiversity and ecosystems at a local level.
Less than Local	**Ecosystems and Habitats** Ecosystems or habitats that do not meet the above criteria, i.e., supporting at least populations of species of conservation concern within the local area. **Species** · Features that are considered to be absent or do not meet any of the above criteria.

2. Great Crested Newt

2.1.1 This section details the findings of great crested newt surveys undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

2.2 Methodology

Desk Study

Biological Records

2.2.1 The following organisations were contacted for great crested newt records within 1km of the existing A9:

- Highland Biological Recording Group (HBRG); and
- North East Scotland Biological Records Centre (NESBreC).

Identification of Pond Locations

2.2.2 Assessment of the effects of the Proposed Scheme on great crested newts has been undertaken in full accordance with standard methods (as detailed below) and concentrates on the investigation of breeding behaviour in ponds that occur in proximity to the Proposed Scheme.

2.2.3 Ponds were searched for within 250m of the Proposed Scheme (as shown on Figure 12.13). This is termed the Study Area.

2.2.4 The locations of ponds were identified through review of Ordnance Survey (OS) maps and aerial photography. Additional ponds discovered during site visits have also been taken into account, and any ponds found not to be present during surveys have been removed.

2.2.5 Flowing watercourses (including rivers, burns and drainage ditches with obvious water movement) are considered unsuitable sites for breeding great crested newts and were excluded from the list of possible breeding sites.

Field Survey

Habitat Suitability Assessment

2.2.6 A total of eleven ponds were identified within the Study Area. Ponds were visited in June 2015 and April 2016 by two suitably experienced ecologists[1] to assess their suitability to support great crested newts. This assessment followed the Habitat Suitability Index (HSI) methodology produced by Oldham *et al.* (2000)[ii] as amended by subsequent guidance by Amphibian and Reptile Groups UK[iii]. Each pond subject to HSI has been assigned a numerical score between 0 and 1, indicating the following suitability classes:

- Poor < 0.5;
- Below average 0.5 – 0.59;
- Average 0.6 – 0.69;

[1] Lucy Elliott (GCN licence 2015-7268-CLS-CLS), Rebecca Hill (GCN licence 2015-7704-CLS-CLS) of Mouchel Consulting

- Good 0.7 – 0.79; and
- Excellent > 0.8.

Environmental DNA (eDNA) Sampling

2.2.7 Ponds within the Study Area were subject to eDNA survey to determine the presence or absence of great crested newts. Studies[iv] show that great crested newts are most likely to make use of terrestrial habitat within 500m of the ponds where newts are present. However, given the likely impact of the Proposed Scheme, it is considered appropriate to include ponds within 250m of the Proposed Scheme.

2.2.8 Environmental DNA sampling is a relatively new survey technique that uses DNA analysis of water samples collected from a pond to determine whether great crested newts are present / absent within the sampled pond.

2.2.9 Water samples were taken from ponds where HSI field assessment had been undertaken and where access was possible. Ponds found to be dry during the eDNA site visits were excluded from the eDNA sampling. eDNA sampling was undertaken by suitably trained and experienced ecologists[2] in June 2015. The eDNA sampling protocol used follows that in Biggs *et al* (2014)[v].

2.2.10 Further eDNA surveys were undertaken in April 2016 on all ponds within 250m of the Proposed Scheme which were not subject to eDNA survey in 2015 (where access permitted).

Limitations

2.2.11 Ecological surveys are limited by factors which affect the presence of animals such as the time of year and behaviour. The absence of evidence of great crested newts should not be taken as conclusive proof that this species is not present or that it will not be present in the future.

Habitat Suitability Assessment

2.2.12 The HSI, while a useful tool for indicating likely breeding suitability of a pond, is not completely reliable as great crested newts may breed in ponds that HSI scores suggest may be unsuitable. Assessments made using the HSI can vary for subjective reasons where, for example, the judgement of the surveyor is important in assigning value to one of its dependent factors. Nevertheless, the HSI surveys undertaken provide valuable information about the ponds in order to inform further survey.

eDNA Sampling

2.2.13 Pond 18 was not subject to eDNA survey as they were outside of the Study Area at the time of the eDNA surveys in 2015 and 2016; this location falls within the Study Area of the final Scheme design. The absence of this data is a limitation to the assessment and as such following the precautionary approach this pond is considered within the impact assessment and great crested newts are assumed present.

2.2.14 Natural variability in the timing of great crested newt breeding at individual ponds, along with geographic variation in weather conditions, could mean that the presence of eDNA within ponds will vary throughout the great crested newt breeding season. A negative result from eDNA testing is not necessarily confirmation that great crested newts do not

[2] Rebecca Hill and David Lovett (GCN licence 2015-11740-CLS-CLS) of Mouchel Consulting.

breed in a given pond. For this reason, ponds directly affected by the Proposed Scheme may require further assessment.

2.3 Results

Desk Study

2.3.1 No great crested newt records were received from the record centres contacted.

Field Survey

Habitat Suitability Assessment

2.3.2 Eleven ponds within 250m of the Proposed Scheme were subject to HSI assessment. The HSI score for each pond is provided in Table A2.1.

eDNA Sampling

2.3.3 Ten ponds were subject to eDNA survey. The findings of the eDNA analysis are shown in Table A2.1.

Table A2.1: Great Crested Newt Survey Results

Pond ID	X Ref.	Y Ref.	Distance from Proposed Scheme (m)	HSI score	eDNA result
4	276837	834094	0	0.48 - Poor	Negative
5	276974	834013	0	0.48 - Poor	Negative
7	278707	832846	206	0.45 - Poor	Negative
8	279169	831115	238	0.53 - Below average	Negative
9	279168	831099	232	0.54 - Below average	Negative
10	279163	831086	229	0.46 - Poor	Negative
11	279194	831118	209	0.53 - Below average	Negative
12	279515	830912	0	0.51 - Below average	Negative
13	279547	830807	64	0.39 - Poor	Negative
14	279490	830801	2	0.54 - Below average	Negative
18	275866	835522	219	0.38 - Poor	Not surveyed

2.3.4 Of the eleven ponds subject to HSI, six of these are considered to have poor suitability to support great crested newts, whilst the remaining five have below average suitability.

2.3.5 Negative results were received for all ten ponds subject to eDNA survey.

2.4 Conclusion

2.4.1 Great crested newt are assessed as likely absent from ten of the twelve ponds within the Study Area. Ponds 18 and 24 are the exception, where uncertainty remains due to the

absence of eDNA data for these waterbodies. The HSI data for pond 18 indicates that it is of 'poor' suitability for this species, and there is therefore a low likelihood that great crested newts breed within this pond.

3. Otter

3.1.1 This section details the findings of otter surveys, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

3.2 Methodology

Desk Study

Biological Records

3.2.1 The following organisations were contacted for otter records within 1km of the existing A9:

- Highland Biological Recording Group (HBRG)
- North East Scotland Biological Records Centre (NESBreC)
- Scottish Wildlife Trust (SWT)
- Scotland Transerv.

3.2.2 In addition, the 2014 Phase 1 habitat survey (CH2M, June 2015)[vi] results were reviewed to identify suitable aquatic habitats.

Watercourses / Waterbodies

3.2.3 Watercourses and waterbodies were searched for within 100m of the Proposed Scheme (as shown on Figure 12.16a-k). This is termed the Study Area.

3.2.4 The locations of watercourses and waterbodies were identified through review of Ordnance Survey (OS) maps and aerial photography. Additional watercourses or waterbodies discovered during site visits have also been taken into account. Any watercourses or waterbodies found not to be present during surveys have been removed.

Field Survey

3.2.5 To inform the DMRB Stage 2 Assessment, otter surveys where undertaken in September 2015 by two suitably experienced ecologists on all watercourses and waterbodies which occur within 100m of the Proposed Scheme, where access allowed, extending to 250m along watercourses where significant levels of otter evidence were recorded.

3.2.6 Further detailed otter surveys were undertaken by suitably experienced ecologists between May and July 2016 to inform the DMRB Stage 3 Assessment. Surveys were carried out on watercourses and waterbodies identified in the DMRB Stage 2 Assessment as providing suitable habitat for otter, in addition to those which were not subject to survey in 2015.

3.2.7 As a result of changes to the Proposed Scheme design, an additional survey was undertaken along the Funtack Burn at Dalmagarry in February 2017.

3.2.8 These surveys followed good practice methodologies and were based on guidance set out in DMRB Volume 10[vii] and by SNH in Otters and Development[viii]. The surveys covered watercourses at least 250m upstream and downstream of the Proposed

Scheme. Ecologists searched for evidence of otter and recorded the location and detail of all signs and resting sites.

3.2.9 With regard to otter resting sites, the following terms are used: holt, hover, couch, nursery area and natal holt.

3.2.10 The assessment of resting site status is determined by the quality of the feature and the ability to provide key requirements for otters (see Table A3.1). This can include cover and seclusion for an individual to sleep or rest, the provision of nursery or breeding habitat (including potential for a natal holt) and the supply of critical factors such as feeding resources (ponds, lochs and water features), freshwater for cleaning and drinking, and the provision of suitable seclusion away from disturbance. This assessment is subjective and corroborated by the abundance of field evidence located in, or around, the feature. Diagnostic evidence such as spraints (including number and age class), urination "green" spots, spraint mounds, sign heaps, grooming hollows, paw prints, paths and slides (and their degree of use) is interpreted to determine the status of the feature.

Table A3.1: Otter Resting Site Status Assessment Criteria[ix]

Resting site status	Definition
Low	A structure or feature with limited evidence of otter activity, indicated by low number of spraints present and all age classes may not be present (i.e. one fresh spraint, or a couple of old spraints). The structure will not be suitable as a breeding/natal site and is unlikely to afford sufficient seclusion to be an important resting site. It is unlikely to have important links to the key otter requirements (food and freshwater). This type of site is more likely to provide a temporary "stop off" for otters when moving throughout their territory. Loss/disturbance of such a feature is unlikely to be significant in terms of the individual or population.
Moderate	A structure or habitat feature containing sprainting with a range of age classes, but not in significant quantities. Paths may be present leading to the feature but are not likely to be overly pronounced. The cover afforded by the structure may be limited or the site may only be suitable at certain times of year. Alternatively, it may not be available at periods of high tide/ flow. The structure is unlikely to be suitable as a breeding/ natal site but will afford suitable seclusion as a resting site and may be linked to other important features within the territory, (Feeding/grooming breeding areas). The impact arising from loss or disturbance of such a feature will be determined by the availability of more suitable or well used sites within the otters territory. The absence of other suitable resting sites within a survey reach may elevate the status of the resting site.
High	The structure or habitat feature has a high level of otter activity, indicated by an abundance of sprainting of all age classes and may include large spraint mounds or well used grooming hollows. On occasion the spraints are all old but of such abundance to indicate a high status feature but that it hasn't been used recently. The site may have a strong otter odour. Paths or slides leading to or from the feature will often be well worn and pronounced. High status resting sites often provide a high degree of cover and are usually coupled with key features such as fresh water and abundance of prey. The area may be suitable as a breeding area, for example with quality nursery habitat supplying pools for swimming and hunting practice and may afford safe features for provision of a natal holt. A natal holt may not have pronounced sprainting, but is likely to be located in a highly secluded area with suitable habitat features. The site is usually available at all times of year and at high and low tide/ flow. However, in certain situations elaborate couch features may only be used during the summer months, but occupied year after year which also indicates high status.

3.2.11 The following evidence of otter activity was looked for during these surveys:

- holts: a cavity or hole in a river bank, in the ground, under tree roots, within rocks or caves where the back cannot be readily seen, if active this will usually contain field evidence such as spraints
- hovers: a bolt hole or ledge that will afford an otter temporary cover or a place to feed on captured prey, the back of the hover can usually be seen, if active there may be footprints, feeding evidence or spraints
- couches: above ground where an otter can lie up or groom; these may take the form of a simple swirl or depression in tall grasses where the otter has laid, or may be covered in a vegetated grass or reed 'roof'
- spraints (droppings)
- feeding remains
- paths and slides (defined otter paths on watercourse banks and mud slides evident of where the animal regularly enters the watercourse)
- footprints
- grooming hollows

Limitations

3.2.12 Ecological surveys are limited by factors which affect the presence of animals such as the time of year and behaviour. The absence of evidence of otter should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

3.2.13 During surveys in 2015 land access was limited in a few places, however this is not thought to be a significant limitation as at least a small stretch of each watercourse was assessed to give an indication of habitat suitability. These areas were subject to further survey as part of the detailed otter surveys undertaken in 2016 for the DMRB Stage 3 Assessment.

3.2.14 During surveys in 2016 a small number of areas could not be surveyed due to access restrictions including the density of vegetation, presence of windblown trees and/or presence of nesting birds, details of which are provided in Table A3.2.

3.2.15 The field surveys were undertaken at an appropriate time of year and during suitable weather conditions. As such, the results of these surveys are considered to be sufficient to inform the DMRB Stage 3 Assessment.

Table A3.2: Limitations Encountered During the Otter Survey, 2016

X Ref.	Y Ref.	Limitation
279913 to 280029	830117 830145	River Findhorn. East bankside (approximately 60m long) covered with large boulders, viewed from opposite bank due to speed of current - unsafe to cross. Distance not surveyed 120m. Bank side not surveyed is the furthest side from the A9.
279475 to 279589	830347 830390	Unnamed burn through dense plantation with fallen trees - could not be surveyed fully. Distance of limited survey: 125m.
278719 to 278323	832197 832128	Allt a Chuil. Nesting lapwing present – section walked quickly to avoid disturbance to birds. Two shooters also in the area. Total distance of limited survey: 425m.

X Ref.	Y Ref.	Limitation
278605 to 278795	832700 832826	Unnamed tributary of Funtack Burn. Not surveyed due to nesting lapwing. Total distance not surveyed: 225m.
278560 to 278570	832160 832010	Not surveyed due to land access restrictions. Area from unnamed tributary of Funtack Burn to Allt a Chuil. Total distance not surveyed: 1km.
278263 to 278390	832913 833115	Unnamed tributary of Funtack Burn. Birds nesting in area: snipe, oystercatcher, curlew. Walked area quickly to avoid disturbance to birds. Total distance of limited survey: 235m.

3.3 Results

Desk Study

3.3.1 Two records of otter were received from Scotland Transerv and HBRG, details of which are provided in Table A3.3.

Table A3.3: Otter Desk Study Records

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Source	Details
279300	830600	North of layby 160A	14/04/2010	37.42	Scotland Transerv	Dead juvenile otter on A9, above culvert.
279000	831000	Dalmagarry	01/10/2004	365.80	HBRG	1 count.

3.3.2 As a minimum, desk study records of Otter within 250m have been displayed on Figure 12.18a-k and therefore some data points listed in Table A3.3 are not shown on the figure.

Field Survey

3.3.3 A summary of the watercourses and waterbodies surveyed is provided in Table A3.4. Results of the field survey in 2015 and 2016 are provided in Table A3.5 and Table A3.6, respectively, and shown on Figure 12.16a-k.

Table A3.4: Summary of Watercourses and Ponds

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
WC 1	Tributary of River Findhorn 001 (Northbound side of A9)	280000	829650	279883	829421	South of A9, north of minor road. Drain approximately 0.5m wide (maximum) with gently sloping banks. Approximately 10cm deep (maximum). Surrounding habitat is broad-leaved woodland. Some small areas of dense common nettle and fallen trees provide cover for otters but no potential otter holts or resting sites recorded. South of the minor road the surrounding habitat becomes arable fields.
WC 2	Tributary of River Findhorn 001 (Southbound side of A9)	279879	830066	280359	829794	Area of marshy grassland and wet woodland north of the A9 with a network of ditches and surface water flowing into ditches via small channels. Ditches variable but generally narrow (approximately 10cm wide) at ground level, opening up to a wider channel beneath overhanging vegetation.
WC 3	River Findhorn	280254	830077	279720	830238	River is 20-25m wide, 0-5m deep, moderate flow. 1m high banks with wood rush, soft rush and tufted hair grass. Occasional overhanging banks. Large boulders present on the northeast bank - viewed from opposite bank as river not safe to cross.
WC 4	Allt na Frithe	279741	830101	279324	829744	Fast flowing burn. 2-4m wide and 30cm deep. Varied bank structure (shallow to steep grassy banks) between 1-2m in height. Stone and boulder channel with occasional silty areas. The watercourse flows through an enlarged pipe culvert under A9.
WC 5	Drain 001 - adjacent to A9 northbound carriageway	279502	830194	279496	830202	Small 3m long, 0.3m wide ditch at the A9 junction at Tomatin. Mostly dry. Not connected to other water courses and polluted with litter.
WC 6	Drain 001)	279474	830294	279684	830246	Drain, shallow and dry in places. 0.6m wide, very slow flow, choked with rush, shaded in parts by adjacent woodland.
WC 7	Tributary of River Findhorn 002	279690	830404	279287	830065	Southbound side of the A9 - burn through dense plantation with fallen trees. Small channel, approximately 20cm wide and 10cm deep with a fast flow and shallow banks. Northbound side of the A9 – watercourse becomes a shallow stagnant drain. Culvert under the A9 is grated.

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
WC 8	Allt Dubhag	279657	830690	279130	830342	Fast flowing stream, 1-2m wide with rocky substrate and occasional boulders. Bank structure varied from shallow to steep.
WC 9	Tributary of River Findhorn 003	279458	830708	279378	830657	Drain approximately 30cm wide and 1-10cm deep (maximum) with a slow flow. Gently sloping banks.
WC 10	Funtack Burn Tributary 001	279404	830790	279494	830899	Drain flowing from the east side of the A9 with concrete tile floor and sides. Approximately 30cm wide and 5-40cm deep. Sloping grassy bankside at southern section. Passes within conifer plantation woodland at central/northern section.
WC 11	Funtack Burn Tributary 001a	279493	830828	279496	830897	Drain heavily overgrown with vegetation including soft rush and tall grasses.
WC 12	Funtack Burn Tributary 001	279496	830928	279834	831443	Watercourse passes through grazed fields and is heavily poached and disturbed by cattle. In other areas it is heavily chocked with vegetation and has a very slow flow.
WC 13	Drain 002	279458	831190	279466	831439	Roadside drainage ditch choked with soft rush. Shallow earth banks with A9 to the east and cycle path and railway to the west. Not connected to other watercourses.
WC 14	Dalmagarry Burn Tributary 001	279442	831395	279228	831095	Watercourse passes through open mixed woodland with some fallen trees. Extends out into a series of ditches through heavily grazed wet grassland.
WC 15	Dalmagarry Burn Tributary 001a	279514	831668	279673	831907	Minor tributary to Dalmagarry Burn.
WC 16	Dalmagarry Burn	279583	831965	278325	832138	Watercourse passes through open woodland with silver birch, no understorey, rush and moss ground cover. No dense impenetrable cover but several fallen trees and exposed roots are present. Where the watercourse passes into farmland, banks are poached by sheep grazing. Mammal passage through existing A9 culvert is possible. Width varied from 1.5m to 5m through survey extent with depths between 0.2 and 0.5m deep. Fish seen in watercourse.
WC 17	Funtack Burn	279592	831998	278973	832419	Watercourse approximately 3-4m wide and >1m depth. Fish seen jumping in watercourse. Soft rush bordering watercourse. Banks poached by livestock.

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
WC 18	Funtack Burn Tributary 003	278435	832594	278681	832769	Drainage ditch running through field, 30cm - 1m wide. Not flowing at time of survey and almost completely vegetated except for occasional pools of water (10-40cm deep). Banks are vegetated with soft rush, grasses and herbs. Heavily used by rabbits.
WC 19	Funtack Burn Tributary 004	278204	832917	278148	832874	Watercourse runs through open birch and ash woodland. Very slow flow and very little open water. Channel vegetated with soft rush, more like a flush.
WC 20	Funtack Burn Tributary 004	278236	832924	278394	833118	Drainage ditch under the A9. Ditch runs through birch and ash woodland, large 1.5m culvert under the A9, man-made stone banks in stretch between A9 and side road, small pipe culvert under side road. The watercourse is then 1.2m wide running through grazed acid grassland vegetated with soft rush, it becomes dry through this section. Heavily poached banks in places.
WC 21	Funtack Burn Tributary 004a	278359	833191	278082	833203	Watercourse is approximately 20cm wide and 20cm deep. No obvious channel until close to pond. Areas of marshy grassland with soft rush. Substrate is peat and there was a slow flow at the time of survey.
WC 22	Drain 005	278179	833449	277917	833533	Very vegetated watercourse with bog myrtle, sphagnums and hare's tail cotton grass present. Where there is open water present, the channel is approximately 30-50cm wide and 10cm deep. Substrate is peat and there was a slow flow at the time of survey.
WC 23	Funtack Burn Tributary 008	277623	833745	277698	833845	Watercourse is approximately 30cm wide and 10cm deep with a fast flow and a rock and silt substrate. Bank-side vegetation is grass and wood rush.
WC 24	Caochan na h-Eaglais	277326	834084	276683	833786	To the north of the A9 the watercourse is 1-3m wide and 10-30cm deep with rocks and boulders in the channel. Heavily shaded. To the south of the A9 the watercourse has a moderate to fast flow with rock and silt substrate. Variable depth between 5 and 30cm and width between 30cm and 1m. Surrounding vegetation includes heather, herbs, grasses and soft rush. At NH 7689533849 the watercourse becomes slow flowing to stagnant in places, and is narrower (10-25cm) and shallower, within dense areas of birch regeneration. Minor tributary is initially steep and rocky where it

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
						meets Caochan na h-Eaglais, before levelling out through open birch regeneration, heather and rushes.
WC 25	Moy Burn Tributary 001	276791	834224	276411	833931	Southbound side of the A9 - the burn is heavily shaded by woodland. It is 1-2m wide and 10-20cm deep with a stony/silt substrate. Northbound side of the A9 - the burn is approximately 30cm wide and 10-20cm deep with a pebble and rock substrate. Banks are steep in some sections but rocky in others.
WC 26	Allt na Loinne Moire	276844	834603	276150	834197	North of B9154 this watercourse is moderate to fast flowing, 0.5m - 2m wide and approximately 0.5m deep with a rocky substrate. Banks are gently sloping with occasional steep sections. The watercourse passes through woodland where the banks are lined with trees, bracken and woodrush. Dense stand of rhododendron on the bank at NH 7676934580. The section of the watercourse between the B9154 and railway line is 2-3m wide and lined by stone walls (approximately 1m high) and dense vegetation, including rhododendron. The channel is concrete lined and stepped in a small section. The section of the watercourse between the railway line and the A9 is 2-3m wide and 30-50cm deep with rock and silt substrate with gently sloping banks. Surrounding vegetation includes grasses, herbs and soft rush with some scattered trees and scrub.
WC 27	Tributary of Allt Creag Bhethin 001	275681	834900	275343	834530	Northbound side of the A9 - the watercourse is a small channel largely running underground. Soft rush and fescues line the banks. Southbound side of the A9 - the watercourse has shallow banks, shaded in woodland with soft rush and sphagnums along the banks, it is >20cm wide and 20cm deep.
WC 28	Tributary of Allt Creag Bhethin 002	275267	834525	275574	834937	Small drain running through acid grassland to the north of the A9 and coniferous plantation woodland to the south of the A9. No real bank structure. Depth ranged from 0-0.2m. Small <1m pipe culvert under the A9.
WC 29	Allt na Slanaich	275079	834854	274827	834393	To the north of the A9 the stream runs through semi-improved acid grassland. Depth ranges from 0.1-0.4m and width from 0.5-3m with

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
						a stony channel and banks which are heavily grazed. To the south of the A9 this is a rocky burn flowing through coniferous plantation woodland. It has a 1-2m wide channel with a fast flow.
WC 30	Allt Creag Bheithin	275224	834985	273214	834757	On the northbound side of the A9 the watercourse flows through an area of cleared coniferous plantation woodland and bog habitat. The channel width is 30cm - 1m at its widest and 30cm deep. The channel goes underground in some sections with dense vegetation cover. On the southbound side of the A9 the watercourse is 30cm - 1m wide with short grazed grassland either side. Cobbled and stony bed and bank side. Tufted hair grass and fescues line the steep and slightly undercut banks. Adjacent habitat is very open.
WC 31	Midlairg's Burn	272361	835391	272362	835396	Depth at the start of the watercourse is approximately 0.3m until it enters a culvert and shallows. The width is approximately 0.8m but variable along the length of the watercourse. Surrounding habitat has grasses, sphagnum species, soft rush and heather. Areas of immature forestry surround the watercourse. Adjacent trees are small and young, with no overhanging root plates. Banks are shallow, low to the water level and vegetated. Flow rate is variable along length from fast flowing through the culvert to slower moving pools. Gravel substrate where substrate could be seen. Watercourse narrows at NH 72369 35338 to approximately 0.4m wide. Ground is wet and boggy at the tributaries. At NH 72609 34950 the channel narrows to approximately 0.4m with a fast flow. At NH 72627 34813 the width is approximately 0.8 - 1m and depth approximately 0.3 m. Fast flow of water with emerging rocks and tree root plates overhanging the watercourse. At NH 72952 34485, the channel has a fast flow and is approximately 1-1.2m wide, with a variable depth. There is a small waterfall at this location.
WC 32	Tributary of Midlairg's Burn	272911	835153	272747	835047	Watercourse is approximately 1m wide and 0.2m deep. It has a fast flow and a stone and rock substrate, with frequent emerging rocks.

Watercourse/ pond reference	Watercourse/pond name	Survey start		Survey end		Description
		X Ref.	Y Ref.	X Ref.	Y Ref.	
	001					Banks are varied, either stone or earth and stones. Lots of overhanging vegetation, such as grasses. Some windblown trees overhanging watercourse with some upturned root plates. Habitat in surrounding area is coniferous woodland with forest rides.
WC 33	Tributary of Midlairg's Burn 002	272363	835072	272288	834926	Small tributary to Midlairg's Burn with little to no water in the channel. Ground adjacent to the channel very wet. Abundance of willow trees in surrounding area.
P12	N/A	279515	830912	N/A		Large pond with two main areas of open water. Emergent vegetation with sedges and duckweed.
P13		279547	830807			Pond dry & overgrown with mosses.
P14		279490	830801			Large pond, heavily vegetated with emergent vegetation. Small patches of open water.
P4		276837	834094			Large pond between A9 and railway with pine, silver birch and ash surrounding. Small island in the centre. Shallow earth banks with moss, rush and tall grass.
P5		276974	834013			Large pond between A9 and railway within coniferous woodland. Shallow earth banks with moss and rushes. Silver birch, ash and pine surround the pond.

Table A3.5: Otter Survey Results, 2015 (Resting Sites are Highlighted in Grey)

TN (Resting sites only)	X Ref.	Y Ref.	Watercourse name	Watercourse reference	Distance from Proposed Scheme (m)	Description of feature
	279991	829635	Tributary of River Findhorn 001 (Northbound side of A9)	WC 1	30	Some areas of dense nettle cover and fallen trees along this stretch have the potential to conceal resting sites or holts but no other evidence was recorded.
	279688	830431	River Findhorn	WC 3	187	Spraint and anal jelly on boulder in River Findhorn.
	279693	830436	River Findhorn	WC 3	193	Dry intact spraint on boulder in River Findhorn.
	279666	830657	River Findhorn	WC 3	207	Fresh spraint on boulder in River Findhorn.

TN (Resting sites only)	X Ref.	Y Ref.	Watercourse name	Watercourse reference	Distance from Proposed Scheme (m)	Description of feature
	279658	830686	River Findhorn	WC 3	204	One fresh and one dry intact spraint on boulder at confluence of River Findhorn and Allt Dubhag.
	279652	830720	River Findhorn	WC 3	205	Footprints in silt.
	279648	830726	River Findhorn	WC 3	198	Otters sighted regularly by land management.
	279739	830096	Allt na Frithe	WC 4	0	Dry intact spraint on boulder in river.
	279725	830060	Allt na Frithe	WC 4	0	Two spraints (one dry fragmented, one fresh) on boulder in channel.
	279713	830045	Allt na Frithe	WC 4	0	Dry intact spraint on boulder in channel.
	279654	829959	Allt na Frithe	WC 4	0	Dry intact spraint on boulder in channel.
	279623	829898	Allt na Frithe	WC 4	39	Dry fragmented spraint found on river side boulder.
	279617	829905	Allt na Frithe	WC 4	34	Dry fragmented spraint found on large boulder at river side.
	279586	829870	Allt na Frithe	WC 4	61	Several dry fragmented spraints found on well used boulder in stream.
	279517	829841	Allt na Frithe	WC 4	1	Fresh spraint in boulder under box culvert.
	279626	829931	Allt na Frithe	WC 4	7	Dry intact spraint on boulder in channel.
	279496	829789	Allt na Frithe	WC 4	5	Two dry fragmented spraints on boulder in channel.
	279486	829797	Allt na Frithe	WC 4	11	Dry intact spraint on boulder on bank.
	279636	830254	Drain 001	WC 6	68	Some holt potential within plantation woodland under fallen pines but very limited ground cover and understorey. No otter evidence recorded.
	279287	830432	Allt Dubhag	WC 8	5	One fresh and two dry intact spraints on boulders within culvert.
	279311	830441	Allt Dubhag	WC 8	7	Possible resting up site under overhanging roots. No otter evidence.
	279313	830462	Allt Dubhag	WC 8	0	Possible resting up site and holt under roots. No otter evidence noted.

TN (Resting sites only)	X Ref.	Y Ref.	Watercourse name	Watercourse reference	Distance from Proposed Scheme (m)	Description of feature
	279392	830528	Allt Dubhag	WC 8	0	Numerous otter prints on top of each other under culvert under A9.
	279399	830535	Allt Dubhag	WC 8	0	Otter slide from culvert ledge into channel.
	279409	830542	Allt Dubhag	WC 8	0	Thirteen spraints under culvert under A9 ranging from fresh to dry fragmented.
	279616	830677	Allt Dubhag	WC 8	162	Dry fragmented spraint on boulder on bank.
	279590	831967	Dalmagarry Burn	WC 16	168	Footprints seen on sandy bank adjacent to watercourse.
	279281	831980	Dalmagarry Burn	WC 16	0	Footprints recorded 5m from watercourse.
	279063	832038	Dalmagarry Burn	WC 16	0	Possible otter holt/resting site under silver birch roots.
	278773	832175	Dalmagarry Burn	WC 16	0	Discussion with landowner - otters seen upstream to west of A9.
	278738	832178	Dalmagarry Burn	WC 16	0	Adult otter footprint under culvert under A9.
	278733	832180	Dalmagarry Burn	WC 16	0	Seven spraints ranging in age from fresh to dry and fragmented in culvert under A9.
	278715	832193	Dalmagarry Burn	WC 16	0	Sprainting site under main section of farm track bridge with ten spraint heaps ranging from fresh to old.
	278704	832202	Dalmagarry Burn	WC 16	0	Sprainting site under bridge. Several fresh spraints recorded including a spraint heap in the southernmost tunnel.
	278703	832201	Dalmagarry Burn	WC 16	0	Dry intact spraint on boulder on bank.
	278659	832206	Dalmagarry Burn	WC 16	0	Dry intact spraint on boulder on bank.
	278647	832207	Dalmagarry Burn	WC 16	0	Dry fragmented spraint on boulder on bank.
	278646	832203	Dalmagarry Burn	WC 16	0	Fresh spraint on boulder on bank.
	278628	832198	Dalmagarry Burn	WC 16	3	Spraint heap on boulder on bank.

TN (Resting sites only)	X Ref.	Y Ref.	Watercourse name	Watercourse reference	Distance from Proposed Scheme (m)	Description of feature
	278358	832553	Funtack Burn Tributary 003	WC 18	0	Potential for otter holts and resting sites in roots and boulders but no evidence of otter use.
	277117	833935	Caochan na h-Eaglais	WC 24	0	Dry fragmented spraint on boulder in channel.
	277126	833948	Caochan na h-Eaglais	WC 24	0	Potential holt under tree roots but no otter evidence recorded.
	277157	833959	Caochan na h-Eaglais	WC 24	0	Potential resting site under tree roots on southern bank. No evidence of otter use.
	276512	834014	Moy Burn Tributary 001	WC 25	25	Some dense impenetrable cover to conceal holts or resting sites but no evidence of otter use.
	276173	834197	Allt na Loinne Moire	WC 26	97	One dry intact spraint on boulder in channel. Looked like mink scat and had lots of fur within but the smell was distinctly otter.
	276297	834249	Allt na Loinne Moire	WC 26	0	Two dry fragmented spraints on boulder on bank.
	276437	834337	Allt na Loinne Moire	WC 26	0	One fresh spraint.
	276484	834430	Allt na Loinne Moire	WC 26	89	Two dry fragmented spraints on boulder in channel.
	276498	834449	Allt na Loinne Moire	WC 26	112	Spraints found within culvert under railway.
	276526	834487	Allt na Loinne Moire	WC 26	158	Dry intact spraint on boulder within arch culvert under side road.
	275360	834547	Tributary of Allt Creag Bhethin 001	WC 27	94	Potential holt under fallen tree, no otter evidence recorded.
TN 8	274863	834414	Allt na Slanaich	WC 29	244	Resting site (hover) under overhanging roots on the bank. Two dry fragmented spraints on boulder here. Low status.
	274875	834428	Allt na Slanaich	WC 29	226	Two dry fragmented spraints on boulder on the bank.
	274913	834484	Allt na Slanaich	WC 29	159	Potential holt under fallen birch, no otter evidence recorded.
	274947	834530	Allt na Slanaich	WC 29	104	Lots of overhanging tree roots and fallen trees

TN (Resting sites only)	X Ref.	Y Ref.	Watercourse name	Watercourse reference	Distance from Proposed Scheme (m)	Description of feature
						provide potential holt and resting sites.
	275032	834744	Allt na Slanaich	WC 29	0	Dry fragmented spraint inside dry tunnel under A9.
	275579	835029	Allt Creag Bheithin	WC 30	176	Very fresh spraint.
	274842	834703	Allt Creag Bheithin	WC 30	0	Potential holt under fallen trees in coniferous plantation woodland to the east of watercourse. No otter evidence recorded.
	275016	834831	Allt Creag Bheithin	WC 30	14	Dry fragmented spraint and several remains of very old spraints on boulder in channel.
	275027	834834	Allt Creag Bheithin	WC 30	24	Very old dry fragmented spraint on boulder on bank.
	275053	834850	Allt Creag Bheithin	WC 30	25	Very old dry fragmented spraint on boulder in channel.
	275225	834928	Allt Creag Bheithin	WC 30	87	Some potential for otter holts or resting sites under ash and birch roots on southern bank but no evidence of otter use.
	275248	835008	Allt Creag Bheithin	WC 30	47	Dry fragmented spraint and tar spot on boulder on bank.
	274322	834611	Allt Creag Bheithin	WC 30	57	Dry fragmented spraint on boulder in channel.

Table A3.6: Otter Survey Results, 2016 (Resting Sites are Highlighted in Grey)

Target Note (Resting sites only)	X Ref	Y Ref	Watercourse/pond name	Watercourse /pond reference	Distance from Proposed Scheme (m)	Description of feature
	279706	830187	Tributary of River Findhorn 001 (Southbound side of A9)	WC 2	60	Mink scat on rock.
	279678	830576	River Findhorn	WC 3	207	Three old spraints.
	279660	830677	River Findhorn	WC 3	205	Single old sprint and staining.

Target Note (Resting sites only)	X Ref	Y Ref	Watercourse/pond name	Watercourse /pond reference	Distance from Proposed Scheme (m)	Description of feature
	279683	830989	River Findhorn	WC 3	129	One recent spraint, one old spraint. On rock beside bank near to water vole latrine.
	279656	830880	River Findhorn	WC 3	152	One recent spraint on rock at side of river.
	279651	830852	River Findhorn	WC 3	158	One old spraint only a few bones and staining from spraint remains on rock.
	279650	830773	River Findhorn	WC 3	181	Pile of fresh spraints on rock beside river.
	279479	830325	River Findhorn	WC 3	0	Single spraint.
	280004	829657	River Findhorn	WC 3	4	Mink scat plus possible otter anal jelly.
	279531	829819	River Findhorn	WC 3	6	Single spraint.
	279523	830222	River Findhorn	WC 3	0	Cavity beneath tree roots, extending back approximately 0.5m. Not evidence of use.
	279636	830254	River Findhorn	WC 3	68	Cavity within bank extends approximately 0.5m. Beneath trash line. No evidence of use.
	279469	829781	Allt na Frithe	WC 4	32	Suitable holt underneath brash / debris covered with a layer of moss. Large cavity, dry inside. No evidence of use.
	280016	829660	Allt na Frithe	WC 4	0	Suitable otter holt in bank. Rocky cavity extends approximately 1m into bank. No evidence of use.
TN 1	279496	829789	Allt na Frithe	WC 4	4	Resting site (hover). Overhanging tree roots covered in moss creates open cavity, approximately 1.5m by 0.75m. Dry at time of survey, however cavity is open at both ends and exposed to weather. Single otter spraint located on rock within. Cavity is located approximately 5m from the river channel on bank adjacent to conifer tree. Low status.
	279706	830187	Allt na Frithe	WC 4	60	Three spraints on boulder.
TN 3	279586	829852	Allt na Frithe	WC 4	62	Resting site (hover). Sheltered cavity under fallen tree/roots, located on south bank. Spraint

Target Note (Resting sites only)	X Ref	Y Ref	Watercourse/pond name	Watercourse /pond reference	Distance from Proposed Scheme (m)	Description of feature
						located on rock inside cavity. Low status.
TN 2	279486	829797	Allt na Frithe	WC 4	11	Resting site (hover). Overhanging bank with dry cavity extending back approximately 0.5m. Single spraint found within. Low status.
	279540	830133	Allt na Frithe	WC 4	1	Single old and weathered spraint on ledge under bridge.
TN 4	279739	830096	Allt na Frithe	WC 4	0.00	Resting site (hover). Rocky cavity within overhanging bank. Extends approximately 0.5m into bank. Tar spot found within. Low status.
TN 5	279658	830401	Tributary of River Findhorn 002	WC 7	148	Resting site (holt). Large cavity created under fallen tree stump with moss covering. One old spraint located on rock within cavity and staining. No evidence of recent use. Low status.
TN 6	279569	830633	Allt Dubhag	WC 8	110	Resting site (hover). Cavity under overhanging bank, extends back approximately 0.5m. Single spraint found on rock within. Low status.
	279991	829635	Allt Dubhag	WC 8	0	Single spraint at entrance of bridge.
	279678	830046	Allt Dubhag	WC 8	0	Steep bank (approximately 8m) below conifers offers suitable features for otter, including cavities extending into the bank by 1m approximately and some subterranean cover from overhanging roots. No evidence of use.
	278629	832187	Dalmagarry Burn	WC 16	11	Two spraints found underneath railway underpass on rock next to wall, one more recent than the other. Some decomposition and drying out, contains bones.
	278598	832167	Dalmagarry Burn	WC 16	12	One spraint on rock in the middle of the Dalmagarry Burn. Recent spraint, retaining shape and contains bones.
	278478	832156	Dalmagarry Burn	WC 16	0	Potential holt in open bankside next to watercourse in gap underneath large boulders.

Target Note (Resting sites only)	X Ref	Y Ref	Watercourse/pond name	Watercourse /pond reference	Distance from Proposed Scheme (m)	Description of feature
						Open vertical entrance that opens into two cavities in between the rocks. Height is more than 250mm. Cannot see back of cavity. Rabbit droppings and skull present but could be used by otter due to size and seclusion. No scratch marks present, no evidence of body rubbing, no hairs and no spraints. A spraint is located approximately 50m downstream.
	277131	833929	Caochan na h-Eaglais	WC 24	0	Otter spraint and tar spot located on a rock in the channel.
	277122	833939	Caochan na h-Eaglais	WC 24	0	Suitable cavities extending into bank where tree roots are located. No evidence of use.
	277140	833955	Caochan na h-Eaglais	WC 24	0	Culvert - hole leading to cavity in stones surrounding piped culvert. No evidence of use, but could provide suitable resting site for otter.
	276792	834231	Moy Burn Tributary 001	WC 25	63	Small, old otter spraint located on a rock in the channel.
	276844	834596	Allt na Loinne Moire	WC 26	332	Spraint on boulder within watercourse.
TN 7	276844	834596	Allt na Loinne Moire	WC 26	332	Resting site (hover). Cavity within overhanging bank. Two to three old spraints located within the cavity. Low status.
	276769	834580	Allt na Loinne Moire	WC 26	333.97	Dense stand of *Rhododendron ponticum* on bank provides suitable feature for otter. No evidence of use.
	274999	834644	Allt na Slanaich	WC 29	3	Overhanging bank with tree roots - large suitable cavity for otter resting site. No evidence of use.
	276977	834034	Pond 5	P5	0	Remains of a frog found on a rock.

Table A3.7: Otter Survey Results, 2017 (Resting Sites are Highlighted in Grey)

Target Note (Resting sites only)	X Ref	Y Ref	Watercourse /pond name	Watercourse /pond reference	Distance from Proposed Scheme (m)	Description of feature
	279550	832006	Funtack Burn	WC 17	141	Feeding remains - salmonid remains.
	279591	831992			174	Approximately ten spraints along an 8m stretch of riverbank.
	279620	831983			200	Salmonid remains in spraint.
	279693	831976			260	Spraint on rock near bridge.
	279695	831955			243	Spraint on vegetation near bridge.
	279723	831973			274	Ten spraints along 5m stretch of bank.
	279777	832000			329	Spraints on vegetation.
	279777	832000			329	Possible otter run through cut-away section of bank next to spraints on vegetation.
	279840	832018			385	Feeding signs - salmonid remains on both sides of watercourse.
	279854	832032			405	Fresh (day old) spraint on riverbank.
	279751	831995			309	Spraint located on bank.
	279720	831976			275	Feeding signs - salmonid remains located on bank.
	279658	831962			232	Nine spraints (several fresh).
	279658	831962			232	Feeding signs - salmonid carcass.
	279660	831962			233	Feeding signs - salmon carcass found along south bank of Funtack Burn.
	279660	831962			233	Spraint found along south bank of Funtack Burn.
	279608	831964			185	Spraint located 2m north west of salmon carcass.
	279493	832020			104	Feeding signs - salmon carcass found along south bank of Funtack Burn.
	279493	832020			104	Spraint found along south bank of Funtack Burn.
TN 9	279832	832034			391	Holt - hole leading under concrete slab on riverbank: rabbit skull, seven spraints (two fresh) nearby and anal jelly outside entrance. Flattened 'couch'-like area at tree stump nearby. (Moderate status).

3.3.4 The survey area contains a number of watercourses, small burns and drainage channels which provide suitable habitat for otters to forage, shelter and commute within the local landscape.

3.3.5 Field surveys between 2015 and 2017 have recorded evidence of otter using the Allt na Frithe, Allt Dubhag, Allt na Slanaich, Allt Creag Bhethin, Dalmagarry Burn, Funtack Burn, Caochan na h-Eaglais, Allt na Loinne Moire and the River Findhorn. Evidence was also recorded on the tributaries of Funtack Burn, Moy Burn, Allt Creag Bhethin and the River Findhorn.

3.3.6 Surveys in 2017 recorded one otter holt along the Funtack Burn (Target Note (TN9), Figure 12.16f), located approximately 391m to the Proposed Scheme. During surveys in 2016, one otter holt was recorded along a tributary of the River Findhorn (TN 5, Figure 12.16d), located approximately 148m to the east of the Proposed Scheme. Four otter hovers were recorded along the Allt na Frithe (TN 1,2,3,4, Figure 12.16d), all of which are located within 62m of the Proposed Scheme. A further hover was recorded along the Allt Dubhag (TN 6, Figure 12.16e) and Allt na Loinne Moire (TN 7, Figure 12.16h), located approximately 110m and 332m from the Proposed Scheme, respectively. During surveys in 2015, one hover was recorded along the Allt na Slanaich (TN 8, Figure 12.16i), located approximately 244m north of the Proposed Scheme. All resting sites recorded during the surveys are considered to have low resting site status (see Table A3.1). Spraints were recorded sporadically on the watercourses named above, indicating that otters are using these watercourses to commute and forage.

3.3.7 In addition to the running water habitats, ponds are also likely to provide foraging resources for otter. Frog feeding remains were recorded at Pond 5, adjacent to the Proposed Scheme, during the field survey in 2016.

3.3.8 Small drainage channels and ditches within the Proposed Scheme provide suitable connecting routes for otter, providing links to the high quality habitats for foraging and resting.

3.3.9 Terrestrial habitats, such as the area of woodland to the north east of the A9 around Loch Moy, are also likely to offer important sheltering and potentially breeding habitat for this species. The woodland habitats along the A9 are well connected to the watercourses detailed above and are likely to be used by otter.

3.4 Valuation

3.4.1 Table A3.8 sets out the valuation of the watercourses surveyed for otter. Given the variation in the nature of the watercourses across the Scheme these have been assessed individually rather than providing a Scheme wide valuation level. In general, smaller watercourses such has drainage channels and minor ditches were not found to be used by otter, with the larger watercourses being used sporadically by the species.

Table A3.8: Otter Valuation

Watercourse / Pond ref	Watercourse name	Valuation	Rational for valuation
WC 1	Tributary of River Findhorn 001	Less than local	These small burns and drainage channels offer some suitable connecting routes for otter, providing links to high quality habitats for foraging and resting. However, no evidence of otter was recorded along these watercourses during field surveys in 2015 and 2016. Due to the location of the watercourses in largely open habitat, they offer negligible potential for otters to rest and shelter. No resting sites were recorded during field surveys in 2015 and 2016. The ponds offer a potential source for foraging from amphibians. However, very little otter evidence was recorded at these locations (remains of a frog). No spraints or resting sites were found in the areas around the ponds.
WC 2			
WC 5	Drain 001 - adjacent to A9 northbound carriageway		
WC 6	Drain 001		
WC 9	Tributary of River Findhorn 003		
WC 10	Funtack Burn Tributary 001		
WC 11	Funtack Burn Tributary 001a		
WC 12	Funtack Burn Tributary 001		
WC 13	Drain 002		
WC 14	Dalmagarry Burn Tributary 001		
WC 15	Dalmagarry Burn Tributary 001a		
WC 18	Funtack Burn Tributary 003		
WC 19	Funtack Burn Tributary 004		
WC 20	Funtack Burn Tributary 004		
WC 21	Funtack Burn Tributary 004a		
WC 22	Drain 005		
WC 23	Funtack Burn Tributary 008		
WC 28	Tributary of Allt Creag Bhethin 002		
WC 32	Tributary of Midlairg's Burn 001		
WC 33	Tributary of Midlairg's Burn 002		
P12	N/A		
P13			
P14			

Watercourse / Pond ref	Watercourse name	Valuation	Rational for valuation
P4			
P5			
WC 3	River Findhorn	Local	The evidence recorded during field surveys indicates that otter are using these watercourses to commute and forage. A total of six hovers and two holts were recorded in 2015 and 2016. However, all of these sites contained small numbers of old spraints and were assessed to be of low status. This, combined with the sporadic nature of spraints recorded along the watercourses suggests that these do not form a mainstay of otter territory and these watercourses are not regularly patrolled. It is likely that the River Findhorn provides a main resource for the local otter population, with both resting sites and prey resource along its length. However, only a small length of this watercourse is present within the Study Area, which had largely open banks. Although it is considered likely that otters will pass through this area, it does not provide suitable natal habitat and as such has been classed to be of local importance.
WC 4	Allt na Frithe		
WC 7	Tributary of River Findhorn 002		
WC 8	Allt Dubhag		
WC 16	Dalmagarry Burn		
WC 17	Funtack Burn		
WC 24	Caochan na h-Eaglais		
WC 25	Moy Burn Tributary 001		
WC 26	Allt na Loinne Moire		
WC 27	Tributary of Allt Creag Bhethin 001		
WC 29	Allt na Slanaich		
WC 30	Allt Creag Bheithin		
WC 31	Midlairg's Burn		

3.5 Conclusion

3.5.1 The evidence recorded during the field surveys indicates that otter are using many of the watercourses in the survey area to commute and forage. However, the limited number of resting sites and sporadic nature of spraints found suggests that these watercourses are not the mainstay of otter territory and they are not regularly patrolled. More important habitat for sheltering may be present further away from the A9, along the River Findhorn and around Loch Moy. Watercourses within the Study Area have been valued at either local or less than local scale for otter.

4. Water Vole

4.1.1 This section details the findings of water vole surveys, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

4.2 Methodology

Desk Study

Biological Records

4.2.1 The following organisations were contacted for water vole records within 1km of the existing A9:

- Highland Biological Recording Group (HBRC)
- North East Scotland Biological Records Centre (NESBreC)

Watercourses / Waterbodies

4.2.2 Watercourses and waterbodies were searched for within 100m of the Proposed Scheme (as shown on Figure 12.16a-k). This is termed the Study Area.

4.2.3 The locations of watercourses and waterbodies were identified through review of Ordnance Survey (OS) maps and aerial photography. Additional watercourses or waterbodies discovered during site visits have also been taken into account. Any watercourses or waterbodies found not to be present during surveys have been removed.

Field Survey

4.2.4 To inform the DMRB Stage 2 Assessment, water vole surveys were undertaken in September and October 2015 by two suitably experienced ecologists on all watercourses within the Proposed Scheme. This encompassed all potential route options and their associated land-take under consideration for the DMRB Stage 2 Assessment, extending up to 100m.

4.2.5 To inform the DMRB Stage 3 Assessment, further surveys were conducted between May and July 2016 by suitably experienced ecologists.

4.2.6 As a result of changes to the Proposed Scheme design, an additional survey was undertaken along the Funtack Burn at Dalmagarry in February 2017.

4.2.7 Field surveys were undertaken according to methodology outlined in The Water Vole Conservation Handbook[x]. Ecologists searched for and recorded the following evidence of water vole:

- burrows
- droppings
- latrines
- feeding remains
- runways and footprints
- nests

- sightings
- sounds (characteristic 'plop' sound when water voles enter the water to warn other water voles in the area of possible danger)

Limitations

4.2.8 Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The absence of evidence of water vole should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

4.2.9 Water vole surveys in 2016 were undertaken in tandem with the otter surveys, and as such the limitations detailed in Table A3.2 also apply to the water vole surveys.

4.3 Results

Desk Study

4.3.1 No records of water vole were received from HBRC or NESBreC.

4.3.2 The Forestry Commission provided the following information regarding water vole within the vicinity of the existing A9:

- records of water vole exist within the forestry around Allt Creag Bheithin, prior to its felling in 2008
- the area around the Allt Creag Bheithin was replanted in 2014
- Allt Creag Bheithin is considered to be a key connection for water voles up to high ground
- a mink control programme had previously been undertaken on the River Nairn to the north of the Scheme
- water vole presence has been recorded at NH74813586, located approximately 1km to the north of the existing A9, 2km northwest of Moy. No detailed records are available

Field Survey

4.3.3 A summary of the watercourses and ponds surveyed is provided in Table A3.4.

4.3.4 The results of the field surveys undertaken in 2015 and 2016 are shown on Figure 12.16a-k and are summarised in Table A4.1. No evidence of water vole was recorded during the survey in 2017.

Table A4.1: Water Vole Survey Results

Watercourse name	Watercourse reference	Description of Feature	Year of record	Number of Records
Tributary of River Findhorn 001 (Southbound side of A9)	WC 2	Burrow (confirmed)	2015	0
			2016	1
		Burrow (no evidence)	2015	0
			2016	1
		Feeding station	2015	0
			2016	2
River Findhorn	WC 3	Burrow (confirmed)	2015	0
			2016	3
		Latrine	2015	0
			2016	6
		Footprints	2015	0
			2016	1
		Sighting	2015	0
			2016	1
Allt na Frithe	WC 4	Droppings	2015	1
			2016	0
		Feeding station	2015	2
			2016	0
Allt Dubhag	WC 8	Burrow (confirmed)	2015	1
			2016	0
		Latrine	2015	2
			2016	0
Allt na Loinne Moire	WC 26	Burrow (confirmed)	2015	1
			2016	0

Watercourse name	Watercourse reference	Description of Feature	Year of record	Number of Records
		Burrow (no evidence)	2015	2
			2016	0
		Latrine	2015	7
			2016	0
		Droppings	2015	1
			2016	0
		Feeding station	2015	1
			2016	0
		Pathway	2015	1
			2016	0
		Plop	2015	1
			2016	0
Tributary of Allt Creag Bhethin 001	WC 27	Burrow (confirmed)	2015	0
			2016	7
		Burrow (no evidence)	2015	4
			2016	0
		Latrine	2015	3
			2016	0
		Pathway	2015	0
			2016	1
Allt Creag Bheithin	WC 30	Burrow (confirmed)	2015	1
			2016	67
		Burrow (no evidence)	2015	2
			2016	5
		Latrine	2015	15

Watercourse name	Watercourse reference	Description of Feature	Year of record	Number of Records
			2016	64
		Droppings	2015	8
			2016	11
		Feeding station	2015	4
			2016	7
		Pathway	2015	0
			2016	3
Midlairg's Burn (Surveyed in 2016 only)	WC 31	Burrow (confirmed)	2016	4
		Latrine	2016	7
		Feeding station	2016	3
		Plop	2016	1
		Sighting	2016	1

4.3.5 The survey area contains a number of small burns and drainage channels which provide suitable habitat for water vole to forage and shelter. Open habitats supporting these small watercourses and drainage channels offer good suitability for this species and include areas such as marshy grassland habitat, bog, wet dwarf shrub heath and acid grassland.

4.3.6 Field surveys in 2015 and 2016 have recorded water vole latrines along Allt Creag Bhethin and its tributary, Allt Dubhag, Midlairg's Burn, the River Findhorn and its tributaries on the southbound side of the A9, and the tributary of Moy Burn.

4.3.7 The largest volume of water vole evidence was recorded along Allt Creag Bhethin (WC 30 on Figure 12.16i-k), which flows through an area of cleared coniferous plantation woodland and bog habitat. This watercourse will be crossed by the Proposed Scheme, by an access track to a SuDs pond and by the A9 itself. During surveys in 2016, 64 latrines and 67 burrows were recorded, with droppings, feeding stations and runs recorded along the length of the surveyed watercourse. Many burrows and latrines were found so close together that these cannot be not shown individually on the Figure (Figure 12.16). Based on the data collected in 2016, it has been calculated that Allt Creag Bhethin supports an estimated population of 45 water voles. This calculation has been made using the formula[3] detailed in the Water Vole Conservation Handbook (2nd edition)[ix]. Surveys in 2015 recorded a smaller volume of latrines and burrows along Allt Creag Bhethin, which at this time supported a smaller estimated population[3] of eleven water voles.

4.3.8 Field surveys in 2015 recorded water vole latrines along Allt Dubhag and the tributary of Moy Burn. Both of these watercourses were estimated to support a population of three water voles at the time of survey. No latrines were recorded along either watercourse during 2016 surveys.

4.3.9 Unconfirmed evidence of water vole, including burrows, feeding remains and runs, was recorded along Allt Creag Bheithin and its tributary, Allt na Frith, Allt Dubhag, Dalmagarry Burn, Midlairgs Burn, the River Findhorn and its tributaries, and the tributary of Moy Burn. Evidence of field vole and bank vole was also recorded throughout the survey area.

4.3.10 During 2016 surveys two likely mink scats were recorded along the River Findhorn and within a series of drains/channels connected to the River Findhorn, located at the southern section of the Scheme. Water voles are heavily predated by mink, as such the presence of this species may be at least partially responsible for the limited amount of water vole evidence found at the southern end of the Scheme.

4.3.11 Watercourses within areas of dense coniferous woodland were generally sub-optimal for this species. These areas are heavily shaded and provide limited suitable vegetation for water voles to forage.

4.4 Valuation

4.4.1 Table A4.2 sets out the valuation of the watercourses surveyed for water vole. Given the variation in the nature of the watercourses across the Scheme these have been assessed individually rather than providing a Scheme wide valuation level. In general, water vole activity was recorded in the smaller watercourses, such as drainage channels and minor ditches, with the larger watercourses being used sporadically by the species.

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

Table A4.2: Water Vole Valuation

Watercourse ref	Watercourse name	Valuation	Rational for valuation
WC 1	Tributary of River Findhorn 001 (Northbound side of A9)	Less than local	These small burns and drainage channels offer some suitable habitat for water vole to forage and shelter. However, no evidence of water vole was recorded during field surveys in 2015 and 2016. Several watercourses are located within areas of dense coniferous woodland and are generally sub-optimal for this species as they are heavily shaded and provide limited suitable vegetation for water voles to forage.
WC 5	Drain 001 - adjacent to A9 northbound carriageway		
WC 6	Drain 001		
WC 7	Tributary of River Findhorn 002		
WC 9	Tributary of River Findhorn 003		
WC 10	Funtack Burn Tributary 001		
WC 11	Funtack Burn Tributary 001a		
WC 12	Funtack Burn Tributary 001		
WC 13	Drain 002		
WC 14	Dalmagarry Burn Tributary 001		
WC 15	Dalmagarry Burn Tributary 001a		
WC 16	Dalmagarry Burn		
WC 17	Funtack Burn		
WC 18	Funtack Burn Tributary 003		
WC 19	Funtack Burn Tributary 004		
WC 20	Funtack Burn Tributary 004		
WC 21	Funtack Burn Tributary 004a		
WC 22	Drain 005		
WC 23	Funtack Burn Tributary 008		
WC 24	Caochan na h-Eaglais		
WC 25	Moy Burn Tributary 001		
WC 28	Tributary of Allt Creag Bhethin 002		
WC 29	Allt na Slanaich		

Watercourse ref	Watercourse name	Valuation	Rational for valuation
WC 32	Tributary of Midlairg's Burn 001		
WC 33	Tributary of Midlairg's Burn 002		
WC 2	Tributary of River Findhorn 001 (Southbound side of A9)	Local	These watercourses offer suitable habitat for water vole to forage and shelter. Field surveys in 2015 and 2016 have recorded a small number of water vole latrines and burrows along these watercourses.
WC 3	River Findhorn		
WC 4	Allt na Frithe		
WC 8	Allt Dubhag		
WC 26	Allt na Loinne Moire		
WC 27	Tributary of Allt Creag Bhethin 001		
WC 31	Midlairg's Burn		
WC 30	Allt Creag Bheithin	Authority	Field surveys in 2015 and 2016 recorded a large volume of water vole evidence along Allt Creag Bhethin, which flows through an area of cleared coniferous plantation woodland and bog habitat. During surveys in 2016, 64 latrines and 67 burrows were recorded, with droppings, feeding stations and runs recorded along the length of the surveyed watercourse. Based on the data collected in 2016, it has been calculated that Allt Creag Bhethin supports an estimated population of forty-five water voles. This calculation has been made using the formula[4] detailed in the Water Vole Conservation Handbook (2nd edition)[xi].

4.5 Conclusion

4.5.1 The Study Area contains a number of small burns and drainage channels which provide suitable habitat for water vole to forage and shelter. However, of the thirty three watercourses surveyed, confirmed evidence of water vole was only recorded on eight watercourses. A significant proportion of this evidence was recorded along Allt Creag Bhethin, located to the west of the A9 at the northern end of the Proposed Scheme. Allt Creag Bhethin currently supports an estimated population of forty-five water voles[3]. Given the size of the population recorded along the Allt Creag Bhethin this watercourse has been assessed to be of importance at Authority Area scale.

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

5. Pine Marten

5.1.1 This section details the findings of a habitat suitability assessment for pine marten and detailed field surveys, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

5.2 Methodology

Desk Study

Biological Records

5.2.1 The following organisations were contacted for pine marten records within 1km of the existing A9:

- Highland Biological Recording Group (HBRG)
- North East Scotland Biological Records Centre (NESBreC)
- Scottish Wildlife Trust (SWT)
- Forestry Commission Scotland
- Scottish Natural Heritage (SNH)
- National Trust for Scotland
- Scotland Transerv.

Survey Area Selection

5.2.2 To inform the DMRB Stage 3 Assessment, the following sources were reviewed to identify suitable habitat for pine marten within the pine marten Study Area and determine the requirement for detailed field survey:

- Geographical Information System (GIS) data from the National Forest Inventory Great Britain
- the Native Woodland Survey
- aerial photography
- information from the 2014 Phase 1 habitat survey[vi]

5.2.3 For the purposes of this investigation, this study examined information extending to 10km from the centre line of the A9.

5.2.4 Field survey areas were determined taking into account the following factors:

- comprised woodland, woodland edges or hedgerow habitats
- formed component parts of larger areas of connected habitats within the wider landscape

Separate survey areas were selected where:

- a barrier (natural or artificial) that would be likely to obstruct pine marten movement was present (for example, a large open area of heath with no cover, or a main road with no culvert or mammal crossing available)
- a change in the composition or character of a given woodland block occurred (for example, where thicket-stage plantation is connected with over-mature semi-natural

woodland). This ensured that different habitats occurring close together were not over or under valued with respect to their importance to pine marten

5.2.5 A total of 17 survey areas were identified, as presented in Figure 12.17a-k.

Habitat Suitability Assessment

5.2.6 Field surveys were undertaken by suitably experienced ecologists in October 2015 to assess the habitat suitability for pine marten within the survey areas. Surveys were based on the methodology set out in in Cresswell et al. (2012)[xii]. A scoring system was used to quantify key features on a scale of 1 to 3. Combining the scores from each category enabled a final assessment to be made of each survey area as being 'high', 'medium' or 'low' quality for pine marten. This method is described in Table A5.1.

Table A5.1: Habitat Suitability Assessment Scoring for Pine Marten

Category	Feature	Subjective score based upon presence/abundance of each feature in a survey area
Foraging resource	Abundance of fruit-bearing trees and shrubs	1 to 3, where 1= poor, 2= moderate, 3= rich (foraging resource).
	Extent of rough grassland/pre-thicket plantations (vole populations)	
	Extent of mature conifers with well-developed field layer	
	Area of broadleaf woodland and scrub	
	Extent of tree-lined stream valleys and wetlands	
	Rabbit abundance	
Habitat extent and connectivity	Extent (area) of 3-dimensional habitat (e.g. woodland) in target Survey Area	1 to 3, where 1= poor, 2= moderate, 3= good (habitat extent and connectivity).
	Habitat connectivity by hedgerows or tree lines beyond woodland edge	
Den availability	Abundance of potential elevated den sites (e.g. over-mature trees with cavities, windthrow, squirrel dreys, raptor or corvid nests, owl boxes, rock outcrops).	1 to 3, where 1= poor, 2= moderate, 3= good (den availability).
Mortality risk factors	Evidence of predator control (e.g. tunnel traps around pheasant pens)	-1 to -3, where -1= low, 2= moderate, -3= high (mortality risk).
	Fox abundance	
	Density of main roads in target habitat Survey Area	
Total	Sum scores for each habitat Survey Area will range between 0 and 8, where score 0-2= low, 3-5= medium, and 6-8= high habitat suitability.	

Field Survey

5.2.7 To inform the DMRB Stage 3 Assessment, further detailed field surveys were undertaken by suitably experienced ecologists in May and June 2016. A survey for potential den sites and scats was undertaken in suitable habitat identified in the DMRB Stage 2 Assessment, alongside red squirrel surveys, based on the methodology

described in Cresswell et al. (2012)[xii]. The survey areas for pine marten were walked once, covering up to 100m from the Proposed Scheme.

5.2.8 Surveyors looked for scats, footprints, potential den sites and direct sightings of pine marten. Where evidence was found, a detailed description was given and the GPS position recorded. All suspected pine marten scats were collected and sent for DNA analysis to EcoWarwicker Ecological Forensics, University of Warwick.

Limitations

5.2.9 Ecological surveys are limited by factors which affect the presence of animals such as the time of year and behaviour. The absence of evidence of pine marten should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

5.2.10 During field surveys in 2015, access was not possible to survey areas 6 and 8. The assessment of the survey areas adjacent to survey area 6 allowed for a tentative estimation of habitat suitability to be made. However, the habitat suitability of survey area 8 could not be assessed.

5.2.11 Due to revisions to the Proposed Scheme design, additional areas of woodland were included in the assessment in February 2017. These survey areas, 1, 2, 3, 9, and 17, have been surveyed for signs of pine marten and for potential den sites, but were not subject to the habitat suitability exercise. The suitability of this woodland has been determined by reviewing the results of the habitat suitability assessment for woodland of a similar character, with a precautionary approach to their valuation taken, where appropriate. The absence of habitat suitability data for these areas is therefore not considered to be a significant limitation to the assessment.

5.2.12 During field surveys in 2016, a small number of woodland areas could not be surveyed due to access restrictions, the density of vegetation and/or the presence of windblown trees preventing access. Details of these limitations are provided in Table A5.2.

5.2.13 Buildings within the survey area (largely residential housing) may offer suitable den sites for pine marten. However, these were not surveyed due to access restrictions.

5.2.14 The field surveys were undertaken at an appropriate time of year and during suitable weather conditions. As such the results of these surveys are considered to be sufficient to undertake this DMRB Stage 3 Assessment.

Table A5.2: Limitations Encountered During the Pine Marten Survey, 2016

X Ref.	Y Ref.	Location	Limitation
279870 to 279550	829590 to 829710	Woodland 200m south east of Tomatin Distillery, beyond residential buildings and access road.	Unable to survey area fully due to dense plantation woodland and windblown trees.
279420	829730	Woodland north east of residential buildings to south of Tomatin Distillery.	Area of plantation woodland not accessed. Viewed from the road with binoculars – woodland relatively open with windblown trees.
279540 to 279510	830220 to 830380	Woodland north of Tomatin Distillery, to east of existing A9.	Unable to survey area due to dense plantation woodland.

279490 to 279460	831700 831830	Woodland to north west of Invereen, south of Dalmagarry Burn and unclassified road.	Unable to survey area due to dense plantation woodland and windblown trees.
275463 to 275579	834609 834579	North east extent of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.
275039	834345	Southern extent of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.
274958	834306	Southern tip of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.

5.3 Results

Desk Study

5.3.1 Three records of pine marten were received from HBRG, details of which are provided in Table A5.3 and shown on Figure 12.18.

Table A5.3: Pine Marten Desk Study Records

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Details
274000	834600	Meallmore	16/04/85	28	Adult, dead on road.
274000	834000	Meallmore	01/05/06	384.48	Adult
281044	828471	South of Findhorn Bridge	02/06/11	55	Adult, dead on road.

5.3.2 As a minimum, desk study records of pine marten within 250m have been displayed on Figure 12.18a-k and therefore some data points listed in Table A5.3 are not shown on the figure.

Habitat Suitability Assessment

5.3.3 The results of the habitat suitability assessment for pine marten are detailed in Table A5.4. Survey areas are shown on Figure 12.17a-k. As discussed in Section 5.2.11, detailed habitat suitability data is not available for survey areas 1, 2, 3, 9, and 17. These areas contain predominantly Scots pine dominated plantation woodland, with some areas of semi-natural or plantation birch woodland. The woodland stands are connected to surrounding wooded areas and are therefore accessible to pine marten. However, habitat data collected for the National Vegetation Classification surveys for the Proposed Scheme indicates that the trees within these woodland stands are generally semi-mature / mature and are unlikely to offer denning opportunities for pine marten. There is also a relatively high mortality risk given the close proximity of these stands to the existing A9. Following the precautionary approach, they are therefore assessed as being of no more than moderate suitability for pine marten.

Table A5.4: Pine Marten Habitat Suitability Assessment Results

Survey Area	Size of Survey Area (ha)	Foraging resource	Habitat extent & connectivity	Den availability	Mortality risk	Total	Habitat Suitability
4	26	2	2	2	-1	5	Moderate
5	6	2	2	1	-1	4	Moderate
6	5	2	2	1	-2	3	Moderate
7	6	2	1	1	-3	1	Low
8	4	2	1	1	-3	1	Low
10	7	2	2	1	-3	2	Low
11	19	3	3	2	-2	6	High
12	4	2	2	1	-1	4	Moderate
13	5	3	2	2	-1	6	High
14	4	1	1	1	-1	2	Low
15	29	1	1	1	-1	2	Low
16	24	1	2	3	-1	5	Moderate

5.3.4 The pine marten Study Area contains predominantly coniferous plantation woodland dominated by Scots pine *Pinus sylvestris*, with occasional smaller stands of Sitka spruce *Picea sitchensis*, Norway spruce *Picea abies* and European larch *Larix decidua*. The plantations are generally semi-mature, containing trees aged between approximately 30 and 50 years old, and are generally fragmented when viewed in the context of the wider landscape. This is largely due to the presence of the existing A9, the Highland Main Line railway, and areas of heath and grassland habitat.

5.3.5 The results of the habitat suitability assessment, detailed in Table A5.4, indicate that two of the 16 survey areas assessed (areas 11 and 13) have high habitat suitability for pine marten. Survey area 11 comprises 19ha of woodland, including a Scots pine plantation and a semi-natural mature larch woodland with some very mature Norway spruce and Sitka spruce trees. This woodland had a ground layer suitable for small mammals and a diverse range of tree and shrub species, with some fruit bearing shrubs. Survey area 13 contained a mixture of woodland types including Scots pine and Sitka spruce plantation and semi-mature coniferous woodland.

5.3.6 The two survey areas that showed high habitat suitability are located towards the mid-point of the Proposed Scheme and are well connected to areas of surrounding woodland.

Field Survey

5.3.7 Results of the field survey are detailed in Table A5.5 and shown on Figure 12.17e and h.

Table A5.5: Pine Marten Survey Results, 2016

X Ref	Y Ref	Distance from Proposed Scheme (m)	Feature	Description
279420	830250	29	Scat	Confirmed pine marten scat on roadside beside large amount of mammal hair

				(possible red squirrel or rabbit).
276766	834195	92	Scat	Confirmed pine marten scat located along forestry ride next to a large pile of feathers.

5.3.8 No den sites were identified during the field survey. Woodlands within the survey area contained a limited number of trees of sufficient maturity to possess cavities suitable for use as pine marten dens. However, it is likely that pine marten in the area are utilising residential housing for alternative den sites.

5.3.9 Suitable foraging resources, such as rabbits and other small mammals, are widespread across the survey area.

5.4 Valuation

5.4.1 Two confirmed scats were recorded during the field surveys and the overall habitat suitability was assessed to be sub-optimal, with only two areas of higher suitability recorded. The habitats within the surrounding area, particularly around Loch Moy and to the north east in the Strathnairn region, are likely to provide good quality habitat for this species. The Inverness and Nairn Biodiversity Action Plan[xiii] also notes that the local pine marten population is widespread in woodland areas. Given the suitability of habitats within the wider area, the habitats within the Scheme have been assessed to be of importance for pine marten at a Local scale.

5.5 Conclusion

5.5.1 Two of the survey areas have high suitability for pine marten. However, the majority of habitats surveyed have low to moderate suitability for pine marten. This is largely due to the abundance of relatively young species-poor coniferous plantation woodland and their lack of potential den sites. The largest woodland blocks are commercial conifer plantations, where structure and species diversity are low and elevated arboreal cavities are not apparent. The overall habitat suitability of the Study Area has been assessed as sub-optimal for pine marten and limited evidence of pine marten was recorded during the field survey. As such, it is likely that pine marten occur at low densities and the habitats within the Scheme are considered to be of Local value for the species.

6. Red Squirrel

6.1.1 This section details the findings of a habitat suitability assessment for red squirrel and detailed field surveys, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

6.2 Methodology

Desk Study

Biological Records

6.2.1 The following organisations were contacted for biological records of red squirrel within 1km of the existing A9:

- Highlands Biological Recording Group (HBRG)
- North East Scotland Biological Records Centre (NESBreC)
- Scottish Natural Heritage (SNH)
- Scottish Wildlife Trust (SWT)
- Forestry Commission Scotland
- National Trust for Scotland
- Scotland Transerv

Study Area Selection

6.2.2 The red squirrel Study Area for this assessment comprised the Proposed Scheme and land extending to 100m from its boundary. This Study Area is consistent with the SNH recommendation that surveys for red squirrel should extend a minimum of 50m from the edge of any proposed operational site[xiv].

Habitat Suitability Assessment

6.2.3 To inform the DMRB Stage 2 Assessment, important red squirrel habitat within the Study Area was identified through a habitat suitability assessment, comprising a desk study and field survey.

6.2.4 The approach to the habitat suitability assessment has been adapted from the Chartered Institute of Ecology and Environmental Management (CIEEM) technical guidance series for red squirrel, including:

- Forestry Commission Research Information Note 255: Practical Techniques for Surveying and Monitoring Squirrels[xv]
- information on red squirrel in: BAP Mammals; Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation[xvi]
- Gurnell et al. (2004) 'A critical look at methods for monitoring red and grey squirrels'[xvii]

6.2.5 A review of the following sources was carried out to identify potential red squirrel habitat within the red squirrel Study Area:

- Phase 1 habitat data gathered for the Proposed Scheme in 2014[vi]

- GIS data from the National Forest Inventory Great Britain and the Native Woodland Survey
- aerial photography
- red squirrel records within 1km of the Proposed Scheme obtained from the desk study
- incidental sightings of red squirrel recorded by surveyors during field surveys in 2015

6.2.6 Using this information twenty seven survey areas were identified, as presented in Figure 12.14a-k.

Field Survey

6.2.7 As part of the habitat suitability assessment for the DMRB Stage 2 Assessment, each survey area was systematically walked by four suitably experienced ecologists, who recorded features of the woodland to enable assessment of its relative quality for red squirrels (see assessment methodology). At each survey area, a record was made of woodland type, woodland use, connectivity, tree species present (including dominant and canopy species), age of woodland, understorey and ground flora. In addition, any indications of red squirrel activity, such as the presence of individuals, dreys, feeding signs, or ring barking were noted and their GPS locations recorded. The numbers of active dreys and abundance of feeding signs were recorded to inform the assessment in addition to the relative quality of the survey areas.

6.2.8 Surveys were undertaken between the 5th and 9th October 2015, generally between the hours of 10am and 4pm, in suitable weather conditions for spotting red squirrel and their field signs.

Assessment Methodology

6.2.9 Habitat suitability was evaluated at each survey area by

- estimating the number of squirrels the habitat can support (its 'carrying capacity')
- making a relative estimate of the level of current red squirrel activity

Carrying Capacity

6.2.10 Standard methods were used to evaluate the indicative carrying capacity of woodlands for red squirrel based on the dominant tree species present[xv]. Most of the survey areas for this assessment were dominated by Scots pine *Pinus sylvestris*, the indicative carrying capacity of which is 'low'[xv]. In order to provide a finer level of detail with which to differentiate the suitability of the survey areas, a scoring system was developed for this study which comparatively assessed features of the survey areas of known value to red squirrel. The field survey method was designed to record each of these features at each survey area accordingly.

6.2.11 Features of value to red squirrel were derived from Gurnell et al. (2009)[xv] and are listed below:

- woodland type (e.g. coniferous plantation, semi-natural broad-leaved woodland)
- woodland use (e.g. commercial forestry, parkland)
- connectivity (whether or not connecting features such as canopy, or thicket-stage plantations were present)
- tree species present (e.g. Scots pine, Sitka spruce, birch)

- dominant species
- canopy species
- age of woodland (over or under 25 years)
- understorey (presence of scrub layer providing cover)
- ground flora (whether developed or poor, or presence of other foraging opportunities)

6.2.12 The relative quality of each survey area to support red squirrel was measured on a four point scale (scores of 0-3 indicating low-high relative quality). The score was determined for each site based on the features observed within each survey area. Table A6.1 presents descriptions of the typical features indicative of each score. The features present in each of the survey areas were considered with respect to these descriptions and assigned scores accordingly. Where typical conditions could not readily distinguish whether a survey area should be assigned one of two adjacent scores, all features observed at that site were considered and a score assigned based on the professional judgement of the lead surveyor.

Table A6.1: System Used to Score the Relative Quality of Survey Areas for Red Squirrel

Description of typical conditions	Score	Assessment
Signs of frequent disturbance by felling; trees younger than 25 years.	0	Resident squirrels are likely to be absent.
Some disturbance; single species plantation of around 25 years; ground flora and understory undeveloped.	1	Resident squirrels are likely to be present.
Some disturbance; 80% scots pine 20% other species plantation over 25 years; ground flora developed; presence of understorey.	2	Resident squirrels are likely to be present.
Mature trees (50-100+ years) with cavities; 80% scots pine 20% other species; mature ground flora with understorey; minimal human disturbance.	3	Resident squirrels are highly likely to be present.

Red Squirrel Activity

6.2.13 Observations made of red squirrel activity during the field surveys were evaluated using another four-point scoring system (scores of 0-3 indicating low-high activity)[xv]. Criteria used to assign these scores are detailed in Table A6.2.

Table A6.2: Scoring System Used to Evaluate Red Squirrel Activity

Score	Description
0	No signs (no signs of activity, no dreys present).
1	Few signs (no dreys, very few feeding signs).
2	Moderate signs (some dreys present, some scattered feeding signs).
3	Many signs (several dreys present, abundant feeding signs).

Relative Habitat Suitability

6.2.14 For the purpose of this assessment, in order to be able to make a comparative assessment of the relative suitability of the survey areas for red squirrels, these scores were taken together to provide a combined score for each survey area. This combined score must be considered a subjective assessment, but is fit for use within this study for

the purpose of comparing sites. Possible total scores for each survey area range between 0 and 6, which has been interpreted as score 0-2= low suitability, 3-4= moderate suitability, and 5-6= high habitat suitability for red squirrels.

Field Survey

6.2.15 To inform the DMRB Stage 3 Assessment, further detailed field surveys were undertaken by four suitably experienced ecologists in May and June 2016. The survey methodology described by Gurnell et al. (2009)[xv] was adapted for this study following the guidelines for specific survey requirements set out by Scottish Natural Heritage. Surveyors undertook a visual (basic method) survey to record red squirrel evidence.

6.2.16 Survey areas were walked to cover as much of the suitable red squirrel habitat as possible. Surveyors walked transects through the woodland approximately 20m apart so as to cover the 50m buffer, stopping for 3 minutes every 100m. Surveys commenced at dawn and continued until approximately 12:00. Sightings of red squirrels and red squirrel evidence (including ring barking, digging, feeding remains and active dreys) were recorded whilst walking and when stopped.

6.2.17 The survey areas were split into two groups and surveys were repeated four times over a period of two weeks for each group (23rd May – 6th June 2016 and 9th June – 23rd June 2016).

6.2.18 As a result of changes to the Proposed Scheme design, an additional area of woodland to the north of Funtack Burn at Dalmagarry was surveyed in February 2017. This survey recorded the suitability of the woodland habitat for red squirrel, in addition to any evidence of this species.

Limitations

6.2.19 Ecological surveys are limited by factors which affect the presence of animals such as the time of year and behaviour. The absence of evidence of red squirrel should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

6.2.20 Due to revisions to the Proposed Scheme design, additional areas of woodland were included in the assessment in February 2017. These survey areas (1, 2, 3, 14, and 29 on Figure 12.14a-k), have been surveyed for signs of red squirrel and for dreys, but were not included as part of the habitat suitability assessment. The suitability of this woodland has been determined by reviewing the results of the habitat suitability assessment for woodland of a similar character, with a precautionary approach to their valuation taken, where appropriate. The absence of habitat suitability data for these areas is therefore not considered to be a significant limitation to the assessment.

6.2.21 During the field surveys in 2015, access was not possible to survey area 27. However, assessments undertaken at the adjacent survey areas allowed an estimated score to be obtained for this area, predominantly based on the quality of the habitat observed and available desk study data.

6.2.22 During the field surveys in May and June 2016 surveyors were unable to walk transects through a small number of woodland areas due to the density of vegetation and/or the presence of windblown trees, details of which are provided in Table A6.3. As such transects were walked around the outside of these impenetrable areas of woodland.

6.2.23 The field survey was undertaken at an appropriate time of year and during suitable weather conditions (i.e. not strong winds, cold temperatures or heavy rain). As such the

results of these surveys are considered to be sufficient to undertake this DMRB Stage 3 Assessment.

Table A6.3: Limitations Encountered during Red Squirrel Surveys, May/June 2016

X Ref.	Y Ref.	Location	Limitation
279870 to 279550	829590 to 829710	Woodland 200m south east of Tomatin Distillery, beyond residential buildings and access road.	Dense plantation woodland and windblown trees.
279540 to 279510	830220 to 830380	Woodland north of Tomatin Distillery, to east of existing A9.	Dense plantation woodland.
279490	831720	Woodland to north west of Invereen, south of Damagarry Burn.	Dense plantation woodland and windblown trees.
275463 to 275579	834609 to 834579	North east extent of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.
275039	834345	Southern extent of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.
274958	834306	Southern tip of woodland to west of A9, approximately 1.5km west of Moy.	Windblown trees preventing access.

6.3 Results

Desk Study

6.3.1 Six records of red squirrel were received from HBRG and NESBReC, details of which are provided in Table A6.4.

Table A6.4: Red Squirrel Desk Study Records

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Source	Details
272000	835000	Not specified	09/04/2009	498	HBRC	None provided
279000	830000	Near Dalmagarry	03/07/2009	438	HBRC	1 count
279000	830000	Tomatin (A9)	24/07/2005	438	HBRC	1 count
279000	832000	Dalmagarry	14/07/2008	0	HBRC	Several adult count
280900	828900	Tomatin	10/01/2007	266	HBRC	1 count
277050	834050	Not specified	05/11/2008	0	NESBReC	None provided

6.3.2 As a minimum, desk study records of red squirrel within 250m have been displayed on Figure 12.18a-k and therefore some data points listed in Table A6.4 are not shown on the figure.

Habitat Suitability Assessment

6.3.3 The findings of the Habitat Suitability Assessment for red squirrels is presented in Table A6.5. As discussed in Section 6.2.20, detailed habitat suitability data is not available for survey areas 1, 2, 3, 14, and 29. Based on a review of woodland within the survey area which is of a similar character, and following the precautionary approach, these areas assessed as being of no more than moderate suitability for red squirrel.

Table A6.5: Red Squirrel Habitat Suitability Assessment Results

Survey area	Indicative carrying capacity	Quality of woodland score	Level of activity score	Habitat suitability
4	Low - Scots pine dominant	2	1	Moderate
5	Low - Scots pine dominant	3	1	Moderate
6	Low - Scots pine dominant	1	1	Low
7	Low - Scots pine dominant	2	3	High
8	Low - Scots pine dominant	3	2	High
9	Low - Scots pine dominant	2	1	Moderate
10	Low - Scots pine dominant	2	2	Moderate
11	Low - Scots pine dominant	2	0	Low
12	Low - Scots pine dominant	2	Unknown	Likely moderate
13	Low - Scots pine dominant	1	1	Low
15	Low - Scots pine dominant	1	1	Low
16	Low - Scots pine dominant	0	1	Low
17	Low - Scots pine dominant	2	1	Moderate
18	Low - Scots pine dominant	3	2	High
19	Low - Scots pine dominant	2	2	Moderate
20	Low - Scots pine dominant	2	2	Moderate
21	Low - Scots pine dominant	2	2	Moderate

Survey area	Indicative carrying capacity	Quality of woodland score	Level of activity score	Habitat suitability
22	Low - Scots pine dominant	1	3	Moderate
23	Low - Scots pine dominant	3	3	High
24	Low - Scots pine dominant	3	2	High
25	Low - Scots pine dominant	0	1	Low
26	Low - Sitka Spruce dominant	1	1	Low
27	Low - Scots pine dominant	2	1	Moderate
28	Low - Scots pine dominant	2	0	Low

6.3.4 The majority of the woodland present is commercial plantation woodland which is approximately 30 years old and dominated by Scots pine. The desk study has shown that this type of woodland typically provides low to moderate quality habitat for red squirrels. The results of the field surveys revealed that some of these survey areas are of higher relative quality as a result of the age structure and species composition of the woodland and lower level of disturbance at some woodlands.

6.3.5 Survey areas where other tree species such as beech *Fagus sylvatica*, Norway spruce *Picea abies*, Sitka spruce *Picea sitchensis* and larch *Larix decidua* were present had more evidence of feeding signs around the base of these trees and more active dreys were located in these areas. Consequently, these survey areas achieve higher relative suitability scores. It is likely that areas such as these, which contain a mixture of species, are of higher value to red squirrel.

Field Survey

6.3.6 Results of the field surveys undertaken in 2015, 2016 and 2017 are shown on Figure 12.14a-k and detailed in Table A6.6, Table A6.7 and Table A6.8.

Table A6.6: Red Squirrel Survey Results, 2015

Description of feature	Number of records
Drey – unknown if active	70
Feeding signs	146
Ring barking	1
Sighting	10

Table A6.7: Red Squirrel Survey Results, 2016

Description of feature	Number of records
Active drey	2
Drey – unknown if active	40
Feeding signs	75
Sighting	15

Table A6.8: Red Squirrel Survey Results, 2017

Description of feature	Number of records
Feeding signs	2

6.3.7 Evidence of red squirrels has been recorded throughout the survey area. The majority of dreys were recorded in the northern section of the Proposed Scheme, in areas of woodland located to the south of the A9 at Lynebeg and to the north of the A9 at Moy. These areas of mature Scots pine plantation contain trees of an age and size to provide abundant feeding resources in the form of cones as well as suitable drey sites for red squirrels.

6.4 Valuation

6.4.1 The Study Area has been valued with respect to red squirrel based on the suitability of the habitat and the volume of red squirrel evidence recorded. The valuation per survey area and rational for this is set out in Table A6.9.

Table A6.9: Red Squirrel Valuation

Survey Area	Valuation	Rational for valuation
1	Local	The majority of the woodland in these survey areas comprises relatively young, species-poor coniferous plantation woodland. The results of the habitat suitability assessment indicate that this type of woodland typically provides low to moderate quality habitat for red squirrels. This assessment is supported by the 2015 and 2016 survey findings which only recorded a limited amount of red squirrel evidence in these areas.
2		
3		
6		
11		
12		
13		
14		
15		
16		
19		
25		
28		
29		
4	Authority Area	These survey areas largely comprise mature Scots pine plantation woodland, containing trees of an age and size to provide abundant feeding resources and suitable drey sites for red squirrels. Field surveys in 2015 and 2016 recorded the greatest volume of red squirrel evidence in the northern section of the Scheme, around Lynebeg and Moy, with numerous sightings and dreys recorded. Red squirrels are widespread in the Cairngorms[xviii] and the Cairngorm region is a UK strong hold for the species. The Inverness and Nairn Biodiversity Action Plan also notes that the red squirrel population is widespread in woodland areas. Given the level of red squirrel activity recorded in these areas, they are assessed to be important at an Authority Area scale.
5		
7		
8		
9		
10		
17		
18		
20		

Survey Area	Valuation	Rational for valuation
23		
21		
22		
24		
26		
27		

6.5 Conclusion

6.5.1 The majority of the woodland in the survey area comprises relatively young, species-poor coniferous plantation woodland. The results of the habitat suitability assessment indicate that this type of woodland typically provides low to moderate quality habitat for red squirrels. In these areas of woodland a limited amount of evidence of red squirrel was recorded during the field surveys, these locations are assessed to be of Local importance for red squirrel. More established areas of Scots pine woodland located at the northern section of the Scheme are of higher value to red squirrel and a greater volume of red squirrel evidence has been recorded in these areas, as such these area are assessed to be important for red squirrel at an Authority Area scale.

7. Reptiles

7.1.1 This section details the findings of a habitat suitability assessment for reptiles, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

7.2 Methodology

Desk Study

7.2.1 The following organisations were contacted for reptile records within 1km of the existing A9:

- Highland Biological Recording Group (HBRG)
- North East Scotland Biological Records Centre (NESBreC)
- Scotland Transerv

Habitat Suitability Assessment

7.2.2 To inform the DMRB Stage 2 Assessment, important reptile habitat was identified through a habitat suitability assessment, comprising a desk study and field survey. The identification of important habitat was restricted to land within the boundary of the Proposed Scheme (the reptile Study Area). This area contained all route options and their associated land-take, and is where direct effects such as habitat loss and harm to individual reptiles are most likely to occur.

Desk Study

7.2.3 The presence and distribution of potentially suitable reptile habitat within the reptile Study Area was determined through a review of relevant guidance on suitable common reptile habitat and existing Phase 1 habitat data collected in 2014[vi] for the Proposed Scheme. The relevant guidance consulted included:

- guidance on reptile survey contained within the DMRB[xix]
- Froglife's Advice Sheet 10: Reptile Survey[xx]
- The Joint Nature Conservation Council's (JNCC) Herpetofauna Workers Manual[xxi]

7.2.4 The desk study information was used to identify suitable habitat for reptiles within the Study Area. Habitats were grouped into Survey Areas and subject to field survey to assess their suitability for supporting reptiles. In total, 9 survey areas were defined for this assessment, as shown on Figure 12.15a-k.

Field Survey

7.2.5 Survey areas were subject to field survey in September 2015 by two suitably experienced ecologists to assess the suitability of habitats within the reptile Study Area to support reptiles. Surveyors walked each of the 9 areas, collecting information on features suitable for:

- basking - south facing slopes and habitat mosaics (micro habitats created by varied vegetation type, topography, substrate, and the amount of sunlight received)
- foraging - presence of insect prey and small mammals / birds (prey for adder *Vipera berus*)

- shelter - areas of dense scrub, rocks, logs, exposed tree roots, fallen trees, mammal burrows etc.
- hibernation - log piles, fallen trees, mammal burrows, root balls etc.

7.2.6 In addition to these features, surveyors aimed to record incidental observations of common reptiles spotted during the field survey.

7.2.7 This information, in conjunction with the desk study information, was used to determine the suitability of habitats within the reptile Study Area for supporting reptiles. Each survey area has been assigned a suitability value for reptiles (either high, moderate, or low) based on the results of the field survey. These have been defined as follows:

- High – survey areas comprised predominantly of 'important' habitat for reptiles. These are generally large areas of habitat with good connectivity, and which support a mosaic of micro-habitats and features suitable for basking, foraging, sheltering, and hibernation by reptiles.
- Moderate – survey areas comprised predominantly of 'important' habitat, but which are generally less suitable when compared to high suitability areas. The habitats within these areas either exhibit greater homogeneity within the habitat type (less of a mosaic structure), smaller areas of suitable habitat, and therefore offer less opportunity for basking, foraging, and shelter.
- Low – survey areas comprised predominantly of 'habitats of moderate importance' for reptiles. These areas are predominantly woodland habitats which are shaded and offer limited opportunity for basking and foraging, but which may support sheltering reptiles. It also includes 'important habitat' which has been assessed as offering limited basking, foraging, and sheltering potential (generally due to its homogeneity / lack of mosaic features).

Field Survey

7.2.8 No further field surveys for reptiles was undertaken to inform the DMRB Stage 3 Assessment.

Limitations

7.2.9 Ecological surveys are limited by factors which affect the presence of animals such as the time of year, migration patterns and behaviour. The absence of evidence of reptiles should not be taken as conclusive proof that reptile species are not present or will not be present in the future.

7.2.10 The habitat suitability assessment was undertaken at an appropriate time of year for identifying reptile habitat and for spotting reptiles during surveys. The results of these surveys are therefore considered to be sufficient to undertake the DMRB Stage 3 Assessment.

7.3 Results

Desk Study

7.3.1 Numerous records of reptile were received from HBRC and NESBreC, a summary of which is provided in Table A7.1.

Table A7.1: Reptile Desk Study Records

Reptile species	Record details
Slow worm	3 records between 2008 and 2012
Adder	1 record in 2000
Common lizard	17 records between 1994 and 2014

7.3.2 In addition to the desk study data, four records of common reptile have been recorded through incidental observation during multi-disciplinary surveys in 2015 and 2016, details of which are provided in Table A7.2.

Table A7.2: Incidental Reptile Records from 2015 and 2016

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Species	Details
273854	834739	East of Creag Bheithin	07/07/2015	7.40	Common lizard	Sighting in wet dwarf shrub heath.
275598	834262	North west of Lynemore	08/09/2015	303.22	Common lizard	Seen on the edge of plantation woodland connected to an area of wet dwarf shrub heath.
274030	834626	South of Allt Creag Bheithin	10/05/2016	0	Common lizard	Sighting during water vole survey, adjacent to watercourse.
274743	834689	South of Allt Creag Bheithin	10/05/2016	0	Common lizard	Sighting during water vole survey, adjacent to watercourse.

Habitat Suitability Assessment

Desk Study

7.3.3 Common reptile species can be found in a broad range of habitats, including grassland, heathland, coppiced woodland, open woodland, immature forest plantations, and farmland[xx]. Unimproved or semi-natural grassland and heathland are of particular importance, as are mosaic habitats, such as heathland / grassland complexes or woodland / grassland edges[xxi].

7.3.4 Table A7.3 presents a summary of the Phase 1 habitat types recorded within the reptile Study Area and their 'importance' for reptiles in accordance with the methodology detailed above. The distribution of these habitats within the reptile Study Area is shown on Figure 12.15a-k.

Table A7.3: Important Habitats Recorded in the Reptile Study Area

('Important' habitat for reptiles shown in dark grey. Habitat of 'Moderate' importance for reptiles shown in light grey)

Phase 1 Habitat Type		Common lizard	Slow worm	Adder
A1.1	Broad-leaved woodland			
A1.3	Mixed woodland			
A2	Scrub			
A3.1	Broad-leaved parkland/scattered trees			
A4.2	Recently felled woodland			
B1	Acid grassland			
B2	Neutral grassland			
B3	Calcareous grassland			
C3.1	Tall ruderal			
D2	Wet dwarf shrub heath			
D5	Dry heath/acid grassland mosaic			
D6	Wet heath/acid grassland mosaic			
E1	Bog			
A1.2	Coniferous woodland			
B5	Marshy grassland			
E2.1	Acid/neutral flush			
I	Rock exposure and waste			
J1.2	Amenity grassland			
G1	Standing water			
G2	Running water			
J4	Bare ground			

Field Survey

7.3.5 The results of the field survey are detailed in Table A7.4. The distribution of each of the nine survey areas within the reptile Study Area is shown on Figure 12.15a-k.

7.3.6 A relatively large proportion of the reptile Study Area supports habitats which are suitable for common reptiles. The verges of the existing A9 are predominantly semi-improved grassland which are connected to adjacent larger expanses of grassland, heathland, and scrub, some of which are also within the Study Area. These habitats provide suitable basking, foraging, and sheltering habitat for reptiles, particularly common lizard and adder. The wooded areas within the Study Area are predominantly coniferous plantation woodland, although pockets of mixed and semi-natural broad-leaved woodland are also present. These areas are generally less suitable for reptiles, as they receive less sunlight which is required by reptiles for basking. However, they do offer some opportunity for shelter, particularly in the drier areas.

Table A7.4: Reptile Habitat Suitability Assessment Field Survey Results

Survey area	Description
1 (Figure 12.15d)	The survey area supports predominantly grazed semi-improved neutral grassland and includes a section of the existing A9 verge which is tussocky grassland. There is some potential for basking (there is a stone wall running through survey area) and foraging, although habitat is generally less suitable due to its uniformity. Adjacent habitats, including a rubble pile and areas of grassland, offer greater opportunities for refuge and hibernation.
2 (Figure 12.15d)	Areas of a high suitability habitat include a relatively large expanse of unimproved acid grassland and wet heath mosaic, encompassing a section of the A9 verge. Rocky outcrops are scattered throughout, but are particularly prevalent adjacent to the River Findhorn. Suitable basking, foraging and sheltering habitat present, as well as opportunities for hibernation. Moderately suitable areas include a mosaic of marshy grassland, neutral grassland, and semi-natural broad-leaved woodland. Grassland areas are relatively dense, although areas for basking and foraging are present; there is ample habitat for shelter. Habitats within this area may flood during heavier rain. The area is considered to be most suitable for common lizard. Lower suitability habitat includes areas of semi-natural broad-leaved woodland with some coniferous plantation. The broad-leaved areas have a more developed understory and offer greater potential for shelter when compared to the coniferous areas. However, these areas offer limited basking and foraging potential. Shelter within these areas is also unlikely as the area is wet it places and is likely to flood during periods of higher rainfall.
3 (Figure 12.15d-f)	Moderately suitable habitat includes a mosaic of unimproved and semi-improved acid grassland, scattered heathland and scrub encompassing the A9 verge and a relatively large continuous area of adjacent habitat. Suitable basking, foraging and sheltering habitat exists throughout, including features suitable for hibernation. Potential for common lizard, slow worm, and adder. Lower suitability areas include coniferous plantation woodland which is relatively sparsely wooded and receives dappled sunlight. Generally not suitable for basking and foraging, although some areas may be used for shelter.
4 (Figure 12.15f-g)	Moderately suitable habitat includes a relatively small area of semi-improved acid grassland adjacent to Dalmagarry Burn and the A9 verge. These areas offer some opportunity for foraging, although sheltering habitat is limited. The majority of this survey area contains lower suitability habitats: grazed semi-improved and improved grassland and heavily shaded coniferous and broad-leaved woodland.

Survey area	Description
5 (Figure 12.15g-h)	Moderately suitable areas include the A9 verge, comprising semi-improved grassland, which grades into an area of dry heath and scrub. Suitable basking, and foraging habitat is present with some potential for shelter within the areas of scrub. Potential for common lizard and slow worm, lower likelihood of adder. Areas of lower suitability include coniferous plantation woodland which is sparsely wooded and receives dappled sunlight. Generally limited opportunity for basking and foraging, although some areas may be used for shelter.
6 (Figure 12.15h-i)	High quality habitat includes a large, continuous area of habitat, encompassing the A9 verge, supporting acid grassland / heathland mosaic, with streams, wet ditches, and rocky areas. Suitable habitat for basking, foraging, and sheltering is abundant. Likely to flood in places although there are higher, drier areas. Particularly suitable for lizards and adders. Habitat of moderate quality includes a mosaic of semi-improved grassland (the A9 verge), dry heath, and acid grassland with scattered scrub. Parts of the survey area include steep cliff faces and areas of rocky outcrops. Basking, foraging, and, sheltering habitat is abundant. It is connected to a large area of grassland and heath to the east. Potential for common lizard, slow worm, and adder. Lower suitability habitat includes coniferous woodland, generally shaded, with some open areas where small stands of dry heath occurs. Some potential for reptiles to forage, bask and shelter within these areas, particularly the more open areas, but generally considered to be of a low suitability.
7 (Figure 12.15e-f)	Habitats of moderate suitability include the existing A9 verge, comprising strip of predominantly unimproved acid grassland varying in width from 5 - 25m. A thin strip of scrub and coniferous woodland is adjacent. The mosaic of habitats within this area offer suitable foraging, basking, sheltering and hibernation habitat for reptiles, particularly lizard and slow worm. Lower suitability habitat includes the coniferous plantation woodland bordered by grassland. The woodlands are generally shaded with some dappled sunlight in places. Basking opportunity is limited, although the woodlands offer some potential for shelter and, in drier areas, hibernation. The survey area also contains small areas of broad-leaved birch and willow woodland, with limited leaf litter on the ground. Some potential for reptiles seeking shelter although generally sub-optimal habitat.
8 (Figure 12.15f-k)	High suitability habitat includes a large area including the existing A9 verge and adjacent habitats which contain a mosaic of grassland, heath, scattered scrub, small watercourses, paths (bare ground) and rocky outcrops. Habitats within this survey area provide ample opportunity for reptiles to bask, shelter, forage, and hibernate. Certain areas are likely to become waterlogged at certain times of the year, although there is sufficient habitat in dry areas to support a resident populations of reptiles, particularly lizards and adders. Habitat of moderate suitability includes the existing A9 verge which grades from an area of short, semi-improved grassland to areas of longer grassland and scrub with dry / wet heath mosaics adjacent. The survey area offers basking and foraging potential, with some habitat for sheltering within the adjacent heathland and woodland habitats. It is therefore connected to areas of higher quality habitat. Suitable for common lizard and slow worm. Lower suitability habitat includes areas of grazed grassland and coniferous woodland.
9 (Figure 12.15b-c)	These survey areas encompass the existing A9 verge as well as stands of coniferous plantation woodland and areas of semi-natural broad-leaved woodland. These are generally of lower suitability for reptiles.

7.4 Valuation

7.4.1 The Study Area has been valued with respect to reptiles based on the suitability of the habitat. The valuation per survey area and rational for this is set out in Table A7.5.

Table A7.5: Reptile Valuation

Survey Area	Valuation	Rational for valuation
Areas of 'Low' suitability habitat within the Study Areas	Less than Local	These survey areas comprise predominantly coniferous plantation woodland, with smaller pockets of mixed and semi-natural broad-leaved woodland. These areas have low suitability for reptiles, as they receive less sunlight required by reptiles for basking. However, they do offer some opportunity for shelter in drier areas.
Areas of 'High' and 'Moderate' suitability habitat within the Study Areas	Local	Four common lizards were observed during the ecological field surveys undertaken in 2015 and 2016 demonstrating their presence in the Study Area. These survey areas comprise predominantly semi-improved grassland which is connected to adjacent larger expanses of grassland, heathland and scrub, some of which also falls within the Study Areas. These areas have been assessed as providing habitat of moderate and high suitability for reptiles as they provide suitable basking, foraging, and sheltering habitat for reptiles, particularly common lizard and adder. Given the abundance of suitable habitat for these species within the wider area, these locations are assessed to be of value at a local scale.

7.5 Conclusion

7.5.1 A relatively large proportion of the reptile Study Area supports habitats which are suitable for common reptiles to bask, forage and shelter. Four incidental sightings of common lizard confirms the presence of this species within the Study Area. Although incidental records of slow worm and adder have not been recorded, it is highly likely that these species are also present. The habitats across the Scheme have been assessed as being important for reptiles at either a negligible or Local scale.

8. Scottish Wildcat

8.1.1 This section details the findings of a habitat suitability assessment for Scottish wildcat, undertaken to inform the DMRB Stage 3 Assessment for the Proposed Scheme.

8.2 Methodology

Desk Study

8.2.1 The following organisations were contacted for wildcat records extending to a minimum of 5km from the existing A9:

- Highland Biological Recording Group (HBRC)
- North East Scotland Biological Records Centre (NESBreC)
- Scotland Transerv
- SNH - provided details of their Wildcat Habitat Suitability Model, which maps wildcat cover, movement and prey habitats
- Cairngorms National Park Authority (CNPA) - provided records of wildcat sightings from within the Cairngorms National Park

8.2.2 The SNH paper on survey and scoping of wildcat priority areas[xxii] has been reviewed to identify if any priority areas are located within the Study Area.

8.2.3 An evaluation of the suitability of habitats present within the Proposed Scheme was undertaken based on the existing Phase 1 habitat data (CH2M, 2015[vi]).

8.2.4 In addition to the Proposed Scheme, a Study Area was defined which comprised the Proposed Scheme plus land up to 200m from its boundary. This area, recommended in SNH guidance[xxiii], accounts for indirect effects, such as project related disturbance which may occur should any dens or resting sites be present in habitats close to the proposed works.

Habitat Suitability Assessment

8.2.5 In order to define 'suitable wildcat habitat', a literature review on the habitat preferences of wildcat was undertaken[xxiv]. Table A8.1 summarises the findings of this review and sets out positive and negative indicators for habitat suitability for wildcat.

Table A8.1: List of Positive/Negative Indicators for Suitability of Habitat for Wildcat

Positive Indicators
Heterogeneous, high diversity habitats.
Margins of habitats, particularly moorland and woodland.
Close to woodland, preferably mixed broad-leaved and small in size. Outer 50m zone of woodland is considered optimal.
Close to grassland.
Close to arable fields.
Close to watercourses.
Negative Indicators

Homogenous habitats e.g. large, dense conifer plantations, large expanses of extensive agriculture.
Dwarf shrub.
High mountain areas.
Open/exposed habitats e.g. open rock face, sparsely vegetated areas.
Proximity to man-made structures.

8.2.6 The information presented in Table A8.1 has been used to develop the definitions of habitat suitability for wildcat set out in Table A8.2.

Table A8.2: Definition of High, Moderate and Low Suitability of Habitat for Wildcat

Habitat Suitability	Definition
High	Heterogeneous habitats with opportunities for both shelter e.g. woodland and foraging e.g. grassland, moorland, riparian habitats. Good connectivity to other suitable habitats and suitability unlikely to be adversely affected by habitat fragmentation or proximity to man-made structures.
Moderate	Some suitable habitats present, but either lacking in opportunities for both shelter and foraging, or suitability reduced through habitat fragmentation or proximity to man-made structures.
Low	Open expanses of homogeneous habitat e.g. large dense conifer plantations, expanses of dwarf shrub, extensive agriculture, with little or very few opportunities for shelter and foraging. Habitats may be highly fragmented, in close proximity to man-made structures or in high mountain areas.

8.2.7 'Habitat units' within the Study Area were identified using Phase 1 habitat survey (CH2M, 2015[vi]) along with aerial photography. Habitats were grouped into units based on their type and degree of connectivity. Each habitat unit was then considered in respect of the above definitions and assigned a suitability for wildcat of 'high', 'medium' or 'low'.

Field Survey

8.2.8 No specific field surveys for wildcat were undertaken for either the DMRB Stage 2 or Stage 3 Assessment. However, during other ecology surveys undertaken in 2015 and 2016 incidental sightings and field signs were recorded.

Limitations

8.2.9 Ecological surveys are limited by factors which affect the presence of animals such as the time of year, migration patterns and behaviour. The absence of evidence of Scottish Wildcat should not be taken as conclusive proof that this species is not present or will not be present in the future.

8.2.10 Identification of habitat types present in the Study Area is dependent on the accuracy of the Phase 1 habitat survey information and aerial photographs examined. However, the data is relatively recent and significant changes in landscape structure in the vicinity of the proposals are unlikely to have occurred in the interim period. This information is not considered to limit this study.

8.3 Results

Desk Study

8.3.1 No records of wildcat within the Study Area were received from the record centres contacted.

8.3.2 SNH have identified six priority areas for wildcats based on recent verified wildcat sightings[Xxii]. The closest priority area is located at approximately 4km south of the scheme, covering an area around Dulnain, crossing the A9 at Slochd.

Habitat Suitability Assessment

8.3.3 The wildcat habitat suitability model provided by SNH indicated areas of suitable habitat for wildcat (grouped into movement, cover, prey moorland and prey grassland habitats) throughout the wildcat Study Area. This suggested that the majority of habitats within the Study Area are suitable for wildcat, although the extent of suitable habitat on the northbound side of the A9 was shown as significantly smaller than that on the southbound, with minimal cover, movement or prey habitats occurring between the Tomatin distillery and the southern edge of Loch Moy.

8.3.4 The results of the habitat suitability assessment for wildcat within the Study Area are detailed in Table A8.3. These results should be read in conjunction with the Phase 1 habitat maps (Figure 12.3) for the scheme shown as sheet number in Table A8.3.

Table A8.3: Scottish Wildcat Habitat Suitability Assessment Results

Sheet number[5]	Habitat type	Positive indicators	Negative indicators	Suitability for wildcat
Adjacent to existing A9 North-bound				
1	Broad-leaved semi-natural woodland; Mixed semi- natural woodland; Coniferous plantation.	Cover, prey and movement habitats all nearby. Well connected to high value offsite habitats.	Close to village of Tomatin; roads, houses, buildings. Railway line close by.	Medium
	Neutral grassland			Medium
2	Conifer plantation	Cover, prey and movement habitats all nearby. Well connected to high value offsite habitats.	Close to village of Tomatin; roads, houses, buildings. Railway line close by.	Medium
	Broad-leaved plantation	Some limited cover within woodland.	Very narrow strip of woodland. Road and railway significantly reduces connectivity to offsite habitats. Close proximity to houses.	Low
	Wet heath/acid grassland mosaic	Some prey habitat in drier areas.	Low prey availability on wet heath. Lack of cover and potential shelter.	Low
	Broad-leaved plantation; semi-natural conifer and broad-leaved woodland	Both shelter and prey habitats in close proximity (albeit very limited in extent). Possible movement corridor along railway.	Very narrow band of habitat with limited offsite connectivity. Bound by road and railway with extensive wet heath/acid grassland mosaic beyond.	Low
3	Wet heath/acid grassland mosaic	Some prey habitat in drier areas.	Low prey availability on wet heath. Lack of cover and potential shelter.	Low
	Acid and neutral semi- improved grassland	Possible prey habitat. Close to burn and riparian prey habitats.	Open in areas and lacking in cover. Poor connectivity to areas offering shelter/cover.	Low
4	Wet heath/acid grassland mosaic	Some prey habitat in drier areas.	Low prey availability on wet heath. Lack of cover and potential shelter.	Low
	Mixed woodland; Broad- leaved	Potential cover/shelter opportunities.	Very narrow band of habitat with poor	Low

[5] Refer to Phase 1 Habitat Map (CH2M, 2015) for the location of this feature.

Sheet number[5]	Habitat type	Positive indicators	Negative indicators	Suitability for wildcat
	semi-natural woodland; Coniferous plantation		connectivity to offsite habitats. Close to road and railway.	
5	Mix of plantation and semi- natural broad-leaved and coniferous woodland	Heterogeneous habitats, offering shelter and prey. Good connectivity to offsite habitats.	Close proximity to road. Small number of houses in vicinity.	High
6	Wet dwarf shrub heath	Heterogeneous habitats within the close vicinity, offering shelter and prey.	Prey availability likely to be reduced over much of the wet dwarf shrub.	Medium
	Dry heath/acid grassland mosaic	Heterogeneous habitats within the close vicinity, offering shelter and prey.	Lack of cover and potential shelter.	High
	Coniferous plantation	Rides and burns through woodland. Close to moorland habitat.	Appears to be relatively dense, reducing prey availability.	High
7	Wet bog	Areas of coniferous plantation (including recently felled woodland) within the wider area.	Prey likely to be much reduced. No immediate cover or shelter opportunities.	Low
	Coniferous woodland plantation - recently felled	Potential cover, both under felled trees/brash and within standing woodland. Some prey habitats within the vicinity (although not extensive).	Open in areas.	Medium
8	Wet bog	Areas of coniferous plantation (including recently felled woodland) within the wider area.	Prey likely to be much reduced. No immediate cover or shelter.	Low
Adjacent to existing A9 South-bound				
1	Broad-leaved plantation woodland	Good opportunities for shelter and foraging, with burns and areas of grassland within close vicinity.	N/A	High
	Unimproved acid/neutral grassland	Heterogeneous habitats. Likely good prey habitat, with woodland cover close by.	N/A	High
2	Coniferous and broad-leaved plantation woodland with patchy semi-natural broad- leaved woodland	Good opportunities for shelter and foraging, with areas of grassland and burns within close vicinity.	Small number of dwellings within woodland.	High

Sheet number[5]	Habitat type	Positive indicators	Negative indicators	Suitability for wildcat
	Acid/neutral grassland	Good prey habitat.	Open areas, lacking in cover, although woodland areas within close proximity.	High
3	Coniferous plantation woodland	Close to grassland and riparian prey habitats, offers cover and extends off site.	Quarry within woodland may be a source of disturbance. Minor road along woodland edge.	High
	Unimproved/semi improved acid and neutral grassland	Possible prey habitat.	Wide open habitat lacking in cover. Number of farm buildings and access tracks present.	Low
4	Unimproved acid grassland	Possible prey habitat.	Wide open habitat lacking in cover.	Medium
	Mixed semi-natural woodland	May provide some limited cover.	Very narrow band of fragmented habitat between A9 and minor road. Close to Moy village.	Low
5	Conifer plantation	Good variety of prey and cover habitats within the close vicinity.	Narrow band of woodland. Separated from suitable habitat around Loch Moy by railway line and minor road. Close to A9 and Moy village.	Medium
6	Wet dwarf shrub heath	N/A	Large, open expanses lacking in cover. Wet, open areas likely to support significantly less prey species.	Low
	Acid grassland	Good prey habitats. Burns flowing through grassland.	Large, open expanse lacking in cover.	Medium
7	Coniferous plantation woodland	Lots of rides and open areas through woodland, offering cover and prey opportunities.	N/A	High
8	Coniferous plantation woodland	Good opportunities for shelter and foraging, with grassland and burns within close vicinity.	N/A	High
	Dry heath/acid grassland mosaic	Good prey habitats and close to areas of cover within the woodland.	N/A	High

8.3.5 A summary of the habitat suitability assessment is presented in Table A8.4, which provides the total approximate areas of the habitats of high, medium and low suitability for wildcat, across the wildcat Study Area (comprising the Proposed Scheme plus land up to 200m from its boundary).

Table A8.4: Comparison of Total Areas of Habitats of High, Medium and Low Suitability for Wildcat within the Study Area

Suitability for wildcat	Approximate area of habitat (km^2)		
	A9 Northbound	A9 Southbound	Total
High	0.69	1.27	1.96
Medium	1.12	0.97	2.09
Low	0.87	0.78	1.65

8.3.6 The results in Table A8.4 show there to be a roughly equal spread of high, medium and low suitability habitats across the Study Area, although the majority of high suitability habitats are present along the southbound side of the existing A9.

8.3.7 Habitats of high suitability include coniferous and broad-leaved woodland, which are common throughout the Study Area. However, these areas of woodland are generally narrow, particularly on the northbound side of the carriageway and on the southbound side around the village of Moy, where they become fragmented by the Highland Main Line railway and minor roads running adjacent to the A9. Habitat fragmentation is likely to reduce habitat suitability and accounts for some of the moderate and low suitability habitat identified.

8.3.8 Other habitats of high suitability include grassland habitats, some of which are grazed by cattle and sheep. These habitats are also frequent along the southbound side of the existing A9. The grassland habitats were generally assessed as being of high or moderate suitability for use by wildcat, as they are likely to provide prey resources. However, in places where this habitat type is extensive, and areas that could provide cover or shelter for wildcat are lacking, habitat suitability is lower.

8.3.9 Large, open areas of wet heathland and acid grassland, at the foothills of the Monadhliath range, are present on the northbound side of the carriageway. These habitats are generally assessed as having low suitability for wildcat due to their extent and openness. This habitat type accounts for the majority of the habitat of low suitability adjacent to the northbound carriageway of the A9. However, where these habitats occur in close proximity to woodland and grassland, their likely suitability for wildcat increases.

8.4 Field survey

8.4.1 No incidental sightings or evidence of wildcat was recorded during ecology surveys in 2015 and 2016.

8.5 Valuation

8.5.1 No evidence of wildcat has been recorded within the Study Area during the 2015 and 2016 ecology surveys and no desk study records were received. The closest priority area for wildcat is located at approximately 4km south of the scheme, covering an area around Dulnain. The Study Area contains areas with moderate and high habitat suitability for wildcat, given this and the proximity of the priority area for wildcat to the south the Study Area is considered to be of Authority level value for the species.

8.6 Conclusion

8.6.1 This study has shown that suitable habitat for wildcat is present throughout the Study Area.

8.6.2 Although no records of wildcat from within the Study Area were returned from the desk study, a lack of records does not indicate absence of a species, particularly in the case of an elusive and wide-ranging species such as the wildcat, which has been recorded within close proximity to the Dalraddy to Slochd section of the project. The Study Area has been valued to be of Authority level value to wildcat.

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