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PERTH TO INVERNESS

Appendix 12.10

Otter and Water Vole

Transport Scotland

August 2018

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

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1. Introduction

1.1.1 This appendix provides the details of otter and water vole surveys and desk studies undertaken to inform the Design Manual for Roads and Bridges (DMRB) Stage 3 Assessment for the Proposed Scheme. The appendix includes a nature conservation evaluation and impact assessment.

2. Methodology

2.1 Desk Study

Biological Records

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

- Highland Biological Recording Group (HBRG);
- North East Scotland Biological Records Centre (NESBReC);
- Scottish Wildlife Trust (SWT); and
- Scotland TranServ.

2.1.2 In addition, the 2014 Phase 1 habitat survey[i] results were reviewed to identify aquatic habitats.

2.1.3 Records received prior to 2007 have not been included as they are no longer considered to be relevant due to their age.

Watercourses and Waterbodies

2.1.4 Watercourses and waterbodies were searched for within 250m of the Proposed Scheme (as shown on Figure 12.20). This is termed the Study Area.

2.1.5 The locations of watercourses and waterbodies were identified through a review of Ordnance Survey (OS) maps and aerial photography. Additional watercourses or waterbodies discovered during site visits have also been considered. Any watercourses or waterbodies not found to be present during site surveys were noted as no longer present.

2.2 Field Survey

2.2.1 An initial walkover survey was undertaken in May 2016 to assess the suitability of habitats for otter and water vole within 100m of the Proposed Scheme. This survey did not include a detailed search for evidence of these species.

Otter Surveys

2.2.2 To inform the DMRB Stage 3 Assessment, detailed otter surveys were undertaken between April and July 2017 by suitably experienced ecologists. Surveys were undertaken on all watercourses and waterbodies located within 100m of the Proposed Scheme (where access allowed), extending to 250m along watercourses.

2.2.3 These surveys followed good practice methodologies and were based on guidance set out in DMRB Volume 10[ii] and by SNH in Otters and Development[iii]. 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.

2.2.4 Otter resting sites are referred to using the following terms: holt, hover, couch, nursery area, natal holt.

2.2.5 The assessment of resting site status is determined by the quality of the feature and whether they provide key requirements for otters (see Table 2.1). 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), 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 2.1: Otter Resting Site Status Assessment Criteria[iv]

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 few 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 spraints with a range of age classes, but not in 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 otter's 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.

Resting Site Status	Definition
	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.

2.2.6 The following evidence of otter activity was searched for and recorded during the 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);
- urination "green" spots;
- feeding remains;
- paths (otter paths on watercourse banks);
- slides (mud slides evident of where the animal regularly enters the watercourse. Where mammal tracks crossing over watercourses have been recorded, these have only been documented as slides where other positive evidence of otter has been noted);
- footprints; and
- grooming hollows.

Water Vole Surveys

2.2.7 To inform the DMRB Stage 3 Assessment, water vole surveys were undertaken between April and July 2017 by suitably experienced ecologists. Surveys were undertaken on all watercourses and waterbodies located within 150m of the Proposed Scheme (where access allowed). Surveys extended up to 5m from the bank and recorded areas of suitable terrestrial habitat where present.

2.2.8 Field surveys were undertaken as per methodology outlined in The Water Vole Mitigation Handbook[v].

2.2.9 The following evidence of water vole activity was searched for and recorded during these surveys:

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

- sightings; and
- sounds (characteristic 'plop').

2.2.10 In addition to field signs, details of the habitats present were also recorded, including the following:

- waterbody type;
- bank material;
- adjoining land use;
- average depth and width;
- estimated flow;
- bank profile;
- bankside vegetation; and
- additional information including details of other species presence, including mink and rat.

2.2.11 Water voles in Scotland may also inhabit areas with minimal water flow (in both depth and width of watercourse) and in some cases where watercourses have dried up (e.g. in upper reaches of the catchment). In addition, water voles may be present in areas with minimal bankside shelter and seemingly low abundance of food sources (e.g. very short riparian sward height)[vi]. This was taken into account during the surveys, with such areas subject to survey.

2.2.12 Guidance within the Water Vole Mitigation Handbook[v] recommends two survey visits to account for the mobility of this species which may respond to habitat changes over the course of a breeding season[1]. Only a single survey was undertaken for this assessment due to the proposed start date of the construction programme being in approximately 2-3 years' time. As such, it is considered that the presence/activity levels of this species may change prior to construction and any additional data collected during a second visit as part of this DMRB Stage 3 assessment would be of limited use for assessing the effect of the Proposed Scheme on water vole. Pre-construction surveys will be carried out and a precautionary approach has been taken to the valuation and impact assessment. The habitat suitability for the species has been assessed and the valuation has considered in areas, which although the species was not recorded in, could support the species in the future based on the habitats present and the current distribution.

2.3 Limitations

2.3.1 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 or water vole should not be taken as conclusive proof that the species is not present in an area or that it will not be present in the future. The results of these surveys have been reviewed and are considered to be sufficient to undertake this Environmental Impact Assessment (EIA).

2.3.2 During the otter and water vole surveys in 2017 a small number of areas could not be surveyed due to access restrictions, such as the density of vegetation, steep terrain, and unsafe conditions underfoot. In addition, a small number of watercourses could not be accessed due to their location within Network Rail land. Details of the limitations

[1] Prior to construction, pre-construction surveys will be undertaken which will provide a second survey, and will provide up to date survey information in the event that any development licences are required for water vole and will allow an appropriate mitigation plan to be developed.

encountered during field surveys in 2017 are provided in Table 2.2 and shown on Figure 12.20. These limitations are not considered to affect the accuracy of the assessment.

2.3.3 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 2.2: Limitations Encountered During Otter and Water Vole Surveys, 2017

X Ref.	Y Ref.	Associated Watercourse	Limitation
283233 To 283271	825782 825764	WC-D11, Unnamed ditch	No access to Network Rail land – section of watercourse not surveyed.
282699 To 282517	826213 826280	WC-25a, Tributary of Allt Cosach	No access to Network Rail land – watercourse not surveyed.
284055 To 284201	825223 825329	WC-28, Sputan Dubha	Watercourse not surveyed due to steep and rocky terrain – unsafe to access.
284215 To 284448	824489 824024	WC-29, Allt Slochd Mhuic	Section of watercourse could not be inspected fully due to overhanging vegetation covering the channel.
285341 To 285560	823990 824109	WC-32, Bogbain Burn	No access to Network Rail land – section of watercourse not surveyed.
289172 To 289107	822690 823441	WC-33, Allt nan Ceatharnach	Section of watercourse surveyed from the east bank only due to steep terrain on the west bank – unsafe to access.
289433 To 289465	822921 822907	WC-D009, Unnamed ditch	No access to Network Rail land – small section of watercourse viewed from the road. No watercourse was visible at the time of survey.
289668 To 289647	822574 822538	WC-34, River Dulnain	No access to south bank underneath bridge due to steep terrain – unsafe to access. Watercourse surveyed from north bank only.
289577 To 289439	822492 822431	WC-34, River Dulnain	No access to south bank due to steep terrain, dense vegetation and deep water – unsafe to access.
289682 To 289697	822738 822660	WC-34, River Dulnain	No access to small areas along this section of watercourse due to dense vegetation and deep water.
289779 To 289845	822451 822491	WC-D008, Unnamed ditch	No access to land between A9 and railway line – section of watercourse not surveyed.
290957 To 290882	820542 820801	WC-35a, Tributary of Feith Mhor	Occasional dense vegetation – access to watercourse restricted.

X Ref.	Y Ref.	Associated Watercourse	Limitation
290430 To 290368	816718 816748	WC-37a, Avie Lochan Burn (North)	Section of watercourse culverted below garden of residential property – not surveyed.
289552 To 289593	814972 815014	WC-38, Allt na Criche (Granish)	Marshy grassland – channel of watercourse lost in places. General area surveyed for field signs.
289705 To 289699	814660 814699	WC-41, Unnamed watercourse	Section of watercourse enclosed by barbed wire fence and dense trees – no access to bank. Viewed from behind the fence line.
289470 To 289582	814128 814154	WC-42, Tributary of River Spey	Marshy grassland – channel of watercourse lost in places. General area surveyed for field signs.
289495 To 289421	813839 813899	WC-44, Aviemore Burn	Section of watercourse between houses with no access on one side and a steep man made retaining wall on the other side.
291301	818399	Pond 16	Entire perimeter of pond could not be accessed due to dense snowberry and fallen/dead vegetation.
290660	817097	Pond 23	Approximately 20% of the bank could not be assessed due to the presence of fencing.
290289	816154	Pond 28	Entire pond surrounded by tall wire mesh fencing – no access to shoreline for survey. Pond viewed clearly from fence line. Wire mesh fencing likely to restrict access by otter.
290335	816020	Pond 29	Entire pond surrounded by tall wire mesh fencing - no access to shoreline for survey. Pond viewed clearly from fence line. Wire mesh fencing likely to restrict access by otter. Pond dry at the time of survey.
288372	810455	Pond 49a	Area of marsh/bog – access to entire area not possible due to unsafe ground conditions.

2.3.4 The Proposed Scheme has undergone several (increasingly minor) design iterations alongside the development of the EIA. Following a design iteration in 2018, a small section of the shoreline at Loch Alvie (approximately NH 8706 1007 to NH 8712 0955) now falls within the Study Area for otter; this was not subject to survey during 2017. The proposed works at this location will involve the upgrade of an existing access track. For this location a precautionary approach to the impact assessment has been taken.

2.3.5 Following the latest design iteration (July 2018), the Allt Cosach watercourse at the far north of the Proposed Scheme now falls within the Study Area for otter and water vole; this watercourse was not subject to survey during 2017. No desk study records of otter or water vole are present within the Study Area at this location. The proposed works involve the construction of a layby along an existing access road located adjacent to the Highland Main Line railway. A precautionary approach to the impact assessment has been taken with respect to the Allt Cosach watercourse.

3. Impact Assessment Methodology

3.1 Introduction

3.1.1 Ecological features have been subject to nature conservation evaluation. Impact significance has then been assessed taking into account the nature and magnitude of potential impacts (including duration, extent and reversibility) and their consequent effects on important ecological features. The approach to nature conservation evaluation and impact assessment was agreed across the wider A9 Dualling Programme.

3.2 Nature Conservation Evaluation

3.2.1 The watercourses and waterbodies surveyed for otter and water vole have been assigned levels of importance for nature conservation based on the criteria set out in Table 3.1. Given the variation in the nature and characteristics of the watercourses and waterbodies present across the Scheme, these have been assessed individually rather than providing a Scheme wide valuation level for otter and water vole.

3.2.2 The general approach to defining the importance of ecological features follows that of CIEEM (2016)[vii]. The approach is also in line with advice given in DMRB Interim Advice Note 130/10 'Ecology and Nature Conservation: Criteria for Impact Assessment'[viii].

3.2.3 Ecosystems, habitats and species within the Ecological Zone of Influence (EZoI[2]) are assigned levels of importance for nature conservation based on the criteria set out in Table 3.1.

3.2.4 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 3.1: 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.
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.

[2] EZoI is an area defined by the assessment in which there may be ecological features subject to impacts and subsequent effects as a result of the Scheme

Importance	Criteria
	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)[i].
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 (LNR)) 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 Aviemore in the CNAP.
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). **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.

3.3 Impact Assessment

3.3.1 For the purposes of this assessment, the impact descriptors in Table 3.2 are taken to summarise the overall characterisation of positive or negative impacts in accordance with CIEEM (2016)[vii], including:

- impact extent/scale (e.g. entire habitat loss, partial habitat loss or indication over specific area affected);
- direct or indirect impact (e.g. direct mortality of individuals from vehicle collisions, or indirect mortality of individuals from reduced prey resources due to pollution of watercourses);
- reversibility of impact (reversible or irreversible);
- frequency of impact (single event, recurring or constant);
- duration of impact (short-term, medium-term, long-term or permanent); and
- likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely).

3.3.2 The character of impacts was defined using the criteria set out in Table 3.2 as High, Medium, Low or Negligible, following the above impact characterisation approach.

Table 3.2: Impact Magnitude and Character for Ecological Features

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

Impact Significance

3.3.3 Each feature's importance and the potential impacts upon it have been determined through surveys and consultation, to provide a robust basis for making a professional decision on the appropriate focus of the impact assessment. The assessment is then focused on those impacts that result in potentially significant effects on important ecological features. For example, an area of amenity grassland would not meet the criteria for local ecological importance and would not progress through the assessment process, as the assessment only includes features of local importance or above. However, any impact on a Site of Special Scientific Interest (SSSI) would progress through the assessment process as these sites are designated as nationally important. Habitats, species and species groups that are considered to have a nature conservation value of less than local are not considered important ecological features[3] in the context of this assessment. Any impact on such a feature as a result of the Proposed Scheme is considered unlikely to have a significant effect on the conservation status of such habitats or species on a local, regional, national or international scale. Therefore,

[3] An ecological feature is considered important based on many factors including its rarity, diversity, naturalness, context in the wider landscape, size and distribution as set out in A Nature Conservation Review (Ratcliffe, 1977).

features assessed to be of less than local nature conservation value have been scoped out of the ecological impact assessment (EcIA).

3.3.4 CIEEM (2016)[vii] notes that impacts that are likely to be relevant in an assessment are those that are predicted to lead to significant effects (negative or positive) on important ecological features. Significant effects are those that undermine the conservation status[4] of important ecological features. Knowledge and assessment of construction methods and operational activities, together with the ecological knowledge of ecologists with experience of similar large-scale infrastructure projects, has been used to identify the potential impacts of the project on ecological features.

3.3.5 Following the above approach, the assessment aims to characterise ecological impacts rather than placing a reliance only on magnitude. The character of an impact is used to inform the determination of whether or not the impact on the feature in question is a significant one.

3.3.6 Where impacts on internationally, nationally or regionally important ecological features are characterised as 'Medium' or 'High', they are considered to be potentially significant under the terms of the EIA Regulations[ix].

3.3.7 Impacts characterised as 'Low' on internationally important features, can be determined as potentially significant as can impacts characterised as 'High' on features of Authority Area importance. There may in addition be a number of impacts on a feature that, whilst not of a character to be significant in themselves, may cumulatively result in a significant effect on that feature.

3.3.8 Where significant impacts are identified, mitigation will be developed to reduce impacts where feasible and are taken into account in the assessment of residual effects.

3.4 Mitigation

3.4.1 The principles of the mitigation hierarchy[x] have been applied when considering potential impacts and subsequent effects on ecological receptors within the EZoI. The principles of the mitigation hierarchy are that impacts on biodiversity should be subject to the following sequential mitigation actions:

- avoidance;
- mitigation;
- compensation; and
- enhancement.

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

3.4.3 The mitigation measures described within this EcIA have been incorporated into the design and construction programme and taken into account in the assessment of residual effects. The mitigation aims to avoid or negate impacts on ecological features in accordance with best practice guidance and UK, Scottish and local government

[4] Conservation status for habitats is determined by the sum of the influences acting on the habitat and its typical species that may affect its long-term distribution, structure and function as well as the long-term distribution and abundance of its population within a given geographical area. Conservation status for species is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its population within a given geographical area.

environmental impact, planning and sustainability policies. These mitigation measures include those required to achieve the minimum standard of established good practice together with additional measures to further reduce any negative impacts of the Scheme. The mitigation measures include those required to reduce or avoid the risk of committing legal offences.

3.4.4 Mitigation is also designed to produce a net gain for biodiversity where practicable in line with policy and guidelines[vii].

3.4.5 Mitigation measures set out in this Environmental Statement (ES) will be specified as environmental commitments in the contract documents to ensure implementation by the appointed Contractor.

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

4. Results

4.1 Desk Study

4.1.1 Six records of otter were received from NESBReC and Scotland TranServ, and one record of otter was provided in the Preliminary Ecological Appraisal[i], details of which are provided in Table 4.1.

Table 4.1: Otter Desk Study Results

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Section	Source	Details
291410	817390	Loch Vaa	12/03/2007	442	N/A	NESBreC	Seen from badger hide.
288665	824010	Allt nan Ceatharnach	09/11/2012	133	N/A	NESBreC	Sighting (no other details provided).
290763	820473	Crannaich Wood – south of Feith Mhor	01/11/2007	2	N/A	NESBreC	No details provided.
289635	822528	River Dulnain	01/11/2007	10	N/A	NESBreC	No details provided.
289120	823110	Allt nan Ceatharnach	01/11/2007	0	N/A	NESBreC	No details provided.
288352	810619	Allt na Criche (Lynwilg)	01/11/2011	0	N/A	Scotland TranServ	Road casualty.

X Ref.	Y Ref.	Location	Date	Distance from Proposed Scheme (m)	Section	Source	Details
289630	822500	River Dulnain	2014	11	8	Preliminary Ecological Appraisal	Otter footprints seen in sandy substrate around base of bridge.

4.1.2 Otters are a qualifying feature of the River Spey Special Area of Conservation (SAC). At its closest, the River Spey is located approximately 170m to the south east of the Proposed Scheme. However, the Allt nan Ceatharnach, River Dulnain, and Allt na Criche (Lynwilg) both run under the existing A9 and are included within the SAC designation.

4.1.3 No water vole records were received from the record centres contacted.

4.2 Field Survey

Watercourses and Waterbodies

4.2.1 All watercourses and waterbodies surveyed for otter and water vole in 2017 are shown on Figure 12.20. The watercourses within the Study Area consist largely of small, fast flowing burns originating from the high ground of the Monadhliath Mountains to the west of the A9. These watercourses flow from west to east, feeding into larger waterbodies and watercourses such as Loch Alvie, the River Dulnain and the River Spey. At the northern end of the Proposed Scheme, small burns originate from the high ground to the north of the A9 and feed into the River Dulnain. Numerous small drainage channels and ditches are also located throughout the Study Area.

4.2.2 In addition to running water habitats, a number of ponds and lochs are located within the Study Area. These are concentrated in the southern and mid-section of the Proposed Scheme below Kinveachy. Waterbodies include Loch Alvie, Loch Puladdern, Avie Lochan and Loch Vaa.

4.2.3 Incidental records were also made during other ecological surveys in 2017 and 2018.

Otter

4.2.4 The results of the otter field surveys undertaken in 2017 and incidental records are provided in Table 4.2 and shown on Figure 12.20.

Water vole

4.2.5 No evidence of water vole was recorded within the Study Area during the field surveys undertaken in 2017.

4.2.6 One dead water vole was recorded along the Feith Mhor at NH 90904 21128, approximately 210m to the east of the Proposed Scheme. This record falls outwith the Study Area for water vole and was recorded during the otter survey conducted along this watercourse.

Table 4.2: Otter Survey Results, 2017 (Resting Sites are Highlighted Grey)

Target Note (TN) – Resting Sites Only	X Ref.	Y Ref.	Watercourse Name	Watercourse Reference	Distance from Proposed Scheme (m)	Description of Feature
	283086	825834	Pond 02	P-02	123	Two dead toads – one obviously predated. Possible anal jelly adjacent.
	283085	825831	Pond 02	P-02	126	Three old fragmented spraints.
	283087	825825	Pond 02	P-02	129	Possible otter footprint amongst other mammal footprints in silt/mud adjacent to pond. Prints could not be confidently confirmed due to erosion by water.
	283078	825842	Pond 02	P-02	122	Two toad feeding remains on the bank. Additional remains of a toad in the pond.
TN 1	283084	825838	Pond 02	P-02	121	Resting site (hover). A smooth ledge/platform which forms part of the pond bank. The hover is very open with heather moorland adjacent. Remains of 12 toads present. Low status.
	283168	825824	Unnamed drain	WC-D11	74	Possible otter footprints in silt/mud adjacent to watercourse. Prints could not be confidently confirmed due to erosion by water.
TN 2	284579	823881	Tributary of Allt Slochd Mhuic	WC-31	156	Resting site (hover) beneath roots of fallen tree adjacent to watercourse. Two old spraints on rock within. Low status.
	287518	824327	Bogbain Burn	WC-32	181	Suitable resting site (hover) underneath roots of fallen tree. No evidence of otter use.
	287701	824219	Bogbain Burn	WC-32	83	Suitable resting site (hover) underneath roots of fallen tree. No evidence of otter. Well defined mammal path leads to site.
TN 3	287680	824232	Bogbain Burn	WC-32	99	Resting site (holt) underneath birch roots covered in moss – cavity extends back by at least 1m and has two entrances. Single old spraint found within. Low status.
	287687	824231	Bogbain Burn	WC-32	100	Suitable resting site (hover) underneath roots of fallen tree. No evidence of otter.
	287700	824221	Bogbain Burn	WC-32	85	Suitable resting site (hover). Large cavity within moss covered root ball of fallen tree. Cavity extends approximately 2m. Earth is smooth

Target Note (TN) – Resting Sites Only	X Ref.	Y Ref.	Watercourse Name	Watercourse Reference	Distance from Proposed Scheme (m)	Description of Feature
						inside. Well defined mammal path leading to site. No evidence of otter within.
	287738	824236	Bogbain Burn	WC-32	79	Slide into watercourse.
	287731	824256	Bogbain Burn	WC-32	100	Series of boulders at the base of the railway embankment with multiple gaps suitable for otter to rest up within. No evidence of otter.
	287768	824207	Bogbain Burn	WC 32	41	Suitable resting site (hover) underneath roots of fallen tree. No evidence of otter.
	287794	824216	Bogbain Burn	WC-32	40	Suitable resting site (hover) underneath roots of fallen tree. No evidence of otter.
TN 4	288105	824159	Bogbain Burn	WC-32	10	Resting site (hover) underneath wooden footbridge. Cavity extends into bank by approximately 1m. Tar spot, anal jelly and footprints within. Low status.
	288157	824154	Bogbain Burn	WC-32	0	Slide into watercourse.
	288282	824112	Bogbain Burn	WC-32	1	Four spraints underneath bridge.
	288281	824111	Bogbain Burn	WC-32	2	Otter footprints underneath bridge.
	288448	824044	Bogbain Burn	WC-32	104	Fresh spraint on bank.
	288508	824008	Bogbain Burn	WC-32	97	Slide into watercourse.
	288549	823969	Bogbain Burn	WC-32	51	Tar spot on rock within watercourse.
	288551	823976	Bogbain Burn	WC-32	58	Slide into watercourse.
	288630	823931	Bogbain Burn	WC-32	60	Slide into watercourse.
TN 5	288706	823888	Bogbain Burn	WC-32	109	Resting site (hover) underneath Scots pine tree root ball, located within 50m of the confluence to the Allt nan Ceatharnach (SAC watercourse). Cavity extends back approximately 2m. Six or more spraints of varying age within. Well used path leading to the site and sprainting recorded in the vicinity. Moderate status.
	288757	823911	Bogbain Burn	WC-32	160	Old fragmented spraint on rock within watercourse.

Target Note (TN) – Resting Sites Only	X Ref.	Y Ref.	Watercourse Name	Watercourse Reference	Distance from Proposed Scheme (m)	Description of Feature
	289114	823027	Allt nan Ceatharnach	WC-33	2	Suitable resting site (hover). Hollow underneath mature scots pine approximately 10m from water's edge – numerous cavities under roots. No evidence of otter.
	289126	822700	Allt nan Ceatharnach	WC-33	8	Large pile of spraint underneath bridge at Lynphail.
	289636	822497	River Dulnain	WC-34	15	Old spraint on rocky outcrop of bank.
	289653	822494	River Dulnain	WC-34	24	Old spraint on old breeze-blocks, 2-3m from water's edge.
	289675	822527	River Dulnain	WC-34	0	Old spraint on rock at edge of watercourse, staining indicates rock is regularly used.
	289647	822527	River Dulnain	WC-34	5	Suitable resting site (hover) viewed from opposite bank with binoculars. Large mammal prints noted underneath stone outcrop over sandy bank. Vertical distance of approximately 20m below A9 bridge. Footprints large enough for otter, but form could not be confidently determined due to soft sand and erosion by water.
	289626	822505	River Dulnain	WC-34	7	Possible otter footprints on sandy bank. Prints could not be confidently determined due to erosion by water.
	290600	820842	Tributary of Feith Mhor	WC-35a	0	Spraint on a rock, immediately adjacent water's edge.
	290599	820840	Tributary of Feith Mhor	WC-35a	0	Suitable resting site (hover), approximately 8m from water's edge, in close proximity to spraint. Under fallen tree covered with moss and debris. Path to site not clear.
	290944	818537	Allt Cnapach	WC-36	39	Old spraint on waterside boulder.
	291019	818516	Allt Cnapach	WC-36	0	Old spraint at edge of watercourse and drain. On mossy, large boulder at bottom of A9 road embankment.
	291071	818509	Allt Cnapach	WC-36	0	Old spraint on mossy boulder in centre of stream underneath railway bridge.
	291096	818516	Allt Cnapach	WC-36	10	Old spraint on a rock in the watercourse underneath railway bridge.
	291142	818468	Allt Cnapach	WC-36	0	Old spraint on a fallen tree at the edge of the watercourse.

Target Note (TN) – Resting Sites Only	X Ref.	Y Ref.	Watercourse Name	Watercourse Reference	Distance from Proposed Scheme (m)	Description of Feature
	290356	816331	Avie Lochan Burn (South)	WC-37	66	Very old spraint.
	290469	816337	Pond 25	P-25	18	Very old spraint on top of mink raft.
	290765	816473	Avie Lochan	L-02	317	Spraint located on a rock on shoreline.
	289938	815542	Allt na Criche (Granish)	WC-38	7	Very old spraint. Still has faint smell.
	289739	814279	Tributary of River Spey	WC-42	215	Spraint on a rock within the culvert.
TN 6	289659	814187	Tributary of River Spey	WC-42	159	Resting site (hover). Hollow in ground beneath fallen tree. Two spraints present. Low status.
	289279	813848	Aviemore Burn	WC-44	0	Possible white old spraint, with scales.
	289348	813851	Aviemore Burn	WC-44	0	Spraint located on bank near culvert entrance.
	289340	813170	Aviemore Burn	WC-44	96	Old spraint on tree stump within the watercourse.
	289273	813146	Aviemore Burn	WC-44	26	Old spraint on boulder near concrete structure.
	289365	813109	Aviemore Burn	WC-44	122	Slide into watercourse, extending from broom bushes.
	289379	813055	Aviemore Burn	WC-44	155	Spraint on a small boulder on bank.
	288846	812388	Pond 42	P-42	164	Spraint on man-made concrete structure on east side of bank.
	289003	812311	Tributary of Loch Puladdern	WC-48	16	Spraint on bank.
	288810	812316	Tributary of Loch Puladdern	WC-48	195	Old spraint on rock on bank.
	289110	812119	Loch Puladdern	P-43	8	Spraint on rock.
	289109	812141	Loch Puladdern	P-43	0	Five spraints on rocks around culvert entrance.
	289198	812146	Pond 44	P-44	36	Spraint on a rock.
	289188	812164	Pond 44	P-44	26	Feeding remains of a trout.

Target Note (TN) – Resting Sites Only	X Ref.	Y Ref.	Watercourse Name	Watercourse Reference	Distance from Proposed Scheme (m)	Description of Feature
TN 7	288146	810750	Allt na Criche (Lynwilg)	WC-49	66	Resting site (hover). Large cavity beneath tree root and boulders on the bankside. Cavity extends approximately 1m back. Good cover. Two old spraints within. Low status.
	288196	810697	Allt na Criche (Lynwilg)	WC-49	0	Three old spraints on rock underneath bridge.
	288283	810661	Allt na Criche (Lynwilg)	WC-49	18	Suitable resting site (hover) underneath alder tree roots. Cavity extends back at least 1m. Does not appear to be in use. No evidence of otter.
	286865	810207	Ballinuig Burn	WC-50	0	Old spraint on boulder, approximately 5m from the culvert entrance.
TN 8	286660	810032	Caochan Ruadh	WC-52	0	Resting site (hover). Overhanging grassy bank creating small cavity, extending approximately 0.5m back. Single old spraint within. Low status.
	286656	810049	Caochan Ruadh	WC-52	0	85 spraints within culvert on narrow ledge, spraints run along entire length of culvert. Spraints are largely old and many fragmented.
	286520	810144	Caochan Ruadh	WC-52	34	Mammal hole underneath fallen tree. Suitable size for otter however no evidence. Not currently in use – cobweb and leaf litter in entrance.
	286501	810134	Caochan Ruadh	WC-52	44	Old fragmented spraint on boulder adjacent to channel.
TN 9	286466	810129	Caochan Ruadh	WC-52	57	Resting site (holt). Cavities underneath roots of large oak tree, some of which extend into bank. Two old piles of spraint within, in addition to bird droppings. Moderate status.
TN 10	286451	810148	Caochan Ruadh	WC-52	81	Resting site (holt). Cavity extending into bank underneath large oak tree. Old spraint pile within. Does not appear to be in use currently – rabbit droppings within. Moderate status.

4.2.7 The Study Area contains a number of watercourses, small burns, drainage channels, lochs and ponds which provide suitable habitat for otters to forage, shelter and commute within the local landscape.

4.2.8 Field surveys in 2017 have recorded evidence of otter using the following watercourses:

- Allt Slochd Mhuic;
- Bogbain Burn;
- Allt nan Ceatharnach;
- River Dulnain;
- Allt Cnapach;
- Allt na Criche (Granish);
- Aviemore Burn;
- Allt na Criche (Lynwilg);
- Ballinuig Burn;
- Caochan Ruadh; and
- unnamed tributaries of the Allt Slochd Mhuic, Feith Mhor, River Spey, Avie Lochan and Loch Puladdern.

4.2.9 The field surveys recorded two otter holts along the Caochan Ruadh (TN 9 and TN 10), located approximately 57m and 81m to the north west of the Proposed Scheme respectively. A single holt was recorded along the Bogbain Burn (TN 3), located approximately 99m to the north of the Proposed Scheme.

4.2.10 Otter hovers have been recorded along the unnamed tributaries of the Allt Slochd Mhuic (TN 2) and the River Spey (TN 6), Bogbain Burn (TN 4 and 5), Allt na Criche (Lynwilg; TN 7) and Caochan Ruadh (TN 8).

4.2.11 Evidence of otter, including spraints, footprints, feeding remains and slides, has been recorded sporadically on the watercourses listed above, with the exception of the Caochan Ruadh, where an abundance of evidence was recorded, as detailed below, indicating that otters are using these watercourses to commute and forage.

4.2.12 A significant amount of otter evidence was recorded along the Caochan Ruadh, with 85 spraints found on two narrow ledges within the culvert beneath the A9. At the time of survey these spraints were largely old and many fragmented, indicating that the watercourse was not in recent use by otter. However, due to the presence of good foraging habitat downstream (Loch Alvie) and the abundance of suitable resting habitat upstream (including three confirmed resting sites) the Caochan Ruadh is likely to be used by otter throughout the year and to form a key part of a territory.

4.2.13 In addition to the running water habitats, lochs and ponds are also likely to provide foraging resources and resting opportunities for otter. Toad feeding remains, spraints, footprints and an otter hover were recorded at Pond 02, whilst spraints and feeding remains were recorded at Avie Lochan, Loch Puladdern, and Ponds 25, 42 and 44.

4.2.14 The small drainage channels and ditches within the Study Area provide suitable connecting routes for otter, providing links to high quality habitats for foraging and resting, although evidence of their use by otter was limited.

4.2.15 Terrestrial habitats, such as the woodland present throughout the Study Area, are likely to offer important sheltering opportunities and potential breeding habitat for this species. The majority of the watercourses described above are well connected to extensive areas of woodland and thus are likely to be used by otter.

5. Nature Conservation Evaluation

5.1 Otter

5.1.1 Table 5.1 sets out the valuation of the watercourses/waterbodies surveyed for otter. Given the variation in the nature of the watercourses/waterbodies across the Proposed Scheme, these have been assessed individually rather than providing a Scheme wide valuation level. Watercourses and waterbodies within each valuation level have been grouped based on their characteristics and evidence recorded. In general, smaller watercourses such as drainage channels and minor ditches were not found to be used by otter, whilst larger watercourses and those connected to the River Dulnain and River Spey were being used sporadically by the species. Watercourses and waterbodies that were found to be dry at the time of survey, with no indication of water being present in the recent past, have been excluded from this valuation.

5.2 Water Vole

5.2.1 No positive evidence of water vole was recorded within the Study Area, however, the watercourses/waterbodies subject to survey have been assessed in terms of their suitability to support this species in the future. Table 5.1 sets out the valuation of the watercourses/waterbodies surveyed for water vole. Given the variation in the nature of the watercourses and waterbodies across the Proposed Scheme these have been assessed individually rather than providing a Scheme wide valuation level. Watercourses and waterbodies that were found to be dry at the time of survey, with no indication of water being present in the recent past, have been excluded from this valuation.

Table 5.1: Otter Valuation

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
WC-D001	Unnamed drainage ditch	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 2017. The drainage channels and small burns are located within largely open habitat and many are subject to disturbance from roads and residential housing. As such, they offer negligible suitability for otters to rest and shelter. No resting sites were recorded along these watercourses during field surveys in 2017. The ponds offer suitable foraging resources in the form of amphibians and fish. However, no feeding remains were recorded at these locations and no spraints or resting sites were identified in the surrounding habitat.
WC-D002			
WC-D003			
WC-D004			
WC-D005			
WC-D006			
WC-D007			
WC-D008			
WC-D009			
WC-26	Tributary of Allt Slochd Mhuic		
WC-27			
WC-40	Tributary of Allt na Criche (Granish)		
WC40a			
WC-41	Unnamed watercourse		
WC-43			
WC-51	Tributary of Caochan Ruadh		
L-01	Loch Vaa		
P-08, P-14, P-19, P-20, P-21, P-22, P-23, P-24, P-27, P-28, P-30, P-37, P-54, P-68, P-70.	N/A		
WC-29	Allt Slochd Mhuic	Local	No resting sites or evidence of otter was recorded along these small burns during field surveys in 2017. However, these watercourses are located within areas of woodland and therefore provide suitable habitat for otters to rest and shelter. These watercourses are further connected to burns and waterbodies in
WC-30	Allt Ruighe an t-Sabhail		
WC-35	Feith Mhor		

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
WC-36a	Gormack Stripe		the surrounding area, and are therefore likely to act as commuting corridors to high quality foraging habitat.
WC-37a	Avielochan Burn (North)		
WC-39	Tributary of Allt na Criche (Granish)		
WC-54	Allt Chriochaidh		
WC-55	Tributary of Loch Alvie		
WC-56	Tributary of Loch Alvie		
WC-57	Allt an Fhearna		
WC-D011	Unnamed drainage ditch	Local	Evidence of otter recorded during field surveys in 2017, including spraints, slides and pathways, indicates that otter are using these watercourses to commute and forage. A total of three hovers (TN 1, 2, 6) were recorded along these watercourses in 2017. These resting sites contained low 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 are not regularly patrolled.
WC-25	Allt Slochd Mhuic		
WC-31	Tributary of Allt Slochd Mhuic		
WC-35a	Tributary of Feith Mhor		
WC-36	Allt Cnapach		
WC-37	Avie Lochan Burn (South)		
WC-38	Allt na Criche (Granish)		
WC-42	Tributary of the River Spey		
WC-44	Aviemore Burn		
WC-48	Tributary of Loch Puladdern		
WC-50	Ballinuig Burn		
L-02	Avie Lochan		
P-43	Loch Puladdern		
P-02, P-42, P-44,	N/A		
N/A	Allt Cosach	Up to Authority Area	The Allt Cosach was not surveyed in 2017 (see Limitations section), therefore a precautionary approach has been taken to the valuation of this watercourse. The Allt Cosach feeds into the River Findhorn, which provides an abundant foraging resource upstream. It is also located approximately 350m (at its closest

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
			point) from Pond 2, at which a low status hover and other evidence of otter activity (including spraint, footprints, and toad feeding remains) were identified during field surveys in 2017. The Allt Cosach is connected to areas of woodland and scrub in the wider area, which may provide suitable habitat for resting sites. Given the connection to high quality foraging habitat and areas of woodland/scrub, the Allt Cosach is likely to provide suitable habitat for otter to commute and shelter. As such, following a precautionary approach, this watercourse has been valued up to Authority Value.
WC-32	Bogbain Burn	Authority Area	Field surveys in 2017 recorded a single holt (TN 3) and two hovers (TN 4 and 5) along the Bogbain Burn. One hover (TN 5) has been assessed as being of moderate status, whilst the other hover (TN 4) and holt (TN 3) have been assessed as being of low status. Multiple suitable resting sites (no evidence) were also recorded within the woodland habitat adjacent to the watercourse. Spraints and slides were recorded sporadically along the watercourse. Bogbain Burn feeds into the Allt nan Ceatharnach, which forms part of the River Spey SAC. A hover assessed as being of moderate status (TN 5) is located approximately 70m from the confluence between Bogbain Burn and the Allt nan Ceatharnach. This, combined with other evidence of otter recorded along Bogbain Burn during the 2017 field surveys, suggests that this watercourse provides high quality habitat for otter to commute, forage and shelter. Field surveys in 2017 recorded two holts (TN 9 and 10) along the Caochan Ruadh, both of which have been assessed as being of moderate status. A single hover (TN 8), assessed as being of low status, was also recorded, in addition to a mammal hole which was deemed suitable for use by otter (no evidence). 85 spraints were recorded on two narrow ledges within the culvert beneath the A9. At the time of survey these spraints were largely old and many fragmented, indicating that the watercourse was not in recent use by otter. However, due to the presence of good foraging habitat downstream (Loch Alvie) and the abundance of suitable resting habitat upstream (including three confirmed resting sites) the Caochan Ruadh is likely to be used by otter throughout the year and may form a key part of a territory. Loch Alvie provides abundant foraging resources for otter in the form of fish and amphibians. Areas of woodland surrounding the loch also provide suitable habitat for this species to rest and shelter. Loch Alvie is fed by the Caochan
WC-52	Caochan Ruadh		
L-03	Loch Alvie		

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
			Ruadh (Authority Area value) and Ballinuig Burn, Allt Chriochaidh, Allt an Fhearna, unnamed ditch (WC-D002) and two unnamed tributaries (Local value).
WC-33	Allt nan Ceatharnach	International	The Allt nan Ceatharnach, River Dulnain and Allt na Criche (Lynwilg) form part of the River Spey SAC, for which otter is a qualifying feature. These watercourses feed into the River Spey and provide high quality habitat for otter to commute, forage and shelter. During field surveys in 2017, multiple slides and mammal paths were identified along the Allt nan Ceatharnach, with an incidental record of spraint recorded in 2018, however no resting sites were recorded. Old spraints, slides, possible footprints and a suitable resting site (not confirmed – viewed from afar) were recorded along the River Dulnain. A single hover (TN 7) assessed as being of low status was recorded along the Allt na Criche (Lynwilg), in addition to a single suitable resting site (no evidence) and a small number of old spraints.
WC-34	River Dulnain		
WC-49	Allt na Criche (Lynwilg)		

Table 5.2: Water Vole Valuation

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
WC-D001	Unnamed drainage ditch	Less than local	These watercourses offer low suitability for water vole, due to the lack of suitable vegetation for this species to forage, unsuitable bank structure for burrowing/lack of suitable burrowing habitat in the surrounding area, fast flowing nature of the watercourse, and/or high level of disturbance from human activity or grazing livestock. A number of these small burns and drainage ditches are located within areas of dense woodland and are generally sub-optimal for this species as they are heavily shaded and provide limited suitable vegetation for water voles to forage. The ponds offer low suitability for water vole to forage and shelter due to limited margin vegetation and limited bank structure for burrowing. These ponds are largely subject to high levels of disturbance from human activity or livestock grazing. No evidence of water vole was recorded during field surveys in 2017.
WC-D002			
WC-D002a			
WC-D003			
WC-D004			
WC-D005			
WC-D006			
WC-D007			
WC-D008			
WC-D009			
WC-D011			

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
WC-27	Tributary of Allt Slochd Mhuic		
WC-30	Allt Ruighe an t-Sabhail		
WC-31	Tributary of Allt Slochd Mhuic		
WC-32	Bogbain Burn		
WC-33	Allt nan Ceatharnach		
WC-34	River Dulnain		
WC-35	Feith Mhor		
WC-35a	Tributary of Feith Mhor		
WC-36	Allt Cnapach		
WC-36a	Gormack Stripe		
WC-36c	Unnamed tributary of Allt Cnapach		
WC-37	Avie Lochan Burn (South)		
WC-37a	Avielochan Burn (North)		
WC-39	Tributary of Allt na Criche (Granish)		
WC-40			
WC-40a			
WC-41	Unnamed watercourse		
WC-42			
WC-43			
WC-44	Aviemore Burn		
WC-48	Tributary of Loch Puladdern		

Watercourse/Waterbody Ref.	Watercourse/Waterbody Name	Valuation	Rationale for Valuation
WC-49	Allt na Criche (Lynwilg)		
WC-50	Ballinuig Burn		
WC-51	Tributary of Caochan Ruadh		
WC-52	Caochan Ruadh		
WC-54	Allt Chriochaidh		
WC-57	Tributary of Loch Alvie		
P-8, P-14, P-16, P-17, P-19, P-20, P-22, P-23, P-25, P-28, P-30, P37, P42, P42a, P-44, P-68.	N/A		
WC-D011	Unnamed ditch	Local	WC-D011 offers suitable habitat for water vole, with abundant vegetation for foraging and areas of suitable burrowing habitat. This watercourse feeds into Pond 2, which provides further suitable foraging habitat for water vole, and is located in an open area which is subject to low levels of disturbance. The Allt Slochd Mhuic offers suitable habitat for water vole to forage and shelter, with numerous sections of the channel providing good bank structure for burrowing and an abundance of grasses, rushes and herbs for foraging. The Allt Slochd Mhuic runs through largely open habitat and is subject to low levels of disturbance. The Allt na Criche (Granish) provides steep banks for burrowing, an abundance of vegetation for water vole to forage, and is subject to low levels of disturbance. The tributaries of Loch Alvie (WC-55 & 56) provide extensive foraging vegetation for water vole, including grasses, rushes and herbs. The surrounding habitat offers suitability for this species to shelter within the vicinity of the watercourses. No evidence of water vole was recorded during field surveys in 2017. However as only one survey was undertaken, and in-line with current guidance[v] a precautionary approach to valuation has been taken, accounting for the potential future use of these locations by water vole at different times of the year. As such, these watercourses/waterbodies have been assessed to be of Local value for water vole.
P-2	Pond 2		
WC-25	Allt Slochd Mhuic		
WC-26			
WC-29			
WC-38	Allt na Criche (Granish)		
WC-55	Tributary of Loch Alvie		
WC-56			

6. Potential Impacts

6.1 Introduction

6.1.1 Water vole are not considered within the impact assessment as no evidence of this species was recorded within the Study Area during field surveys in 2017. As such, they are not considered to be present within the EZoI.

6.1.2 It is noted that suitable habitat for water vole exists within the Land Made Available (LMA). Pre-construction surveys for the species will be undertaken, and in the event of a change in baseline conditions additional mitigation may be required. Any mitigation measures developed will require agreement from SNH.

6.2 Construction

6.2.1 During construction otter may be affected as a result of the following:

- direct damage to resting sites;
- disturbance to individuals using resting sites due to elevated levels of construction related disturbance (such as increased noise, lighting, and human presence);
- loss of habitat, suitable for commuting, foraging and resting;
- reduction in habitat quality as a result of pollution incidents;
- severance of habitat and important commuting routes;
- disturbance to individuals using commuting routes due to elevated levels of construction related disturbance; and
- direct mortality due to construction related activities.

6.3 Operation

6.3.1 During operation otter may be affected as a result of the following;

- disturbance to individuals using resting sites due to road noise;
- disturbance to individuals using commuting routes due to road noise;
- severance of habitat and important commuting routes as a result of the road widening and additional access tracks and junctions; and
- direct mortality as a result of the road widening and additional access tracks and junctions.

7. Mitigation

7.1.1 A list of standard mitigation measures has been developed for all projects within the A9 Dualling Programme. In addition to these, Scheme specific mitigation measures have also been developed as detailed in Table 7.2. Specific mitigation measures are presented in Figure 13.4 - Landscape and Ecological Mitigation plan. The Proposed Scheme includes embedded mitigation as part of the design such as mammal ledges through culverts and design of culverts to maintain natural beds.

7.1.2 A full list of ecological mitigation measures is provided in ES Chapter 12: Ecology and Nature Conservation. Those measures of relevance to otter have been extracted and are detailed in Table 7.1. Some of these mitigation measures are relevant to a number of species; all species are referred to in the tables below for consistency between ES Chapter 12 and the other ES Appendices.

Table 7.1: A9 Standard Mitigation Commitments

Mitigation Item[5]	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/ Objective	Specific Consultation or Approval Required
SMC-E1	Throughout Proposed Scheme	Pre-Construction	Pre-construction surveys will be undertaken to verify and, where required, update the baseline ecological conditions set out in the ES. The scope of the pre-construction surveys will be confirmed with SNH prior to them being undertaken.	To update the baseline ecological conditions set out in the ES.	SNH
SMC-E2	Throughout Proposed Scheme	Pre-Construction	Prior to construction a suitably qualified (or team of suitably qualified) ECoWs will be appointed and will be responsible for implementation of the Ecological Management Plan. The ECoW will: • provide ecological advice over the entire construction programme, at all times as required; • undertake or oversee pre-construction surveys for protected species in the areas affected by the Proposed Scheme; and ensure mitigation measures are implemented to avoid and reduce impacts on ecological features; and • monitor the implementation of the mitigation measures during the construction phase to ensure compliance with protected species legislation and commitments within the ES. The ECoW will be a member of CIEEM and will have previous experience in similar ECoW roles. All ECoWs will be approved by Transport Scotland to be appropriately qualified for the role. The ECoW will be appointed in advance of the main construction programme commencing to ensure pre-construction surveys are undertaken and any advance mitigation measures required are implemented.	To ensure the implementation of the Ecological Management Plan.	None required
SMC-E6	Throughout Proposed Scheme	Pre-Construction	The Contractor will obtain and comply with the requirements of any protected species derogation licences in respect of works that have the potential to breach applicable conservation legislation necessary to construct the project. Licensing may be for the UK and/or protected species.	To comply with conservation legislation.	SNH

[5] Only items relevant to otter and water vole are listed

Mitigation Item[5]	Approximate Chainage/ Location	Timing of Measure	Description	Mitigation Purpose/ Objective	Specific Consultation or Approval Required
SMC-E10	Throughout Proposed Scheme	Construction	The use of construction lighting will be in accordance with BS5489 Code of Practice for the Design of Road Lighting[xi] and follow best available guidance on lighting with regards to protected species (e.g. Bat Conservation Trust (2009)[xii] and Institute of Lighting Engineers (2007)[xiii]). The construction lighting design will take into account the need to avoid illuminating sensitive mammal habitats (e.g. for bats and badgers) in locations such as: adjacent to watercourses; along woodland edges; and, where there is known activity identified through pre-construction ecological surveys (refer to Mitigation Item SMC-E1). Where this is not possible the Contractor will agree any exceptions with SNH.	To protect sensitive mammal habitats from illumination.	Exceptions to be agreed with SNH
SMC-E13	Throughout Proposed Scheme	Construction	Trenches, holes and pits will be kept covered at night or provide a means of escape for mammals, reptiles and amphibians that may become entrapped. Gates to compound areas will be designed sensitively to prevent mammals from gaining access and will be closed at night.	To avoid mammals becoming entrapped in and around compound areas during construction.	None required
SMC-E14	Throughout Proposed Scheme	Construction	Temporary mammal-resistant fencing will be provided around construction compounds following a specification agreed through consultation with Transport Scotland.	To avoid mammals becoming entrapped in and around compound areas during construction.	Transport Scotland
n/a (note)	Throughout Proposed Scheme	Construction	Best practicable means will be employed to avoid the disturbance of sensitive species and habitats with noise, dust and air pollution. The Standard Mitigation Measures as detailed in ES Chapter 11 (Road Drainage and the Water Environment), ES Chapter 13 (Landscape and Visual), ES Chapter 16 (Air Quality) and ES Chapter 17 (Noise and Vibration) will be implemented to protect aquatic and terrestrial habitats and species.	To protect aquatic and terrestrial habitats and species.	N/A

Table 7.2: Project Mitigation Commitments

Mitigation Item[6]	Approximate Chainage/location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
P11-E34	Throughout Proposed Scheme	Pre-Construction & Construction	Species Protection Plans to be produced pre-construction and agreed with SNH. Plans will be produced for otter and water vole. Where appropriate, the Species Protection Plans will include monitoring plans.	To comply with conservation legislation and to protect fauna.	SNH
P11-E56	Local value watercourses/waterbodies	Construction	No working or artificial lighting within 50m of watercourses/waterbodies during the hours of darkness, taken to be 30 minutes before sunset to 30 minutes after sunrise, unless specifically agreed with SNH. Due to the geographical location of the Scheme and for reasons of practicality, works taking place between the months of November and February (inclusive) may be permitted up to 7pm and from 7am, with no works taking place between these hours, subject to the nature of the works and following discussion with the ECoW. Any lighting used to accommodate such works must be positioned to minimise light spill onto watercourses/waterbodies and will be subject to ECoW approval. The ECoW will monitor otter activity upstream and downstream of the works using camera traps and may stop site activities at any time should they consider that the works are having an impact on otter activity.	To prevent disturbance to otters using Local value watercourses/waterbodies	Working times to be agreed with the ECoW
P11-E57	Authority Area value watercourses/waterbodies	Construction	No working or artificial lighting within 50m of watercourses/waterbodies during the hours of darkness, taken to be 30 minutes before sunset	To prevent disturbance to otters using Authority Area	Approval required from the ECoW

[6] Only items relevant to otter and water vole are listed

Mitigation Item[6]	Approximate Chainage/location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
	(Bogbain Burn, Caochan Ruadh, Loch Alvie)		to 30 minutes after sunrise, unless specifically agreed with SNH. The ECoW will monitor otter activity upstream and downstream of the works using camera traps and may stop site activities at any time should they consider that the works are having an impact on otter activity.	value watercourses/waterbodies	
P11-E58	International value watercourses (River Dulnain, Allt nan Ceatharnach, Allt na Criche (Lynwilg))	Construction	No working or artificial lighting within 50m of watercourses during the hours of darkness, taken to be 30 minutes before sunset to 30 minutes after sunrise, unless specifically agreed with SNH. The ECoW will monitor otter activity upstream and downstream of the works using camera traps and may stop site activities at any time should they consider that the works are having an impact on otter activity. When site activities are taking place at more than one International value watercourse at any one time, this will be subject to ECoW approval, to avoid any cumulative impact on otter activity. This includes any works taking place within 50m of the watercourse.	To prevent disturbance to otters and fish using International value watercourses	Approval required from the ECoW
P11-E59	Throughout Proposed Scheme	Pre-Construction & Construction	Permanent otter fencing to be installed 100m either side of watercourse crossings, where indicated on the Landscape and Ecological Mitigation plan (Figure 13.4), to be installed prior to scheme completion. Design will follow SNH guidance[xiv] and will be checked and approved by the ECoW. The recommended specification is as follows: at least 1.2m high galvanised welded mesh (of at least 2.5mm gauge) above ground level, with a maximum mesh size of 100 x 50mm attached to fence	To protect otters from road traffic accidents.	Deviations to be agreed with ECoW and SNH

Mitigation Item[6]	Approximate Chainage/location	Timing of Measure	Description	Mitigation Purpose/Objective	Specific Consultation or Approval Required
			posts and topped with barbed wire. Below ground, the mesh should be dug in to a depth of 300mm, or 100mm with a horizontal lap on the otters' side of 300-450mm. Where fencing ties into structures, culverts and mammal underpasses gaps will not exceed 5cm. Mammal proof fencing will be taken around the top of the structure where the height of the headwall/wingwalls do not exceed the required height of fencing, where access could be gained up a sloping wall or where an overhang on the fencing is required. Where fencing crosses access tracks mammal proof gates will be provided to prevent access onto the carriageway. Temporary otter fencing must be installed prior to commencement of the construction phase, 100m either side of all watercourse crossings where indicated on the Landscape and Ecological Mitigation plan (Figure 13.4). Specification should follow that of the permanent fencing, where deviations to this are required for constructability purposes, these should be agreed with the ECoW and SNH.		

8. Residual Impacts

8.1 Construction

8.1.1 With the adoption of the mitigation commitments detailed in ES Chapter 12: Ecology and Nature Conservation, degradation by pollution of habitats used by otter is not anticipated.

8.1.2 One resting site (TN 8) is located within the Proposed Scheme. As such, direct damage to this low status hover located on the Caochan Ruadh is anticipated as a result of the Proposed Scheme. This effect is considered in Table 8.1.

8.1.3 No direct damage to any other resting sites is anticipated as a result of the Proposed Scheme. As such, this effect is not considered further in the impact assessment.

8.1.4 One resting site (TN 4) is located within the standard distance threshold for disturbance[iv]. This low status hover is located on the Bogbain Burn approximately 10m to the south of the Proposed Scheme. As such, a disturbance impact is anticipated and this effect is considered in Table 8.1.

8.1.5 The Allt Cosach watercourse (which was not subject to survey in 2017; see Limitations section) is located over 50m from the Proposed Scheme. Therefore, no direct impacts are expected on any resting sites that may be present along the watercourse. The watercourse is located over the standard distance threshold for disturbance[iv] to non-breeding/natal otter resting sites. As such, the risk of any potential disturbance impacts is limited to breeding or natal holts. This effect is considered in Table 8.1. Surveys will be undertaken in autumn 2018 to establish the ecological baseline within this area and inform the requirement to obtain SNH derogation licences where necessary and any associated mitigation measures required.

8.1.6 All of the other resting sites identified during surveys in 2017 are located over the standard distance threshold for disturbance[iv] and are not considered to be suitable breeding or natal holts. As such, no disturbance impacts are anticipated on these resting sites and this effect is not considered further.

8.1.7 Although direct damage or disturbance effects are not anticipated on the majority of the resting sites (with the exception of TN 8 and TN 4), the movement of otters along watercourses to reach these sites may be affected during the construction period. In addition, individuals using these watercourses to commute and forage may be subject to disturbance as a result of construction activities. These effects are considered in Table 8.1.

8.1.8 Effects as a result of riparian habitat loss, which includes loss of foraging resource and areas of suitability for resting sites, are unlikely to be significant, as the extent of habitat which will be lost (both temporarily for construction and permanently within the Proposed Scheme) is negligible in comparison to the resource available within the local area. As such, this effect is not considered.

8.1.9 There is a risk of direct mortality to individuals that may be caused as a result of construction related activities. This effect is discussed in Table 8.1.

Table 8.1: Otter – Specific Impacts, Mitigation and Residual Impacts - Construction

Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
TN 8 – Low status resting site located on the Caochan Ruadh	Direct damage to resting sites	Extent: Construction works at this location will result in direct damage and loss of this resting site. Effect: Direct negative Duration: Permanent Frequency and timing: Permanent and recurring Reversibility: Irreversible Likelihood: Likely Impact Descriptor: High	SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E57.	Not significant
Allt Cosach watercourse	Disturbance to individuals using natal/breeding holts	Extent: Construction works within the vicinity of this watercourse may result in disturbance to otters using natal/breeding holts due to increased levels of construction related disturbance, such as light, noise, vibration, and human activity. This may prevent individuals from using the watercourse as a location for potential natal/breeding holts during the construction period. Effect: Indirect negative Duration: Temporary Frequency and timing: Recurring Reversibility: Reversible Likelihood: Unlikely Impact Descriptor: High	SMC-E1, SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E56, P11-E57, P11-E58	Not significant

Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
TN 4 – Low status resting site located on the Bogbain Burn	Disturbance to individuals using low status resting site	Extent: Construction works within the vicinity of this resting site may result in disturbance to otters due to increased levels of construction related disturbance, such as light, noise, vibration, and human activity. This may prevent individuals from frequenting this resting site during the construction period. Effect: Indirect negative Duration: Temporary Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely Impact Descriptor: Medium	SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E57.	Not significant
International value watercourses: River Dulnain (WC-34) Allt nan Ceatharnach (WC-33) Allt na Criche (Lynwilg) (WC-49)	Severance of habitat and important commuting routes	Extent: Movement of otters along watercourses may be affected during the construction period through severance, restricting access to resting sites and foraging resources. For example, during construction of culverts and other water crossings, passage along watercourses may be temporarily severed. Effect: Indirect negative Duration: Temporary Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely Impact Descriptor: Low	SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E58.	Not significant
Authority Area value watercourses/waterbodies: Bogbain Burn (WC-32) Caochan Ruadh (WC-52) Loch Alvie (L-03)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E57.	
Local value watercourses/waterbodies (see Table 5.1 for full list)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E56.	
International value watercourses: River Dulnain (WC-34) Allt nan Ceatharnach (WC-33)	Disturbance to individuals using	Extent: Construction works within the vicinity of these watercourses/waterbodies may cause changes to existing otter activity levels due to increased levels of construction related disturbance, such as light, noise, vibration, and human activity. This may alter how otters	SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E58.	Not significant

Feature	Potential Impact	Characterisation of Impact (Pre-mitigation)	Mitigation	Residual Impact
Allt na Criche (Lynwilg) (WC-49)	commuting routes	use watercourses, waterbodies and terrestrial habitat if individuals avoid areas due to disturbance. As a result, resting sites and foraging habitat may not be frequented during the construction period. Effect: Indirect negative Duration: Temporary Frequency and timing: Recurring Reversibility: Reversible Likelihood: Likely Impact Descriptor: Low		
Authority Area value watercourses/waterbodies: Bogbain Burn (WC-32) Caochan Ruadh (WC-52) Loch Alvie (L-03)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E57.	
Local value watercourses/waterbodies (see Table 5.1 for full list)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E56.	
International value watercourses: River Dulnain (WC-34) Allt nan Ceatharnach (WC-33) Allt na Criche (Lynwilg) (WC-49)	Direct mortality	Extent: Construction works within the vicinity of these watercourses/waterbodies may cause changes to existing otter activity levels and alter how they use watercourses/waterbodies and terrestrial habitat in the area. This in turn may result in an increased risk of mortality caused by road traffic accidents. Effect: Direct negative Duration: Temporary Frequency and timing: Permanent Reversibility: Irreversible Likelihood: Likely Impact Descriptor: Medium	SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E58.	Not significant
Authority Area value watercourses/waterbodies: Bogbain Burn (WC-32) Caochan Ruadh (WC-52) Loch Alvie (L-03)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E57.	
Local value watercourses/waterbodies (see Table 5.1 for full list)			SMC-E2, SMC-E6, SMC-E10, SMC-E13, SMC-E14, P11-E34, P11-E56.	

8.2 Operation

8.2.1 Given the presence of the existing A9, terrestrial species recorded within the EZoI will already be habituated to disturbance through ambient road noise levels. Therefore, impacts on otter as a result of noise disturbance have been discounted. As such, operational impacts on this species are considered to be limited to direct mortality and effects from increased severance as a result of the road widening and additional access tracks and junctions.

8.2.2 Evidence of otter was recorded on 15 watercourses within the EZoI. Of these, 12 are currently crossed by the A9 and will be crossed by the Proposed Scheme. The potential risk of increased severance and mortality as a result of the widening of the A9 has been mitigated through embedded design measures to maintain permeability.

8.2.3 A minimum of 22 structures will be utilised to allow passage across the Proposed Scheme (see Figure 12.24). Where feasible, bridges and culverts which cross the Proposed Scheme incorporate mammal ledges and/or have been increased in size to increase permeability. Planting will be used where necessary to guide otters to ledges and underpasses. Details of the existing and proposed culvert/bridge specifications are provided below:

- Allt Chriochaidh (CH570) (A9 1100) – Proposed bridge with a span of 4m and height of 1.5m. The existing bridge has the same span and height as the proposed structure, however has no bank area beneath the bridge for passage by otter and no mammal ledges incorporated into the structure. The proposed structure will improve connectivity at this location through the provision of mammal ledges.
- Caochan Ruadh (CH1700) (A9 1100 C70) – Proposed 2.5m wide x 2.5m high culvert with integrated mammal ledge. The existing structure has a 1.9m diameter. The proposed structure is larger and features a mammal ledge, improving connectivity at this location.
- Ballinluig Burn Underpass (CH1940) (A9 1110) – Proposed underpass with a channel for the watercourse and a separate dry route through the structure, approximately 4.5m wide x 2.2 m high. The existing has a 2.3m diameter. The proposed structure is larger and features a passable route for otter, improving connectivity at this location.
- Allt na Criche (Lynwilg) (CH3540) (A9 1130) – Proposed bridge with a span of 6m and a height of approximately 4m above the river bed. The existing structure has a span of 6m, with no bank area beneath the bridge for passage by otter and no mammal ledges incorporated into the structure. The proposed structure will improve connectivity at this location through the provision of mammal ledges.
- Loch Puladdern (CH5430) (A9 1150 C7) – Proposed 1.2m wide x 1.2m high culvert. The existing structure has a 0.9m diameter. The proposed structure is not large enough to incorporate mammal ledges, however a mammal underpass will be provided adjacent to the culvert, improving connectivity at this location.
- Aviemore Burn (CH7170) (A9 1150 C95) – Proposed 2.5m wide x 2.5m high culvert. The existing structure has a 2.4m diameter. The proposed structure is larger and features mammal ledges, however these will not be compliant during spate conditions. As such, a mammal underpass will be provided adjacent to the culvert, improving connectivity at this location.
- Unnamed watercourse (WC-42) (CH7470) (A9 1150 C11) – Proposed 2.5m wide by 2.5m high culvert with integrated mammal ledges. The existing structure has a 1m diameter. The proposed structure is larger and features mammal ledges, improving connectivity at this location.

- Allt na Criche (Granish) (CH9120) (A9 1170 C12) – Proposed 2.5m wide x 2.5m high culvert. The existing structure has a 1.8m diameter. The proposed structure is larger than the existing structure and will feature a mammal ledge, improving connectivity at this location.
- Avie Lochan Burn (South) (CH9950) (A9 1170 C20) – Proposed 1.2m wide x 1.2m high culvert. The existing structure has a 0.9m diameter. This watercourse is considered to be an important commuting route to Avie Lochan, which provides suitable habitat for otter to forage. The proposed size of the culvert is unsuitable for provision of a mammal ledges, whilst increasing the size of the culvert (e.g. to 2.5 x 2.5m) is not possible for design reasons. As such, a mammal underpass will be provided adjacent to the culvert, improving connectivity at this location.
- Avie Lochan Burn (North) (CH10250) (A9 1170 C23) – Proposed 1.2m wide x 1.2m high culvert. The existing structure has a 1m diameter. The proposed structure is larger than the existing structure, improving connectivity at this location.
- Allt Cnapach (CH 12210) (A9 1170 C50) – Proposed 2.5m wide x 2.5m high culvert. The existing structure has a 1.8m diameter. The proposed structure is larger than the existing structure and features a mammal ledge, improving connectivity at this location.
- Tributary of Feith Mhor (CH 14620) (A9 1170 C77) – Proposed 1.8m wide x 1.8m high culvert. The existing structure has a 1.6m diameter. The proposed structure is larger than the existing structure and features mammal ledges, however these will not be compliant during spate conditions. The mammal underpass provided adjacent to structure A9 1170 C75 (located approximately 180m to the south) will allow otter passage and maintain connectivity during spate conditions.
- Feith Mhor (CH 14470) (A9 1170 C75) – Proposed 1.8m wide x 1.8m high culvert. The existing structure has a 2.1m diameter. For flood mitigation purposes, the proposed culvert is smaller than the existing. Mammal ledges will be incorporated into the structure, however these will not be compliant during spate conditions. As such, a mammal underpass will be provided adjacent to the culvert, improving connectivity at this location.
- River Dulnain (16610) (A9 1190) – Proposed bridge with a span of approximately 80m, width of 14m, and height of 12m above the river bed. The existing structure has a span of 80.5m and provides adequate bank area beneath the bridge for passage by otter on both sides of the watercourse. The proposed structure will maintain connectivity at this location through retention of the river banks, as such mammal ledges are not required for otter passage.
- Allt nan Ceatharnach (CH17430) (A9 1200) – The existing bridge structure has a span of 13.7m, with no bank area beneath the bridge for passage by otter and no mammal ledges incorporated into the structure. The existing structure will be retained, with mammal ledges retrofitted into the structure. A proposed new structure will be constructed immediately adjacent to the existing, with an approximate span of 18m and height of 10m above the watercourse bed. The proposed structure will feature mammal ledges, which in combination with the existing structure, will improve connectivity at this location.
- Soldiers Head Underpass (CH23580) – Proposed new underpass with a channel for the watercourse and a separate dry route through the structure, approximately 3.5m wide and 3m high. The proposed structure features a passable route for otter, improving connectivity at this location. The underpass will feature PIR motion sensor lighting and low levels of pedestrian/vehicular traffic.
- Slochd Mhor 1 (CH23920) (A9 1210 C39) – Proposed 2.5m wide x 2.5m high culvert with integrated mammal ledge. The existing structure is approximately 2.2m wide x

3m high. The proposed structure is wider than the existing structure and features a mammal ledge, improving connectivity at this location.

- Allt Slochd Mhuic (CH23930) (A9 1207 F) – No new structure is proposed at this location. The existing structure is approximately 3m wide and 1.5m high and will be retained.
- Allt Slochd Mhuic (CH24110) (A9 1208 F) – No new structure is proposed at this location. The existing structure is approximately 1.5m wide x 1.6m high and will be retained.
- Slochd Mor 2 (CH24230) (A9 1210 C45) – Proposed 2.5m wide x 2.5m high culvert with integrated mammal ledge. The existing structure has a 1.7m diameter. The proposed structure is larger than the existing structure and features a mammal ledge, improving connectivity at this location.
- Slochd Mor 3 (CH24320) (A9 1210 C46) – Proposed 2.5m wide x 2.5m high culvert with integrated mammal ledge. The existing structure has a 1.6m diameter. The proposed structure is larger than the existing structure and features a mammal ledge, improving connectivity at this location.
- Allt Slochd Mhuic (CH24330) (A9 1209 F) – No new structure is proposed at this location. The existing structure is approximately 1.2m wide x 2m high and will be retained.

8.2.4 In addition to the embedded design measures described above, specific mitigation measures to reduce otter mortality include provision of permanent otter fencing at watercourses crossed by the Proposed Scheme where otter activity has been recorded and suitable habitat exists. Vegetation will also be planted to provide sufficient cover for otter using these crossing points (see Figure 13.4, Landscape and Ecological Mitigation plan). It is therefore considered that the Proposed Scheme will increase the connectivity of habitats for otter on either side of the A9 and as such the mortality risk from the A9 will be reduced.

8.2.5 Sustainable Urban Drainage Systems (SUDS) access roads cross the Allt an Fhearna (WC-57), Allt na Criche (Granish) (WC-38) and its unnamed tributary (WC-40a), Avie Lochan Burn (South) (WC-37), Allt Cnapach (WC-36), and Feith Mhor (WC-35) and its northern tributary (WC-35a). These watercourses have been assigned Local value, with only sporadic evidence of otter activity (sprainting) recorded on four of the watercourses (WC 35a, 36, 37, 38). The SUDS access roads are narrow in width (on average 4m) and will be used infrequently by maintenance vehicles. As such, given the width of the roads and low frequency and volume of traffic, it is unlikely that these access roads will present a barrier to otter movement or elevate the likelihood of mortality.

9. Conclusion

9.1.1 Evidence recorded during field surveys in 2017 indicates that otter are using many of the watercourses within the Study Area to commute and forage, whilst a small number of watercourses are being used for shelter; resting sites have been recorded on five watercourses. In addition to the running water habitats, lochs and ponds within the Study Area are being used to forage and occasionally shelter. None of the resting sites recorded within the Study Area are considered to be suitable breeding or natal sites. One low status hover (TN 8) will be damaged as a result of the Proposed Scheme and one low status hover (TN 4) will be subject to disturbance during construction. However, through the implementation of mitigation measures, these impacts are not considered to be significant. The majority of the watercourses and waterbodies within the Study Area have been valued at Local scale for otter, with three valued at Authority Area scale and

three valued at International scale. Overall, connectivity for this species will be improved compared to the existing situation through embedded design measures and mortality risk reduced through the implementation of mitigation commitments. As such, no significant impacts on otter from either construction or operation are anticipated.

[i] CH2MHill (2015) Preliminary Ecological Appraisal. North Scheme – Dalraddy to Moy
[ii] The Design Manual for Roads and Bridges (2001) Volume 10, Section 1 Part 9 HA 81/99: Nature Conservation Advice in Relation to Otters, Chapter 7.
[iii] Scottish Natural Heritage (undated) http://www.snh.org.uk/publications/on-line/wildlife/otters/effects.asp
[iv] Bassett, S. and Wynn, J. (2010) Otters in Scotland: How vulnerable are they to disturbance? In Practise, 70: 19-22.
[v] Dean, M, Strachan, R, Gow, D. and Andrews, R (2016) The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. Mammal Society, London.
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[x] Department for Communities and Local Development (2012) National Planning Policy Framework, Paragraph 118. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 (Accessed 14/06/2016).
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