

Eastern Green Link 4: Scottish Onshore Scheme

*Volume 4: Appendices
Appendix 7.3: Other Mammals*

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1. Introduction

1.1 Background

This appendix accompanies **Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report)** of the Environmental Impact Assessment Report (EIAR). It describes in detail the desk study and field survey carried out to establish the baseline conditions within the zone of influence (Zol) of the Proposed Development in respect of mammals (excluding bats, otter, and badger)

This appendix is supported by **Figure 7.3 Other Mammals (Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report))**.

Throughout this appendix, species are given their common and scientific names when first referred to and their common names only thereafter. All distances are cited as the shorted distance 'as the crow flies', unless otherwise specified. The area encompassed by the red line boundary shown on the accompanying figures is referred to throughout as the 'Site'.

1.2 Quality Assurance

This appendix, and the desk study and field survey described within it, has been completed in accordance with the AECOM Integrated Management System (IMS). AECOM's IMS places emphasis on professionalism, technical excellence, quality, as well as covering health, safety, environment and sustainability management. All AECOM staff members are committed to maintaining this accreditation to those parts of BS EN ISO 9001:2015 and 14001:2015, as well as BS OHSAS 18001:2007 that are relevant to a consultancy service.

The field survey for mammals was carried out by capable AECOM employees with experience of these surveys. All are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) at the appropriate grade and adhered to their strict Code of Professional Conduct.

1.3 Legislation and Policy

The following legislation is relevant to relevant mammal species that may occur within Zol of the Proposed Development:

- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (the 'Habitats Regulations'¹);
- Wildlife and Countryside Act 1981 (as amended) (the 'WCA');

¹ EU legislation which applied directly or indirectly to the UK before 11.00 p.m. on 31 December 2020 (such as *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora* (the 'Habitats Directive')) has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'. The Habitats Regulations, which implemented the Habitats Directive, have been amended by *The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019*, so that they continue to operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate national authorities. All other processes or terms in the Habitats Regulations remain unchanged and existing guidance is still relevant.

- Nature Conservation (Scotland) Act 2004 (as amended);
- Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (the ‘WANE Act’);
- The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014; and
- Marine (Scotland) Act 2010.

The requirements set by the above pieces of legislation were taken into account when preparing this appendix.

Under the Nature Conservation (Scotland) Act 2004, public bodies in Scotland have a duty to further the conservation of biodiversity. The Scottish Biodiversity List (SBL) is a list of habitats, plants and animals that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The purpose of the SBL is to identify habitats and species that are of highest priority for biodiversity conservation, thereby helping public bodies to carry out their biodiversity duty.

Beaver

On 01 May 2019, beaver *Castor fiber* became fully protected under Schedule 2 of the Habitats Regulations. This legislation makes it an offence to intentionally or recklessly:

- capture, injure or kill beaver;
- harass a beaver or group of beavers;
- disturb a beaver while it is occupying a structure or place used for shelter or protection;
- disturb a beaver while it is rearing or otherwise caring for its young;
- obstruct access to a breeding site or resting place, or otherwise deny a beaver use of a breeding site or resting place;
- disturb beavers in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species; or
- disturb a beaver in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.

It is also an offence, whether carried out deliberately or recklessly, to damage or destroy a breeding site or resting place used by a beaver, whether occupied or not at the time.

Where development works are at risk of causing one or more of the offences listed above, a mitigation licence from NatureScot can be obtained to facilitate the works that would otherwise be illegal. However, for a licence to be obtained, evidence must be provided that there is:

- a licensable purpose (one of the purposes specified in regulation 44(2) of Habitats Regulations);
- no satisfactory alternative; and
- no detriment to maintaining the species at favourable conservation status.

Satisfactory survey information and an SPP incorporating proportionate mitigation and/or compensation are also required to support a licence application.

Water Vole

Water vole *Arvicola amphibius* receive partial protection in Scotland under Schedule 5 of the WCA. This protects places of shelter used by water vole but not the animal itself. It is an offence to intentionally or recklessly:

- damage, destroy or obstruct access to any structure or place used for shelter or protection; and/or,
- disturb a water vole while it is using any such place of shelter or protection.

It is possible to obtain a licence to permit works that would otherwise be offences where:

- a. the licensed activity will contribute to significant social, economic or environmental benefit;
- b. there is no satisfactory alternative; and
- c. there is no significant negative impact on the conservation status of the species.

Satisfactory survey information and an SPP incorporating proportionate mitigation and/or compensation are also required to support a licence application.

The water vole is listed on the SBL as a species that is a priority for conservation in Scotland. It is also listed as a priority species in Fife LBAP within freshwater and wetland ecosystems.

Red Squirrel and Pine Marten

Red squirrel *Sciurus vulgaris* and pine marten *Martes martes*, and their resting places, are fully protected under Schedule 5 of the WCA. For red squirrel and pine marten, offences include to intentionally or recklessly:

- kill, injure or take an animal;
- damage, destroy or obstruct access to a place used for shelter or protection²; and/or
- disturb an animal in such a place.

This protection does not apply to areas where red squirrel only feed, and protection of pine marten dens from disturbance does not apply to dens inside a dwelling house.

It is possible to obtain a licence to permit works that would otherwise be offences where:

- a. the licensed activity will contribute to significant social, economic or environmental benefit;
- b. there is no satisfactory alternative; and
- c. there is no significant negative impact on the conservation status of the species.

² Mostly dreys (nests in trees) for red squirrel, and various types of den for pine marten including tree cavities, between boulders, and in buildings.

Satisfactory survey information and an SPP incorporating proportionate mitigation and/or compensation are also required to support a licence application.

Red squirrel and pine marten are listed on the SBL, and consequently public bodies should have regard to them when implementing their biodiversity duty under the Nature Conservation (Scotland) Act 2004. Red squirrels are also listed as a priority species in Fife LBAP within woodland ecosystems.

Seals

Under the Marine (Scotland) Act 2010 it is an offence to intentionally or recklessly kill, injure or take a seal at any time of year, except:

- to alleviate suffering; or
- where Marine Scotland has issued a licence to do so.

This applies to both grey seal *Halichoerus grypus* and harbour seal *Phoca vitulina*.

It is also an offence to intentionally or recklessly harass a seal at a haul-out site designated under The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014.

Grey seal and harbour seal are also listed in Schedule 3 of the Habitats Regulations which protects them only from killing by certain methods not relevant to development activities.

Other Important Mammals

Brown hare *Lepus europaeus* are listed on Schedule 5A of the WCA, affording them partial protection in the closed season (1 February - 30 September). During this period it is an offence to intentionally or recklessly kill or injure a brown hare.

Hedgehog *Erinaceus europaeus* are listed on Schedule 6 of the WCA which protects them only from killing by certain methods not relevant to development activities.

Brown hare and hedgehog are listed on the SBL, and consequently public bodies should have regard to these species when implementing their biodiversity duty under the Nature Conservation (Scotland) Act 2004.

Other Guidance

Though not legislative, Fife Local Biodiversity Action Plan (LBAP) sets out Fife Council's strategy for improving biodiversity within the local authority area, which contributes to the overall Scottish Biodiversity Strategy. The proposed Natural Environment Bill may in future introduce statutory nature recovery targets, to which LBAPs could contribute.

Within Fife LBAP Water vole is highlighted as a priority freshwater and wetland species and otter is highlighted as a keystone species or indicator of freshwater and wetland ecosystem health. Red squirrel is highlighted as a priority woodland species and seals are highlighted as keystone species or indicators of marine and coastal ecosystem health.

2. Methods

2.1 Desk Study

A desk study was carried out to identify nature conservation designations for which mammals are qualifying or notified species, and to search for existing records of mammals in proximity to the Proposed Development. The desk study sought to identify:

- Special Areas of Conservation (SACs) designated for mammals within at least 10 km of the Proposed Development;
- SSSIs designated for mammal species within 2 km of the Proposed Development;
- locally designated sites within 1 km of the Proposed Development for which mammal species are an identified reason for designation or, where no designation information is available, for which mammals are likely to be part of the reason for site selection; and
- records of important mammals within 1 km of the of the Scoping Boundary³, made in the last 10 years.

The desk study was carried out using the data sources listed in Table 1.

Table 1: Desk study data sources

Data source	Date accessed	Data obtained
Fife Nature Records Centre	September 2024	<ul style="list-style-type: none"> • Records of protected and/or important mammal species. • Information about non-statutory sites.
Mammal Society Species Hub (https://www.mammal.org.uk/species-hub/full-species-hub/discover-mammals/)	February 2025	Information about protected and important mammal species.
NatureScot Natural Spaces webpage (https://cagmap.snh.gov.uk/natural-spaces/)	February 2025	Ancient Woodland Inventory for Scotland to inform habitat suitability for mammals in wider area.
NatureScot SiteLink webpage (https://sitelink.nature.scot/home)	February 2025	<ul style="list-style-type: none"> • SPAs, SACs and Ramsar sites within 10 km; and • SSSIs within 2 km

³ A record search was carried out to inform the scoping report (AECOM, 2024) before the Site boundary was defined.

Data source	Date accessed	Data obtained
		of the Proposed Development, designated for mammal species.
NBN Atlas Scotland (https://scotland.nbnatlas.org/)	September 2024	Commercially-available records of protected and/or important mammal species within 1 km of the Proposed Development, made since 2014.
Ordnance Survey (OS) 1:25,000 maps and aerial photography (https://www.bing.com/maps/)	February 2025	Habitats and connectivity relevant to interpretation of planning policy and potential important mammal species constraints.
Saving Scotland's Red Squirrels (scottishsquirrels.org.uk)	February 2025	Red squirrel <i>Sciurus vulgaris</i> and grey squirrel <i>Sciurus carolinensis</i> records.
SEPA Water Classification Hub (https://www.sepa.org.uk/data-visualisation/water-classification-hub/)	February 2025	Status of watercourses and standing waters to inform habitat suitability.
The National Water Vole Database & Mapping Project (NWVDMP) (https://www.wildlifetrusts.org/national-water-vole-database-mapping-project)	February 2025	Water vole and American mink <i>Neovison vison</i> records.

2.2 Field Survey

All targeted field surveys relating to mammals were carried out between 16 September and 23 October 2024.

Beaver, and Water Vole Survey

Surveys for beaver and water vole were carried out along all watercourses and other waterbodies within 50 m of the Site as it was understood at the time of survey, as far as access was possible and safe.

Surveys followed guidance in published literature (Campbell, *et al.*, 2012; Dean *et al.*, 2016; Strachan *et al.*, 2011). Any evidence found during the survey was mapped and accompanying field notes taken. Surveyors walked in the channel of watercourses where possible and visually inspected all parts of the banks. Where dense vegetation (especially scrub) or soft substrate prevented this, searches for field signs were made as far as access allowed from the top bank.

Evidence of water vole searched for included latrines, footprints, droppings, burrows, trails, and foraging evidence. Evidence of beaver searched for included refuges (burrows or lodges), trails, footprints, scent mounds, feeding caches and foraging signs. Where found, foraging signs were recorded as fresh, old, or mixed based on their apparent age.

Surveys Scoped Out

No dedicated pine marten *Martes martes* or red squirrel survey was carried out since the Proposed Development would largely avoid direct impacts on woodland habitat.

No dedicated wildcat *Felis silvestris* or mountain hare *Lepus timidus* survey was carried out because the Proposed Development lies outside the recognised range of these species in Scotland (JNCC, 2019; Wetherhill *et al.*, 2022) and there is no suitable habitat present within the Site.

No dedicated survey was carried out for brown hare or hedgehog as these species are relatively common and widespread in lowland Scotland, and impacts from the Proposed Development are largely temporary or highly localised, where permanent.

Nonetheless, any sightings of other mammal species, or evidence of their presence (such as squirrel-eaten cones), were noted during all fieldwork if encountered incidentally.

2.3 Limitations and Assumptions

The aim of the desk study was to help characterise the baseline context of the Proposed Development and provide valuable background information that may not be captured by field survey alone. Information obtained during the desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular species does not necessarily mean they do not occur in the study area. Likewise, the presence of records for a particular species does not automatically mean that these still occur within the area of interest or are relevant to the Proposed Development.

The placement of recorded field signs is based on the accuracy of that data in GIS. Consequently, the location of any refuges identified are approximate and should be verified by measurement on Site where required for design, construction, or licencing.

Survey areas were based on the boundary of the Proposed Development as it stood at the time of survey. Owing to design changes and lack of land access, some sections of the Site and surrounding habitats have not been surveyed. Areas not accessed and discrepancies between the survey area and the Site are shown in the figures supporting this Technical Appendix. Habitats not surveyed for mammals appear from aerial imagery to largely comprise agricultural fields with occasional field drains of limited value to protected/important mammals, except where the Site crosses a block of woodland of greater ecological value towards the southern end. This limitation is considered when carrying out the ecological impact assessment.

Only one survey for water vole was carried out at the end of the suitable survey season (mid-April-September). However, it is recommended that a second survey for water vole is completed to account for seasonal changes in distribution (Strachan *et al.*, 2011). This

limitation is considered when drawing conclusions about water vole presence within the Site.

The likelihood of deviations from baseline conditions increases with elapsed time since survey. While the baseline is not expected to change sufficiently to alter the impact assessment, the precise situation regarding protected/important species may nevertheless differ (for example, new otter holts may become established). In line with NatureScot guidance, pre-application surveys should be repeated if the application is delayed more than two years since the date of field survey and pre-construction surveys should be completed as close to the construction period as possible, and no more than 3 months before the start of works to ensure compliance with legislation (NatureScot, 2025).

3. Results

3.1 Nature Conservation Sites

There are no SACs within 10 km of the Proposed Development (or further afield that are obviously connected to the Site), or SSSIs within 2 km, for which mammals are qualifying or notified species.

There are three Protected Seal Haul-Out Sites present within 10 km of the Proposed Development: Kinghorn Rocks, Inchkeith, and Inchmickery and Cow & Calves. Kinghorn Rocks is situated on the Fife coast and is, at closest, 50 m from the Proposed Development whilst the others are more than 4 km away on islands within the Firth of Forth. Kinghorn Rocks is used by both grey seal and harbour seal; it is designated as a key seal haul-out based on August survey counts, not a breeding seal haul-out.

There are three local wildlife sites (LWS) within 1 km of the Proposed Development. Although all LWS's identified during the desk study may support protected/important mammals, none appear to be specifically designated for such species.

3.2 Beaver

Desk Study

The desk study did not identify any records of beaver within 1 km of the Scoping Boundary. Beaver distribution has spread into the River Forth catchment; however, they are only known to occur upstream, from Clackmannanshire westward (Campbell-Palmer *et al.*, 2021). In Fife, beavers are currently only known to occur in the north within the Tay sub-basin district, more than 10 km from the Site.

Field Survey

No evidence of beaver activity was recorded during field surveys, and they are considered absent from the Site.

3.3 Water Vole

Desk Study

No records of water vole were returned by the desk study within 1 km of the Scoping Boundary. The nearest OS grid square within which water vole were recorded during the NWVDMP is NO20, the edge of which is more than 2.5 km from the Site.

Field Survey

No evidence of water vole was recorded during the single-visit field survey. As discussed in **Section 2.3: Limitations and Assumptions**, it is recommended that a second survey for water vole is completed to account for seasonal changes in distribution (Strachan *et al.*, 2011) but the results of only one survey are available to inform this baseline. Considering the lack of evidence in watercourses across the wide-ranging Site (including burrows that often persist between years of occupancy), and that American mink⁴ are present in the area (see **Section 3.4: Other Important Mammals** and **Section 3.5 Invasive and Non-native mammals** below) it is considered highly likely water vole are absent from the Site.

3.4 Other Important Mammals

Pine Marten

No records of pine marten were returned by the desk study within 1 km of the Scoping Boundary. Pine marten distribution has expanded from being historically confined to the Scottish Highlands. They are now widespread across Scotland, north of the central belt, but remain sparsely distributed in Fife (Croose *et al.*, 2013).

No evidence of pine marten was incidentally recorded during field surveys. Pine marten favour habitats with high levels of woodland coverage but will use adjacent more open habitats to hunt for small mammals. Intensively farmed agricultural land, as is present across much of the Site, is typically avoided by pine marten (Stringer *et al.*, 2015). However, it is possible few individuals utilise blocks of woodland scattered across the Site.

Red Squirrel

Fife Nature Records Centre provided five recent records of red squirrel from around Lochgelly, Tullylumb Plantation, and Kinghorn Loch. Numerous recent sightings of red squirrel are also available via Saving Scotland's Red Squirrels. These are mostly concentrated around Cardenden.

One red squirrel individual was incidentally recorded woodland associated with Hare Law in the north of the Site at the edge of a public footpath. The location of this sighting is shown on **Figure 7.3 Other Mammals (Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report))**. Red squirrel are considered absent from most of the Site, as the open agricultural fields which dominate are unsuitable. If present, red squirrel will be highly localised within woodland blocks and tree lines that sparsely occur across the Site.

⁴ American mink is an invasive non-native species which was introduced to the UK when individuals escaped from historic fur farms. Their presence is thought to be one of the leading causes of decline faced by water vole which have not evolved effective defence mechanisms against this mustelid predator.

Brown Hare

Fife Nature Records Centre provided eight recent records of brown hare within 1 km of the Scoping Boundary. These records are all associated with fields south of Tiel Burn, including one record within the Site.

Incidental sightings of brown hare were made in woodland and agricultural fields across the Site during other field surveys, as portrayed on **Figure 7.3 Other Mammals (Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report))**. The greatest number of individuals seen in one observation was six within fields south of the B9157.

Hedgehog

Fife Nature Records Centre provided 21 recent records of hedgehog within 1 km of the Scoping Boundary. Most records are associated with the towns of Kinghorn, Cardenden, and Lochgelly. The closest record was of a dead individual 25 m east of the Site on the B981.

No incidental records were made of hedgehog during other field surveys. Hedgehogs are likely absent from most of the Site, as the open agricultural fields that occur are unsuitable. However, they may be present within field margins, along hedgerows, and within woodland, all of which are scattered across the Site.

Marine Mammals

Fife Nature Records Centre provided eleven recent records of grey seal and three of harbour seal within 1 km of the Scoping Boundary; associated with the coast in the far southeast of the Site. As Kinghorn Rocks seal haul-out is very close to the southeastern end of the Site, resting seals are likely to be present in suitable habitat along the coastal section of the Site.

One record of humpback whale *Megaptera novaeangliae* was also provided by Fife Nature Records Centre; however, as the scope of this EIAR covers the Scottish Onshore Scheme (above Mean Low Water Springs) cetaceans are not discussed further in this report.

3.5 Invasive Non-native Mammals

American Mink

The desk study did not return any records of American mink; however, individuals have been recorded in the general area as part of the NWVDMP.

Evidence of American mink activity was incidentally recorded on Dronachy Burn and along a tributary of Tiel Burn, the locations of recorded field signs are displayed on **Figure 7.3 Other Mammals (Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report))**. On the tributary of Tiel Burn, a burrow considered too small for use by otter was recorded on the top bank under some tree roots with a clear slide down into the watercourse. It is likely this is an American mink den.

Grey Squirrel

Fife Nature Records Centre provided 13 recent records of grey squirrel within 1 km of the Scoping Boundary. Records were associated with settlements along the coast, and none were from within the Site. Further records are available via Saving Scotland's Red Squirrels,

mainly associated with Kirkcaldy with occasional records in other towns (e.g. Cardenden and Kinghorn).

Incidental sightings of grey squirrel individuals were made on three occasions during other survey; all were south of the A92, and none within the Site. Locations of incidental sightings are shown on **Figure 7.3 Other Mammals (Chapter 7: Ecology and Nature Conservation (Volume 2 Main Report))**.

4. References

AECOM (2024). Eastern Green Link 4: Scottish Onshore Scheme – Scoping Report. *Report prepared for SP Energy Networks*.

Campbell, R.D., Harrington, A., Ross, A. and Harrington, L. (2012). Distribution, population assessment and activities of beavers in Tayside. *Scottish Natural Heritage Commissioned Report No. 540*.

Campbell-Palmer, R., Puttock, A., Needham, R.N., Wilson, K., Graham, H. & Brazier, R.E. (2021). Survey of the Tayside Area Beaver Population 2020-2021. *NatureScot Research Report 1274*.

Croose, E., Birks, J.D.S. & Schofield, H.W. (2013). Expansion zone survey of pine marten (*Martes martes*) distribution in Scotland. *Scottish Natural Heritage Commissioned Report No.520*.

Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook*. The Mammal Society, London.

JNCC (2019). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019. Available from: <https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019-species/>. [Accessed: December 2024]

NatureScot (2025). *Planning and development: protected species*. Available from: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species>. [Accessed February 2025]

Strachan, R., Moorhouse, T. and Gelling, M. (2011). *Water Vole Conservation Handbook (3rd Edition)*. Wildlife Conservation Research Unit, University of Oxford.

Stringer, A.P., MacPherson, J., Carter, S., Gill, R., Ambrose-Oji, B., Wilson, R., Kelsall, P., Feirn, W.G., Galbraith, L.C., Hilário, C.M. and Parry, G., (2015). The feasibility of reintroducing pine martens (*Martes martes*) to the Forest of Dean and lower Wye Valley. *Herefordshire: Forestry Commission England, Gloucestershire Wildlife Trust, and Vincent Wildlife Trust*.

Wetherhill, A.S., Coomber, F.G., Darvill, B., Hesford, N., Le Marquand, C., Macleod, R., Mathews, F., Newey, S., Raynor, R., Willis, S., and Wilson, M.W. (2022). Development of the Mountain Hare National Monitoring Scheme - trialling a citizen science approach. *NatureScot Research Report No. 1294*