

Technical Appendix 8.2: Protected Species

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ANNEXES

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1.0 Introduction

This Technical Appendix has been prepared to accompany Chapter 8 of the Oliver Forest Wind Farm ('the Proposed Development') Environmental Impact Assessment (EIA) Report.

It presents detailed methodologies and results of desk studies and field surveys completed to establish baseline conditions with regard to protected and notable faunal species (excluding bats and fisheries which are respectively considered separately in Technical Appendix 8.3 and Technical Appendix 8.4).

It should be read with reference to the following:

- Figure 8.1: Statutory Designated Sites For Nature Conservation Ecological Interest.
- Figure 8.2: Non-Statutory Designated Sites For Nature Conservation Interest.
- Figure 8.3b: Desk Study Records – Notable Faunal Species.
- Figure 8.7: Protected Species Survey Results.
- Figure 8.11: HSI Appraisal and eDNA Pond Survey Results.
- Confidential Figure 8.2.1: Protected Species Survey Results (Sensitive).

The objective of the baseline studies was to establish the presence and spatial distribution of protected and notable faunal species which may be impacted by the Proposed Development.

Only common species names are used throughout this Appendix. Scientific names for all species referenced are supplied in Annex A.

Those records considered sensitive are presented on Confidential Figure 8.12. Such information will not be made publicly available but will be provided to Scottish Borders Council (SBC), Scottish Government and NatureScot.

2.0 Methodology

2.1 Desk Study

The desk study has included a review of the following key sources summarised in Table 1.

Additional peer-reviewed literature and industry guidance has also been reviewed and is referred to where relevant.

Records from, and including, 2012 are considered.

Table 1 – Desk Study Key Sources and Information Sought

Key Source – incl. Date	Information Sought	Search Area
NatureScot's Sitelink https://sitelink.nature.scot/home - 2022	Proximity to statutory designated sites, with ecological interests.	Within 10 km of the site (as shown on Figure 8.1).
The Wildlife Information Centre (TWIC) - October 2022	Non-statutory designated sites for nature conservation with qualifying ecological interests, and existing ecological records.	Within 2 km of the site, as shown on Figures 8.2 and 8.3b.
Saving Scotland's Red Squirrels website https://scottishsquirrels.org.uk/squirrel-sightings/ - March 2023	Red squirrel records.	Within the site and adjacent habitats.
Consented Whitelaw Brae Wind Farm – April 2024	Existing protected species records from baseline field surveys.	Species-specific search areas used for surveys for the consented scheme.

2.2 Field Surveys

Detailed information regarding the presence or likely presence of protected and notable faunal species within proximity to the Proposed Development has been derived through field surveys for the following species:

- badger;
- pine marten;
- water vole;
- otter;
- red squirrel; and
- great crested newt.

Personnel

Field surveys to record terrestrial mammals were undertaken by M. Wood *BSc (Hons)*, who is a highly experienced field ecologist with considerable experience in the survey and identification of field signs of protected mammal species in Scotland. M. Wood also undertook the initial preliminary appraisal of waterbodies on-site for their potential to support great crested newts (see Technical Appendix 8.1 for information).

Habitat suitability index (HSI) appraisals and eDNA surveys of the appropriate ponds on-site were led by L. Grubb *MSc*, who is an experienced great crested nest surveyor and has undertaken many HSI appraisals and eDNA surveys of waterbodies throughout the UK. These surveys followed the appropriate guidance.

Terrestrial Mammal Survey Area

The Mammal Survey Area, as shown on Figure 8.7, has comprised all areas within the site. This meant that, in accordance with NatureScot species-specific guidance (NatureScot, 2020a-e), potentially suitable habitats within the appropriate species-specific survey buffers (ranging from 50 m to 250 m from the Proposed Development) were typically covered.

Terrestrial Mammal Survey Methods

The survey comprised an assessment of habitat suitability for terrestrial mammals and a systematic search of habitat features, to record the location and distribution of field signs identifying the presence and/ or potential presence of protected terrestrial mammal species within the mammal survey area as summarised in Table 2. The survey methodology followed industry standard guidance: Chanin (2003), Cresswell *et al.* (2012), Dean *et al.* (2016), Harris *et al.* (1989) and NatureScot (SNH, 2018).

Table 2 – Terrestrial Mammal Field Survey Methodology Summary

Species	Survey Methodology Summary
Badger	Walkover search of suitable habitat for signs of badgers, such as footprints, hair, snuffle holes, latrines, and sett entrances.
Pine marten	Walkover search of suitable habitats for scats and potential den sites.
Water vole	Walkover search of suitable habitats for potential burrows, runs, footprints, feeding stations and feeding remains, droppings, and latrines.
Otter	Walkover search of suitable habitat for spraints, paw prints, paths, slides, food remains, holts, and places used for breeding and/ or shelter.
Red squirrel	Walkover search of suitable habitats for feeding remains and potential dreys.

The survey of the mammal survey area was undertaken in June and July 2022, on the following dates:

- 14 and 15 June 2022; and
- 11 July 2022.

In addition, an extended Phase 1 habitat survey was carried out of the Mammal Survey Area on 17 June 2022 where signs of (or potential for) terrestrial mammals were searched for.

All surveys were undertaken in conditions conducive to the survey of terrestrial mammals, including normal flow conditions of on-site watercourses and not undertaken after periods of heavy rain.

Great Crested Newt Survey Area and Methods

During the extended Phase 1 habitat survey two waterbodies were identified within the site, with a further two identified on land adjacent to the site. The two ponds on-site, and within 250 m of the Proposed Development, were surveyed. These ponds were subject to a HSI appraisal and eDNA

survey on 16 May 2023. These ponds are located at NT08341 23451 ('pond 1') and NT07680 24267 ('pond 2'), see Figure 8.11.

The great crested newt eDNA surveys provide presence or likely absence data. NatureScot accepts the results of eDNA surveys to ascertain presence or likely absence of great crested newt, providing the surveys conform to the methods in the technical report that accompanied Defra's research into eDNA (Biggs *et al.*, 2014).

A great crested newt HSI appraisal of both waterbodies was made using the HSI methodology as developed by Oldham *et al.* (2000), and as detailed within ARG UK guidance (2010), and terrestrial habitats both within and immediately adjacent to the waterbodies was considered in terms of providing foraging opportunities and places of shelter and refuge.

Limitations

All parts of the site were accessible. This meant that habitats typically out to at least 250 m from the Proposed Development were surveyed with the exception, in the north, of some of the survey buffer out from Turbine 4 and some of its associated infrastructure. Turbine 4 and its associated infrastructure and surrounding habitats to which effects are to be determined was however appropriately covered during the surveys (see Figure 8.7). As such, no substantive limitations are identified.

3.0 Results

3.1 Desk Study

Statutory Designated Sites for Nature Conservation

A review of NatureScot's Sitelink identifies that the site does not form part of any statutory designated site for nature conservation with faunal qualifying features.

However, the River Tweed SAC and SSSI, which runs along the east and south-east boundary of the site, has otter as a qualifying interest, and in addition, the River Tweed SSSI has a beetle and fly assemblage as qualifying features.

Non-statutory Designated Sites for Nature Conservation

There are three non-designated sites for nature conservation within 2 km of the site, one of which is located within the site (details in Table 3). The three sites are designated Scottish Wildlife Trust "Wildlife Sites" and also "Local Biodiversity Sites – to be adopted". The location of non-statutory sites is shown on Figure 8.2.

Table 3 – Non-statutory Designated Sites of Nature Conservation

Designated Site	Distance and Direction from the site	Faunal Species Interest
Glenmuck Bog	Within the site	Common frog.
Hawkshaw Bog	Adjacent to southern site boundaries, other side (south) of the River Tweed	Common frog and newt (unspecified species).
Talla Reservoir	1 km south-east of the site	Common frog. Red squirrel. Hedgehog.

Existing Protected and Notable Faunal Species Records

In consultation with TWIC, a single record of badger (road casualty) and a single record of red squirrel were obtained, dating from 2013 and 2014 respectively, within 2 km of the site (the badger record from the A701). Records of two butterfly species, two damselflies, one bumble bee species and 16 moth

species were also returned within 2 km of the site, with some of these invertebrate records from within the site. Records are shown on Figure 8.3b.

A review of the Saving Scotland's Red Squirrels website¹ revealed 17 red squirrel records within 2 km of the site. The closest was located within the site to the south of the A701 road, with nine also located within 200 m of the east and south-east site boundary.

The baseline protected species surveys for the consented Whitelaw Brae Wind Farm revealed the presence of otter along the Hawkshaw Burn, Fingland Burn and the River Tweed, with a couch (resting place) identified in the survey area (location not disclosed).

No other protected species (including reptiles, amphibians, pine marten, badger or water vole), or evidence of protected species, were recorded during baseline surveys.

3.2 Field Surveys

Terrestrial Mammal Survey

This section provides an overview of protected and notable terrestrial mammal observations recorded during terrestrial mammal surveys. Records (non-sensitive) are provided on Figure 8.7.

Evidence of badger was recorded within the Mammal Survey Area and given the sensitivity of the records (sett and associated badger activity) details are presented on Confidential Figure 8.2.1.

Evidence of pine marten was also recorded within the Mammal Survey Area, comprising scats located at NT 08883 23335 and NT 08472 23602 close to the A701 in the south of the site, and NT 09176 25033, along a forestry track on-site.

Otter spraint was recorded at NT 07684 24277 (at pond 2 on-site) and NT 09665 24952 (one of the off-site ponds, adjacent to the site boundary).

No evidence of any other protected and/ or notable terrestrial mammal species was recorded during surveys.

Great Crested Newt Survey

The results of the HSI appraisal and eDNA survey of the two ponds on-site (and within 250 m of the Proposed Development) are provided on Figure 8.11.

The results of the HSI appraisal of these ponds are provided in Table 4.

Table 4 – HSI Appraisal Results

SI No	Pond Number	Pond 1	Pond 2
	SI Description	SI Value	SI Value
1	Geographic location	0.01	0.01
2	Pond area	>2000 m ²	>2000 m ²
3	Pond permanence	0.9	0.9
4	Water quality	1	1
5	Shade	1	1
6	Waterfowl effect	1	1
7	Fish presence	0.67	0.67
8	Pond Density	0.318471338	0.318471338
9	Terrestrial habitat	1	0.67
10	Macrophyte cover	0.8	0.45
HSI Score		0.56	0.51
Pond suitability²		Below average	Below average

¹ <https://scottishsquirrels.org.uk/squirrel-sightings/>. (Accessed 31 May 2024).

² < 0.50 'Poor', 0.50-0.59 'Below average', 0.60-0.69 'Average', 0.70-0.79 'Good', >0.80 'Excellent'.

The eDNA results returned no evidence of great crested newts in either surveyed pond on-site (see Annex B).

Other Protected and Notable Faunal Species

A common lizard was recorded in the west of the site at NT 07377 23610 (see Figure 8.3b).

During the extended Phase 1 habitat survey the on-site ponds supported dragonflies and damselflies, while one of the off-site ponds, adjacent to the eastern site boundary contained tadpoles (so supported amphibians; common frog).

A grey squirrel (an invasive non-native species) was recorded within the site.

No further protected and notable faunal species were recorded during surveys.

4.0 References

ARG UK (2010). *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index*. Amphibian and Reptile Groups of the United Kingdom

Biggs J., Ewald N., Valentini A., Gaboriaud C., Griffiths R.A., Foster J., Wilkinson J., Arnett A., Williams P and Dunn F (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt*. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

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Cresswell, W. J., Birks, J. D. S., Dean, M., Pacheco, M., Trehella, W. J., Wells, D. and Wray, S. (2012). *UK BAP Mammals Interim Guidance for Survey Methodologies*. Impact Assessment and Mitigations. The Mammal Society, Southampton.

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Oldham R.S., Keeble J., Swan M.J.S. and Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, 10(4), pp. 143-155.

NatureScot (2020a). *Standing Advice for Planning Consultations – Protected Species: Badger*. NatureScot, Inverness.

NatureScot (2020b). *Standing Advice for Planning Consultations – Protected Species: Red squirrel*. NatureScot, Inverness.

NatureScot (2020c). *Standing Advice for Planning Consultations – Protected Species: Pine marten*. NatureScot, Inverness.

NatureScot (2020d). *Standing Advice for Planning Consultations – Protected Species: Otter*. NatureScot, Inverness.

NatureScot (2020e). *Standing Advice for Planning Consultations – Protected Species: Water Vole*. NatureScot, Inverness.

SNH (2018). *Best Practice Badger Survey Guidance Note*. SNH, Inverness.

ANNEX A - SCIENTIFIC FAUNAL NAMES

Table A-1 provides common and scientific names of faunal species included in this Technical Appendix.

Common Name	Species Name
Great crested newt	<i>Triturus cristatus</i>
Common frog	<i>Rana temporaria</i>
Common lizard	<i>Zootoca vivipara</i>
Badger	<i>Meles meles</i>
Otter	<i>Lutra lutra</i>
Pine marten	<i>Martes martes</i>
Red squirrel	<i>Sciurus vulgaris</i>
Grey squirrel	<i>Sciurus carolinensis</i>
Water vole	<i>Arvicola amphibius</i>
Hedgehog	<i>Erinaceus europaeus</i>

ANNEX B – EDNA SURVEY RESULTS (FROM LABORATORY)



Folio No: E17584
 Report No: 1
 Purchase Order: AESS-23-014
 Client: AVIAN ECOLOGY LTD
 Contact: Lydia Grubb

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 23/05/2023
Date Reported: 30/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
R416	Oliver Forest Pond 1	-	Pass	Pass	Pass	Negative	0
R419	Oliver Forest Pond 2	-	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

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METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

- SIC: Sample Integrity Check [Pass/Fail]**
 When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.
- DC: Degradation Check [Pass/Fail]**
 Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.
- IC: Inhibition Check [Pass/Fail]**
 The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.
- Result: Presence of GCN eDNA [Positive/Negative/Inconclusive]**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.


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