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Technical Appendix 8.2: Protected Species Survey Report

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1 INTRODUCTION

1.1.1.1 This Technical Appendix (TA) describes the methods and results of Protected Species Surveys (PSS) undertaken to obtain baseline ecological information in connection with the proposed ground-mounted solar photovoltaic (PV) system and Battery Electric Storage System (BESS) (the Proposed Development). The following terminology is used throughout this TA:

- The Site: all land within the proposed red line boundary as shown on **Figure 8.2.1, Appendix A**;
- The Proposed Development: the propose solar PV farm and BESS, inclusive of all necessary infrastructure. The Development layout is shown on **Figure 8.2.2, Appendix A**; and
- Ecology Survey Area (ESA): the land within which protected species could be affected by the Proposed Development, and where the PSS was undertaken. The ESA is shown on **Figure 8.2.3, Appendix A**.

1.2 The Proposed Development

1.2.1.1 The Proposed Development will occupy an area of approximately 190 hectares (ha), with the layout is shown in **Figure 8.1.2, Appendix A**. A full detailed description of the Proposed Development is found in **Chapter 3: Development Description** of the Environmental Impact Assessment Report (EIAR).

1.3 Site Description

1.3.1.1 The Site is centred on grid coordinates National Grid Reference (NGR) NT 78702 67899 approximately 2.4 kilometres (km) south of Cockburnspath, and 13 km southeast of Dunbar.

1.3.1.2 A full description of the Site and its surroundings can be found in **Chapter 2: Site Design and Evolution**.

1.4 Purpose of Report

1.4.1.1 PSS were undertaken to collect detailed information regarding the occurrence and distribution of protected species within the Site and its surrounds, to provide an accurate baseline on which to base an Ecological Impact Assessment (EcIA). The purpose of this report is to detail the methods and results of the PSS apart from bats.

1.4.1.2 All methods and results relating to bats are detailed within the V**olume 3: TA8.3 Bat Survey Report**[1].

[1] Environmental Resources Management (ERM) (2025). *Bowshiel Farm Solar PV and BESS: TA8.3 Bat Survey Report.* ERM, Glasgow, Scotland, UK.

2 METHODOLOGY

2.1 Field Survey

2.1.1.1 In accordance with NatureScot (NS) standing advice[2], Environmental Resources Management (ERM) completed a range of surveys to establish the presence of protected[3] and / or priority[4] species within the Site and its immediate surrounds. The PSS were completed by ERM ecologists who are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) with at least capable level of competence in undertaking PSS, as per CIEEM's competency framework[5]. The following section describes the methodology undertaken for the PSS.

2.1.2 Red Squirrel

2.1.2.1 A walkover survey of all accessible woodland within, and up to 50 m from the Site was conducted for red squirrel (*Sciurus vulgaris*) on 12 September and 13 September 2024. The survey was completed in accordance with the latest guidance[6],[7]. Surveyors walked the woodland areas and recorded red squirrel activity including dreys, feeding remains, and footprints, as well as direct sightings of individuals.

2.1.2.2 Dates and times of surveys, and weather conditions are detailed in **Table 2.1**.

TABLE 2.1 DATES AND TIMES OF RED SQUIRREL SURVEY

DATE OF SURVEY	START TIME	WEATHER CONDITIONS
11/09/2024	12:30	Temperature (ºC): 15 Cloud Cover (Oktas): 3/8 Wind (Beaufort): 1 Precipitation (mm): 0
12/09/2024	08:30	Temperature (ºC): 14

[2] NatureScot (2025) *Planning and development: standing advice and guidance documents* [Online] Available at: Planning and development: standing advice and guidance documents | NatureScot (Accessed February 2025)
[3] Species which are afforded protection under Scottish, UK or European Legislation including: Nature Conservation (Scotland) Act 2004, the Wildlife and Countryside Act 1981 (as amended in Scotland); and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland)
[4] Species which are of principal importance for biodiversity in Scotland as listed on the Scottish Biodiversity List and the East Lothian Biodiversity Action Plan.
[5] CIEEM (2024) *Competency Framework*. [Online] Available at: Competency-Framework-2024-V7-Web.pdf (Accessed February 2025)
[6] NatureScot (2024) *Standing advice for planning consultation – Red Squirrels* [Online] Available at: Standing advice for planning consultations - Red Squirrels | NatureScot (Accessed February 2025)
[7] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012). *UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton

DATE OF SURVEY	START TIME	WEATHER CONDITIONS
		Cloud Cover (Oktas): 3/8 Wind (Beaufort): 1 Precipitation (mm): 0

2.1.3 Otter

2.1.3.1 In accordance with best practice guidelines[8] an otter (*Lutra lutra*) survey of watercourses within the Site, and 200 m of the Site, was completed on 23 July 2024 and 24 July 2024. Surveys recorded the presence of otter holts and resting sites; as well as, evidence of otter activity including spraints (dung), feeding remains, footprints, paths and slides.

2.1.3.2 Structures or places used by otter for shelter or protection were classified based in accordance with Harris and Yalden (2008)[9].

- Holt: an underground feature that can be situated in natural cavities or specifically dug by an individual. Normally in frequent use by an otter with an abundance of spraints and prints at the entrance, although non-breeding individuals may utilise a network of holts as they move through their territory. Breeding typically occurs in holts with extensive tunnel-systems and chambers where cubs are raised; and

- Couch: an above ground feature regularly used by otter for resting, normally characterised by vegetation that has been pulled up and flattened by an individual into a nest. Specially constructed covered couches can be used for breeding.

2.1.4 Water vole

2.1.4.1 In accordance with good practice guidelines[10],[11], all accessible watercourses within the Site and 50 m from the Site were subjected to water vole (*Arvicola amphibious*) surveys, The surveys were completed on 23 July 2024 and 24 July 2024 The purpose of the surveys was to record habitat suitability within the ESA and to record evidence of water vole activity including latrines (droppings), footprints, runs and burrows and feeding remains.

2.1.4.2 The Water Vole Field Signs and Habitat Assessment (Dean, M. 2021)[12] was used as a basis to evaluate features of a waterbody to understand if it holds the potential to house water

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[8] NatureScot (2020). *Standing Advice for Planning Consultations: Otters*. [Online]. Available at: Standing advice for planning consultations - Otters | NatureScot (Accessed August 2024)
[9] Harris, S., and Yalden D.W. (2008). *Mammals of the British Isles Handbook (4th edition)*. The Mammal Society, Southampton, UK.
[10] NatureScot (2020). *Standing Advice for Planning Consultation: Water Vole.* [Online] Available at: Standing advice for planning consultations - Water Voles | NatureScot (Accessed August 2024)
[11] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016) The Water Vole Mitigation Handbook (Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. Mammal Society, London.
[12] Dean, M. (2021) *Field Signs and Habitat Assessment: A Practical Guide to Water Vole Surveys*. Pelagic Publishing, UK.

voles. **Table 2.2**, taken from the guidance, shows the criteria used during the survey to assess waterbodies for their suitability to support water voles.

TABLE 2.2 CRITERIA FOR ASSESSING THE VALUE OF HABITAT FOR WATER VOLES

HABITAT CATEGORY	DRY AREAS FOR BORROWS OR NESTS			HERBACEOUS VEGETATION	WATER
	BANK PROFILE	BANK SUBSTRATE	VARIATION IN WATER LEVEL		
Optimal (all criteria need to be met)	Steep (approaching 1:1) on at least one side of a watercourse. Steep or shallow on static waterbodies or fen type habitat.	Earth or peat	No noticeable variation during the summer months; banks are not overtopped regularly.	Continuous swathe of tall and luxurious riparian vegetation providing 90 – 100 % cover on the banks (tall tussocky grassland) and marginal / in channel vegetation is present (emergent species).	Permanent water.
Good (all criteria need to be met)	Steep (approaching 1:1) on at least one side of a watercourse. Steep or shallow on static waterbodies or fen-type habitat.	Earth or peak banks, or stony / reinforced bank with gaps allowing access to the earth behind.	No noticeable variation during the summer months; banks are not overtopped regularly.	Continuous swathe of bankside or in-channel (emergent) vegetation providing at least 60 % ground cover. May be dominated by grasses and weeds rather than luxurious riparian vegetation. The vegetation should generally be tall, except in urban or suburban areas, where shorter bankside vegetation may also qualify.	Permanent water. Or routinely wet for at least 2 – 3 months during the summer, and where other 'good' habitat present in immediately adjacent areas with permanent water.
Suitable but poor	Any habitat that falls short of the criteria to qualify as 'good' but does not meet the criteria of 'negligible' value could reasonably be considered to be 'suitable but poor.'				

HABITAT CATEGORY	DRY AREAS FOR BORROWS OR NESTS			HERBACEOUS VEGETATION	WATER
	BANK PROFILE	BANK SUBSTRATE	VARIATION IN WATER LEVEL		
Negligible (will generally need to meet the criteria for herbaceous vegetation and at least one other)	Shallow profile on both banks.	Rocky or gravel, unsuitable for burrowing.	Considerable variation in water level – the bank toe can move by more than 1 m horizontally over the breeding season.	No or limited bankside and marginal vegetation (due to shading or other 'permanent factors – note that management can change and is often a 'temporary' factor).	N/A
	Vertical bank face with no burrowing opportunities behind it.	Reinforced banks with no gaps.	N/A		

2.1.5 Great crested newt

Environmental DNA (eDNA) Survey

2.1.5.1 This method[10] requires the collection of water samples, and the sending of the samples to a laboratory for analysis. Environmental eDNA (eDNA) surveys detect DNA of great crested newt (*Triturus cristatus*) (GCN) that enters ponds through their urine, faeces, skin cells etc. NatureScot accepts eDNA test results as evidence of presence, or likely absence of GCN, if undertaken between the 15 April and 30 June.

2.1.5.2 The survey of Pond 1 was carried out on 02 May 2024, in accordance with NatureScot guidelines[13], and involved the collection of 20 water samples from around the waterbody margin using a sample kit provided by an accredited laboratory. The location of samples was spaced evenly around the margin, and targeted areas where there was vegetation suitable for use as egg laying material but avoiding areas less than 50 – 100 mm deep. Before each sample was taken, the water column was mixed gently to maximise the chances of detecting GCN DNA. Once collected, all samples were vigorously shaken together for ten seconds in a whirl bag to ensure any DNA was mixed across the whole sample. A pipette was then used to add water samples to sterile tubes containing ethanol to preserve any DNA present. Each tube was then mixed for a further ten seconds to prevent DNA degradation. Preserved samples were then stored at a cold ambient temperature until they were returned to the accredited laboratory for analysis.

GCN Traditional Pond Survey

2.1.5.3 The eDNA technique described above can detect presence / absence of GCN; however, it cannot provide any quantitative information about population size if presence is confirmed. Such information requires the use of traditional GCN pond survey techniques based on six visits to a pond. To allow completion of six visits (if necessary) within the survey window for GCN (mid-March to mid-June), the first traditional pond survey using traditional techniques was completed alongside the eDNA survey, and if the eDNA survey confirms absence in a pond, then traditional surveys can stop.

2.1.5.4 A survey was undertaken on 02 May 2024 in accordance with best practice guidelines and comprised of a torchlight survey. Surveyors walked the margin of the pond after dark and shone a torch of c. 500,000 – 1,000,000 candlepower into the ponds. Any newts, or other amphibian species were counted and recorded. Surveys were led by Stephen Clark who holds a NatureScot survey license for Great Crested Newt. Stephen was supported by David Milburn MCIEEM. The surveys were carried out in suitable weather conditions (i.e. during periods without rain, when the air temperature was above 5ºC, with little or no wind).

[13] NatureScot. *Standing Advice for Planning Consultations – Great Crested Newt.* [Online] Available at: Standing advice for planning consultations - Great Crested Newts | NatureScot (Accessed August 2024).

2.2 Survey limitations

2.2.1.1 Due to access constraints, watercourses outside of the Site were not able to be surveyed for otter and water vole. However, effects of the Proposed Development would largely be limited to the Site only, and all major rivers and woodland are avoided; therefore, effects to water vole and otter beyond the Site are unlikely, and as all watercourses within the Site were subjected to survey an understanding of whether otter and water vole were present within the Site could be understood. Furthermore, with respect to otter, where suitable habitat exists that could be used for otters to form their holts, it has been assumed that otter are present in these locations. Therefore, this is not considered a considerable limitation.

3 BASELINE SURVEY RESULTS

3.1 Red squirrel

3.1.1.1 Suitable dreying and foraging habitat was identified in the north and south of the ESA, where a combination of mixed and conifer woodland is present. In addition, some isolated trees exist around the farmhouse in the centre of the Site, which provide suitable dreying and foraging habitat.

3.1.1.2 No evidence of red squirrel was recorded within the ESA. Therefore, red squirrel is considered absent from the ESA.

3.2 Otter

3.2.1.1 The Site contains two agricultural ditches, and a small pond surrounded by rough grassland and scrub, as well as a small watercourse in the north. An additional watercourse, Pease Burn runs adjacent to the southern boundary of the Site at its nearest point. This is bounded by broadleaved woodland, which represents suitable habitat for holt construction. Therefore, suitable habitat exists for otter to forage and commute within the Site, with potential resting habitat both within the Site, and immediately adjacent to the Site.

3.2.1.2 No holts or resting sites were identified during the PSS and no signs of otter activity were recorded; however, access was not granted to the woodland (Bowshiel Wood), which lies between the Site boundary and the Pease Burn and so the presence of otter, and potential resting sites cannot be ruled out.

3.3 Water vole

3.3.1.1 The habitat assessments identified one pond and four ditches which hold suitability for water voles. The pond and one ditch are of good potential for water voles, whilst the other three ditches are of suitable but poor potential for water voles. However, no signs of water vole activity were recorded; therefore, water vole is considered absent from the Site.

3.3.1.2 Full details of the water vole surveys are shown in **Table 3.1**, overleaf.

TABLE 3.1 WATER VOLE SURVEY RESULTS

WATERBODY ID	OVERALL HABITAT CATEGORY	RATIONALE	WATER SIGNS RECORDED DURING SURVEY (Y/N)	WATER PRESENT OR ABSENT
Pond 1	Good	A permanent manmade mid-sized pond, which contains shallow banks, though banks are near vertical in places. Bank has been reinforced in places, but there are gaps between the stones that allow access to the earth behind for burrowing. Bankside vegetation is largely rough grassland with some tall ruderal and areas of scattered scrub. There is plentiful food supply for voles. In addition, aquatic flora is present with *Sparganium erectum, Iris pseduoacorus* and*, Potamogeton natans* all recorded. The pond is therefore considered to hold good potential for water voles.	N	Absent
Bowshiel Ditch 1	Suitable but poor	Banks are very steep, almost vertical earth banks. Though banks are covered in grasses. Banksides are covered in coarse grasses, with some scrub; however watercourse is prone to changes in water level, and some areas were dry during the PSS, evidenced by the growth of terrestrial flora within the channel. The waterbody falls short of criteria for good, but does not meet criteria for negligible; therefore, waterbody was suitable but poor for water vole.	N	Absent
Bowshiel Ditch 2	Suitable but poor	The banks of the ditch are steep, almost vertical. Substrate on the banks is rocky in places, but there are gaps for voles to form burrows. The substrate within the bed of the ditch is gravel. There was clearly variation in water level throughout the year. No in channel vegetation is present and banksides have been heavily poached and grazed by cattle, so there is little bankside vegetation. The downstream end flows into an area of dense gorse scrub, which smothers the banks and shades the watercourse. The waterbody falls short of criteria for good, but	N	Absent

WATERBODY ID	OVERALL HABITAT CATEGORY	RATIONALE	WATER SIGNS RECORDED DURING SURVEY (Y/N)	WATER PRESENT OR ABSENT
		does not meet criteria for negligible, therefore waterbody is suitable but poor for water vole.		
Bowshiel Ditch 3	Good	Banksides are steep and earthy, though vegetated at the field end. At the end where the ditch flows between the arable field, the banks are dominated by coarse grasses, but the ditch then flows into woodland, and so the woodland end is shaded by the woodland canopy. Access and steep banks made it difficult to understand if aquatic flora is present; therefore, a precaution it is assumed aquatic flora is present Therefore, the ditch is considered to hold good potential for water vole.	N	Absent
Bowshiel Ditch 4	Suitable but poor	Both banks are shallow, and a mix of earth and stone, with some limited areas available behind stone for burrowing. Vegetation on bankside is a mixture of scrub, and heavily grazed grass, with a sward height of <20 mm, therefore unsuitable for water vole as a food source. The ditch was at very low flow, almost dry at the time of PSS, however, the wet patches on rocks indicated that flow varies considerably during the year, including during the breeding season. The waterbody falls short of criteria for good, but does not meet criteria for negligible, therefore, waterbody is suitable but poor for water vole.	N	Absent

3.4 Great crested newt

3.4.1 eDNA Surveys

3.4.1.1 The eDNA Surveys at Pond 1 gave a negative result, which indicates likely absence. **Appendix B** contains the raw analysis of the data provided by the accredited laboratory.

3.4.2 Traditional Pond Survey

3.4.2.1 No GCN were recorded during the surveys at Pond 1, however smooth newts (SN) were recorded, see, **Table 3.2** below. The position of Pond 1 is shown on **Figure 8.2.3, Appendix A**.

TABLE 3.2 GCN SURVEY RESULTS

VISIT NUMBER	DATE	SURVEY METHOD	SURVEY FINDINGS	WEATHER CONDITIONS
1	02 May 2024	Torching	20 SN	Temperature (ºC): 10 Cloud Cover (Oktas): 7/8 Wind (Beaufort): 1 Precipitation (mm): 0

3.5 Other Species

3.5.1.1 Brown hare (*Lepus euopeaus*), which is listed on the Scottish Biodiversity List (SBL) and as such is of principal importance for biodiversity conservation in Scotland was recoded throughout the ESA during the PSS. Therefore, brown hare is present within the ESA.

4 SUMMARY

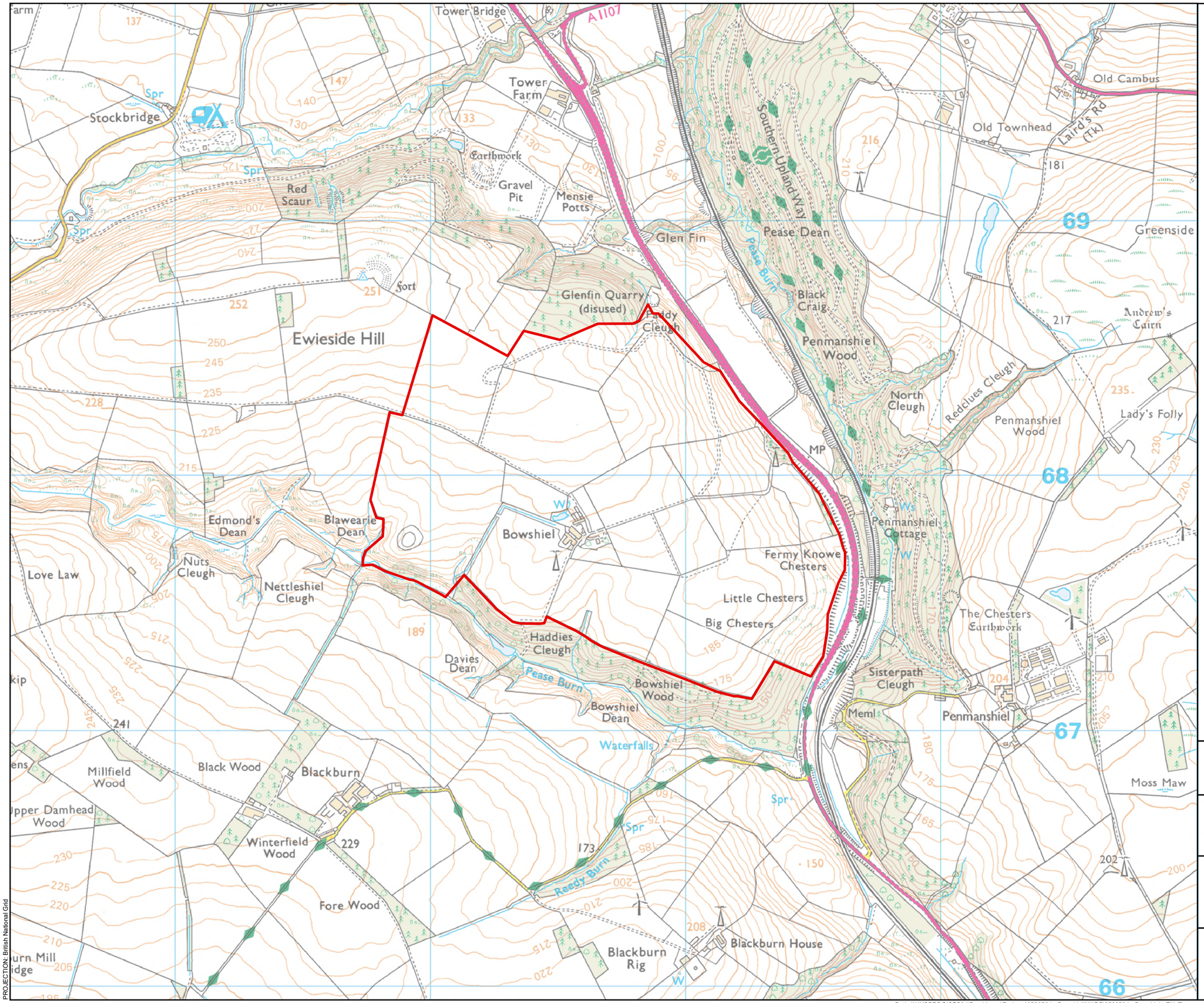
4.1.1.1 Following the PSS, the following protected and / or priority species were confirmed to be present, within the ESA:

- Otter; and
- Brown hare.

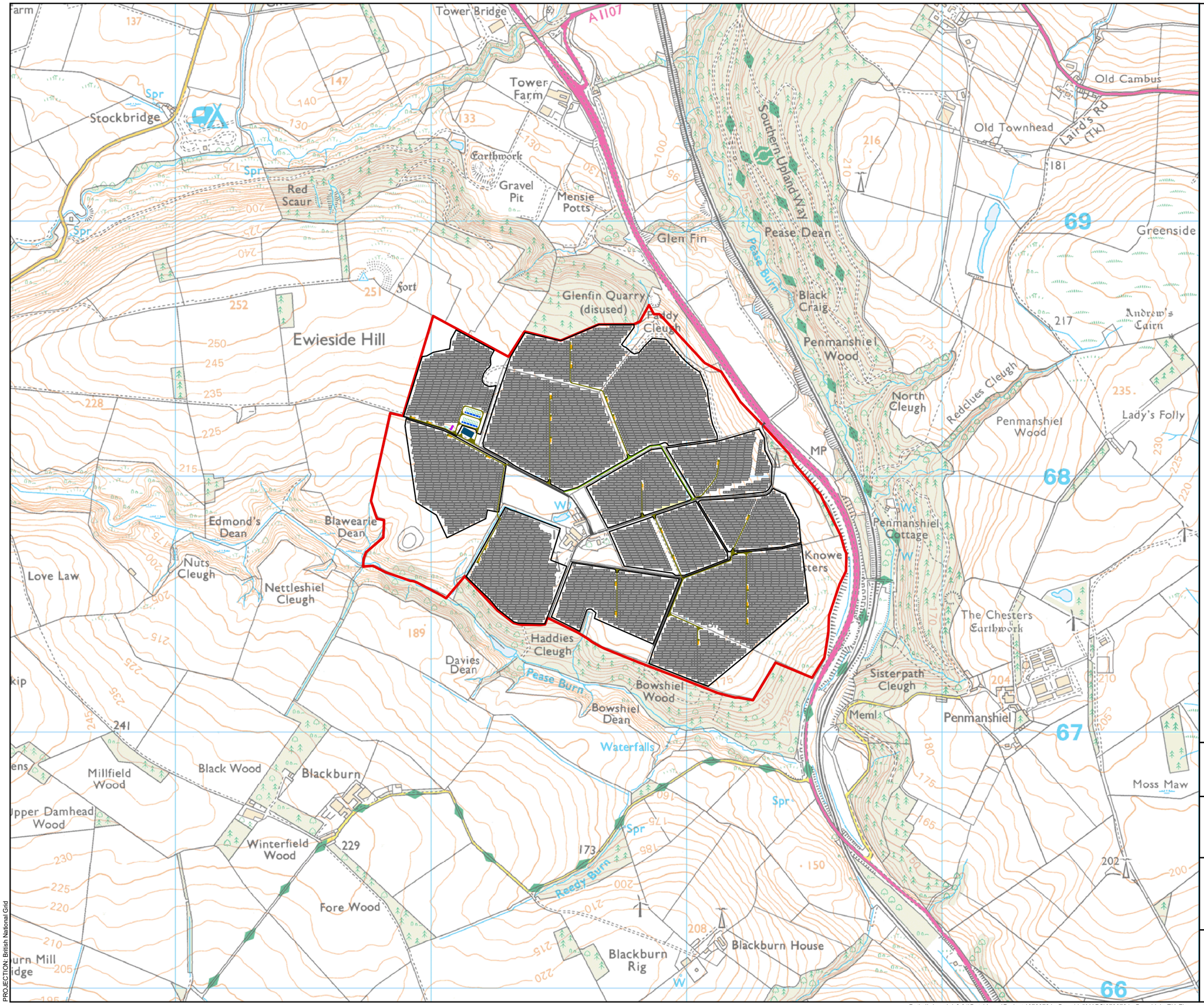
4.1.1.2 The following species are likely absent from the ESA at the time of the PSS:

- Red Squirrel;
- Water Vole; and
- GCN.

APPENDIX A FIGURES



Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel - EIA Figures.aprx\0733784 - Bowshiel - Protected Species TA - Figure 8.2.1 - Site Location Plan - A01



- Site Boundary

Proposed Site Layout

- BESS
- Temporary Construction Compound
- OM Building
- Customer Substation
- PV Module
- Transformer
- Internal Access Track
- Existing Access Track
- External Access Track
- Power Conversion
- Storage Container
- Tesla Megapack
- Fence

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: JS
PROJECT: 0733745	CHECKED: MW
DATE: 6/3/2025	APPROVED: RO

Bowshiel Solar Farm and BESS
Protected Species Survey Report
Figure 8.2.2
Development Plan

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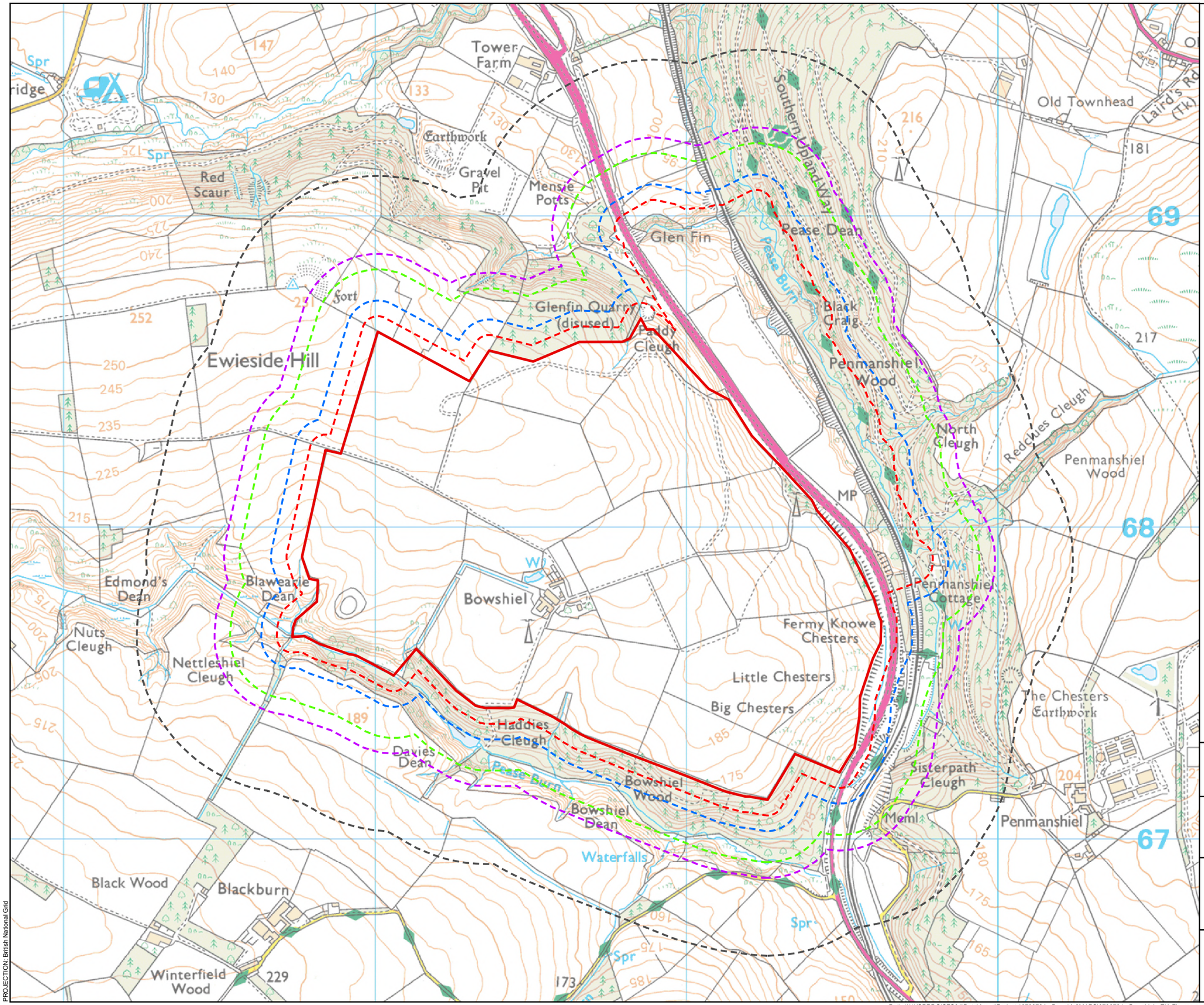
PROJECTION: British National Grid

Path: \\uksprdgisfs01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel - EIA Figures.aprx\0733784 - Bowshiel - Protected Species TA - Figure 8.2.2 - Development Plan - A01



- Site Boundary
- Site Boundary - 50 m Buffer (Bats, Water Vole and Red Squirrel)
- Site Boundary - 100 m Buffer
- Site Boundary - 200 m Buffer (Otter)
- Site Boundary - 250 m Buffer (Habitats)
- Site Boundary - 500 m Buffer (GCN)

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: JS
PROJECT: 0733745	CHECKED: MW
DATE: 05/03/2025	APPROVED: RO

Bowshiel Solar Farm and BESS
Protected Species Survey Report
Figure 8.2.3
Ecology Survey Plan

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PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel - EIA Figures.aprx\0733784 - Bowshiel - Protected Species TA - Figure 8.2.3 - Ecology Survey Plan - A01