Volume 5: Appendix 11.4 – Bat Survey Report

CONTENTS

LIST OF ABBREVIATIONS

AWI: Ancient Woodland Inventory

BAI: Bat Activity Index

BCT: Bat Conservation Trust

BRP: Bat Roost Potential

EcIA: Ecological Impact Assessment

EIA: Environmental Impact Assessment

ESA: Ecological Survey Area

LEPO: Long-Established Woodland of Plantation Origin

LNCS: Local Nature Conservation Site

LOD: Limit of Deviation

NBN Atlas: National Biodiversity Network Atlas

NESBReC: North East Scotland Biological Records Centre

OHL: Overhead Line

PRF: Potential Roost Feature

PRF-I: Potential Roost Feature – Individual

PRF-M: Potential Roost Feature – Multiple

1. INTRODUCTION

1.1 The Proposals

1.1.1 This appendix presents the methods and results of the bat surveys undertaken to inform the Ecological Impact Assessment (EcIA) of the Kintore to Tealing 400 kV Overhead Line (OHL). It should be read in conjunction with **Volume 1, Chapter 3: Project Description** of the Environmental Impact Assessment Report (EIAR) for full details of the Proposed Development, and **Volume 2, Chapter 11: Ecology** for an assessment of the effects of the Proposed Development upon Ecology.

1.2 Supporting Documents

1.2.1 This appendix supports the EcIA in addition to the following appendices (**EIAR Volume 5** and a confidential appendix in **EIAR Volume 6**):

- **Appendix 11.1: Desk Study and Legal/Policy Context**;
- **Appendix 11.2: Habitat and Vegetation Survey Report**;
- **Appendix 11.3: Protected Species Survey Report**;
- **Appendix 11.5: Outline Biodiversity Enhancement Plan**; and
- **Appendix 11.6: Confidential Protected Species Survey Report (Volume 6)**.

1.2.2 This appendix is supported by the following figures (**EIAR Volume 3**):

- **Figures 11.1.1** to **11.1.23: The Proposed Development and Ecology Survey Area**;
- **Figures 11.2.1** to **11.2.5: Designated Sites within 10 km, 5 km and 2 km of the Proposed Development**; and
- **Figures 11.7.1** to **11.7.23: Bat Survey Results**.

1.2.3 In addition, images from the bat surveys are provided in **Annex 11.4.1: Photographs**.

1.3 Requirement for the Report

1.3.1 LUC was commissioned by the Applicant to undertake bat surveys to aid the design process, to inform an assessment of the nature and condition of the habitats present, and to determine the presence or likely absence of bats from the Ecological Survey Area (ESA).

1.4 Terminology and Survey Area

1.4.1 The following terminology will be used throughout this report:

- **Proposed Development:** Defined as the infrastructure including towers, overhead line (OHL) conductors, access tracks, and temporary working areas within the Limit of Deviation (LOD) (**Volume 3, Figures 3.1.1 to 3.1.29: Proposed Development for which Section 37 consent (*Electricity Act, 1989*) is sought**; see **Volume 1, Chapter 3: Project Description**).
- **Proposed Alignment**: Defined as the centreline of the OHL (see **Volume 3, Figure 1.1: Overview of the Proposed Development**).
- **Limit of Deviation (LOD)**: The area either side of the Proposed Alignment and ancillary works within which micrositing may take place in accordance with the conditions of the Section 37 Consent.
- **Ecology Survey Area (ESA)**: The LOD of the Proposed Development, plus relevant buffers (up to 250 m from the LOD, with the exception of access tracks, tie-ins and tie backs for which a buffer of up to 50 m from the associated LOD was applied), in which all ecology surveys were undertaken in line with good practice guidelines for all ecological features surveyed (see **Volume 3, Figures 11.1.1 to 11.1.23: The Proposed Development and Ecology Survey Area**; details of survey guidance and methods can be found in **Volume 5, Appendices 11.2-11.5,** and confidential **Appendix 11.6** can be found in **Volume 6**).
- **Section**: To aid the reader in comprehension of the geographic spread of the ecology baseline data and assessment, the Proposed Development has been divided into six sections (as outlined below, defined fully in **Volume 1, Chapter 3: Project Description** and shown on all figures associated with this chapter);
    - Section A: Emmock 400 kV substation to Forfar, Towers S206 to S163;
    - Section B: Forfar to Brechin, Towers S162 to S106;

- Section C: Brechin to Laurencekirk, Towers S105 to S52;
- Section D: Laurencekirk to Hurlie 400 kV substation, Towers S51 to S1;
- Section E: Hurlie 400 kV substation to River Dee, Towers N96 to N61; and
- Section F: North of the River Dee to Kintore Substation, Towers N60 to N1**.**

2. METHODS

2.1 Scope

Desk Study

2.1.1 A desk study was undertaken to inform the bat surveys. A detailed account of the methods adopted, and findings, is provided in **Volume 5, Appendix 11.1: Desk Study and Legal/Policy Context,** which also sets out the legislative provisions afforded to bat species.

Field Surveys

2.1.2 Informed by the habitats present within the ESA (refer to **Volume 5, Appendix 11.2: Habitat and Vegetation Survey Report**) and the Scoping Report[1], surveys for bats were undertaken with in the ESA.

2.2 Field Survey

Overview

2.2.1 Field surveys were undertaken in accordance with the most recent Bat Conservation Trust (BCT) guidelines[2], which set out best practice for undertaking bat surveys for large infrastructures projects in the United Kingdom. This guidance has been adapted as far as reasonably practicable for the context of the Proposed Development.

2.2.2 The surveys constituted of two methods:

- Initial survey comprised a bat habitat suitability assessment in the form of a Bat Roost Potential (BRP) assessment of all suitable habitat areas, such as woodlands, along the Proposed Development.
- Further survey comprised the deployment of ground-level static detectors in key areas for extended periods of time.

2.2.3 These methods together sought to identify the types and quality of bat habitat present along the Proposed Development, as well as to confirm the bat species present, and the levels of bat activity along the Proposed Development. The surveys sought to identify whether any bat species were present with an unfavourable conservation status and/or not previously recorded within the Angus and Aberdeenshire areas. This information was collected to assess the likely usage of high-quality habitats by bats along the Proposed Development and inform the assessment of potential effects of the Proposed Development upon bats.

Bat Roost Potential Assessment - Trees

2.2.4 An assessment for BRP was undertaken on groups of trees within the ESA, following assessment criteria set out in best practice guidance available at the time[3]. This assessment enabled the identification of features which may be directly impacted by the Proposed Development (eg as a result of vegetation removal to facilitate construction or operation). The BRP surveys aimed to identify groups of trees that exhibited potential roosting features, and record evidence of bat presence (such as droppings) where encountered. The criteria used to categorise BRP are summarised in **Table 11.4.1: Bat Roost Potential Categories (BCT Guidelines 3rd Edition).**

Table 11.4.1: Bat Roost Potential Categories (BCT Guidelines 3rd Edition)

BRP Category	Roosting Habitat Features	Commuting and Habitat Features
Negligible	Negligible habitat features likely to support roosting, commuting or foraging bats.	
Low	Structures in this category offer one or more potential roost sites for individual, opportunistically roosting bats. These sites do not offer the space, shelter or	Habitat on and around the Site could be used by a small number of commuting bats. This category includes densely urbanised landscapes or linear

[1] SSEN Transmission, September 2024. Environmental Impact Assessment Scoping Report Kintore to Tealing 400 kV Overhead Line (see **Volume 5, Appendix 6.1: Scoping Report).**

[2] Collins, J. (ed.), 2023. Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London. [Online] Available at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-4th-edition [Accessed March 2025].

[3] Collins, J (ed), 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed). The Bat Conservation Trust, London. [Online] Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/Bat_Survey_Guidelines_2016_NON_PRINTABLE.pdf?v=1542281971 [Accessed March 2025].

BRP Category	Roosting Habitat Features	Commuting and Habitat Features
	appropriate conditions to support large numbers of bats or maternity roosts. Trees in this category include those of sufficient size and age to support suitable roosting features, but none are visible from the ground.	vegetation features poorly connected to the wider landscape (eg gappy hedges in an agricultural context).
Moderate	Structures and trees in this category offer one or more roost site that, due to their space, shelter or conditions, offer roosting potential for a range of species. Roosts may be more permanent, rather than opportunistic. Small maternity roosts of common species may form in one of these roost sites	Habitat on and around the Site is well-connected to wider continuous habitat and offers commuting and foraging habitat to a larger number of bats across a number of species. (eg tree lines or linked gardens in the urban context, or continuous hedge/tree lines and watercourses in an agricultural setting).
High	Structures and trees in this category have one or more potential roost sites that are suitable for large number of bats. Roosts are likely to be permanent and include maternity roosts. Potential roost sites exist for a wide range of species or species of particular conservation interest	Habitat on and around the Site is diverse, continuous and linked to extensive suitable habitat. This category includes well- vegetated rivers, streams, hedgerows and woodland edge. Habitat is sufficiently diverse to offer opportunities to a wide range of species or those of particular conservation interest.

2.2.5 Since commencing the BRP surveys, the 4th edition of the standard guidance prepared by the BCT had been released. Changes have been made regarding the categorisation and assessment of trees. **Table 11.4.2: Bat Roost Potential Category Conversion Table** provides a description of the categories as provided in the BCT Guidelines 3rd edition, the BCT Guidelines 4th edition, and a conversion column allowing translation between the two systems.

Table 11.4.2: Bat Roost Potential Category Conversion Table

BRP Category, 3rd edition	BRP Category, 4th edition	Conversion Description
Negligible	Negligible	As defined in **Table 11.4.1: Bat Roost Potential Categories (BCT Guidelines 3rd Edition)** above.
Low	Potential Roost Feature - Individual (PRF-I)	Groups of trees in this category have limited Potential Roost Features (PRF) suitable only for individual bats or very small number of bats either due to size of lack of suitable surrounding habitats.
Moderate	Either PRF-I or Potential Roost Feature - Multiple (PFR-M)	Groups of trees in this category are re-assessed based on the survey information collected as they may fit into either PRF-I or PRF-M.
High	PRF-M	Groups of trees in this category have one or more PRFs suitable for multiple bats and may be used by a maternity colony.

2.2.6 Where relevant, a note was made of the categorisation of woodlands listed on the Ancient Woodland Inventory (AWI)[4]. Woodlands are classified as Ancient Woodland (of semi-natural origin), Long-Established Woodland of Plantation Origin (LEPO), or Other (on Roy maps).

Ground-Level Static Bat Surveys

2.2.7 To gather further data regarding the usage of the ESA by bats, ground-level automated detectors were deployed within key locations for at least two weeks in Spring (April – May), Summer (June – mid-August) and Autumn (mid-August – October) of 2024. These key locations were all areas identified with at least Moderate BRP for bat activity spaced along the Proposed Development to determine the spatial trends between sections of Angus and Aberdeenshire over time. There were four exceptions to this rule. The location of detector B_1 which was chosen due to its location inside the Woodside Local Nature Conservation Site (LNCS). Detectors B_3, E_2 and F_1 were deployed on an older route option around Moderate BRP areas. The data has been retained and analysed to provide greater context of bat species and activity within the wider landscape.

[4] NatureScot, n.d.. A guide to understanding the Scottish Ancient Woodland Inventory (AWI). [Online] Available at: https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi [Accessed March 2025].

2.2.8 Due to delays in agreeing access and subsequent access restrictions (see Constraints and Limitations), detectors could not be deployed at all locations in each of the three seasons. As such, four detectors were deployed in the Spring, 18 in the Summer and 22 in the Autumn of 2024.

2.2.9 **Table 11.4.3: Ground-Level Static Survey Deployment Dates** summarises the dates of deployment for each of the ground-level automated detectors. All detectors were programmed to start recording 30 minutes before sunset and stop recording 30 minutes after sunrise.

2.2.10 Bat passes from the ground-level automated detectors was analysed using Kaleidoscope Pro software. Data was analysed using the auto ID feature and manual verification by suitably experienced ecologists. Basic statistical analysis was conducted using Microsoft Excel to understand how bats are using the ESA.

Table 11.4.3: Ground-Level Static Survey Deployment Dates

Detector ID	Dates Deployed	No. of Consecutive Nights recorded
Spring		
H_1	24 April 2024 – 14 May 2024	20
H_2	24 April 2024 – 13 May 2024	19
H_3	24 April 2024 – 13 May 2024	19
H_4	24 April 2024 – 11 May 2024	17
Summer		
A_1a	31 May – 20 June 2024	20
A_1b	31 May – 20 June 2024	20
B_1	11 July – 24 July 2024	13
B_2	11 July – 21 July 2024	10
B_3	30 May – 18 June 2024	19
B_4	11 July – 24 July 2024	13
C_1	30 May – 18 June 2024	19
C_2	30 May – 18 June 2024	19
C_3	11 July – 24 July 2024	13
C_4	11 July – 23 July 2024	12
D_1	11 July – 14 July 2024	3
D_2	11 July – 23 July 2024	12
E_2	23 July – 19 August 2024	27
F_1	19 June – 9 July 2024	20
F_2	19 June – 9 July 2024	20
F_3	9 July – 23 July 2024	14
F_4	5 June – 22 July 2024	14
F_5	19 June – 9 July 2024	20
Autumn		
A_1a	27 – 29 August 2024	2
A_1b	27 August – 17 September 2024	21
B_1	28 August – 17 September 2024	20
B_2	27 August – 8 September 2024	12
B_3	27 – 29 August 2024	2
B_4	28 August – 17 September 2024	20

Detector ID	Dates Deployed	No. of Consecutive Nights recorded
C_1	28 August – 17 September 2024	20
C_2	28 August – 17 September 2024	20
C_3	27 August – 17 September 2024	21
C_4	18 September – 1 October 2024	13
D_1	18 – 30 September 2024	13
D_2	18 September – 3 October 2024	15
E_2	18 September – 2 October 2024	14
F_1	18 – 25 September 2024	7
F_2	18 – 19 September 2024	1
F_4	18 – 27 September 2024	9
F_5	18 September – 1 October 2024	13
H_1	8 – 21 October 2024	13
H_2	8 – 10 October 2024	2
H_3	8 – 18 October 2024	10
H_4	8 – 11 October 2024	3

2.2.11 **Table 11.4.4: Detector Location Details** provides details of detector locations and their proximity to proposed towers, as well as the surrounding habitat(s).

Table 11.4.4: Detector Location Details

Detector ID	Detector Location	Grid Reference	Habitat Type	Elevation (m)	Proximity to Nearest Proposed Tower (m)	Photo Reference
A_1a	Southeast of Glamis, Angus	NO 40532 45181	Deciduous woodland	214	369	11.4.23
A_1b	Southeast of Glamis, Angus	NO 40318 45264	Deciduous woodland	191	171	11.4.24
B_1	Forestmuir Wood, North of Forfar, Angus	NO 43488 54226	Deciduous woodland	83	383	11.4.25
B_2	River South Esk, Southwest of Tannadice, Angus	NO 45787 57440	Riparian woodland	73	269	11.4.26 and 11.4.27
B_3	Southwest of Findowrie Cottages, Angus	NO 54713 61183	Deciduous woodland	94	1194	-
B_4	Lochty Wood, Angus	NO 53842 62029	Deciduous woodland	90	72	11.4.28
C_1	Little Brechin Wood, Brechin, Angus	NO 57087 62997	Deciduous woodland	68	65	11.4.29
C_2	Belliehill Wood, Brechin, Angus	NO 56975 63099	Deciduous woodland	73	15	11.4.30
C_3	River North Esk, Edzell, Angus	NO 62279 67059	Riparian woodland	35	220	11.4.31
C_4	Burnside of Eslie Plantation, Kincardineshire	NO 66262 71302	Coniferous woodland	63	147	11.4.32

Detector ID	Detector Location	Grid Reference	Habitat Type	Elevation (m)	Proximity to Nearest Proposed Tower (m)	Photo Reference
D_1	Luther Water, Laurencekirk, Kincardineshire	NO 72221 75500	Riparian woodland	61	205	11.4.33
D_2	Woods of Redhall, Fordoun, Kincardineshire	NO 74201 76981	Mixed woodland	72	198	11.4.34
E_2	Craiglug Wood, Kincardineshire	NO 81357 97822	Deciduous woodland	72	3960	-
F_1	Northwest of Drumoak, Kincardineshire	NO 78495 99357	Deciduous woodland	114	1144	-
F_2	Southwest of Quartains Moss, Aberdeenshire	NJ 77210 01510	Coniferous woodland	81	134	11.4.39
F_3	Backstrip Wood, Aberdeenshire	NJ 75771 04472	Deciduous woodland	95	251	11.4.40
F_4	East of Culfosie Cottage, Aberdeenshire	NJ 73880 07554	Riparian woodland	125	70	11.4.41
F_5	Corskie Wood, Aberdeenshire	NJ 74128 10178	Mixed woodland	138	107	11.4.42
H_1	Hurlie, Kincardineshire	NO 79431 86331	Coniferous woodland	246	264	11.4.35
H_2	Hurlie, Kincardineshire	NO 79896 86339	Coniferous woodland	218	109	11.4.36
H_3	Hurlie, Kincardineshire	NO 79731 86900	Coniferous woodland	219	359	11.4.37
H_4	Hurlie, Kincardineshire	NO 79422 87320	Coniferous woodland	243	397	11.4.38

2.3 Analysis

2.3.1 Bat passes from SM4, SM Mini and Anabat Express detectors were analysed using Kaleidoscope Pro software. Data was analysed using Auto ID software, followed by manual verification by suitably experienced ecologists.

2.3.2 Four detectors were used in the Spring, 18 in the Summer and 22 in the Autumn. Several of these detectors returned a very high number of sound files. With detector E2 in the Summer and detectors B2, B4, C2 and F4 in the Autumn manual verification sought to confirm 10% of both the uncommon bat species recorded and 10% of the NoID files. NoID files are those where Kaleidoscope detected a sound but where the confidence score was too low to assign the sound to a particular bat species. Therefore, NoID files were each assigned a bat species based on the proportion of calls identified as a given species in accordance with the proportion identified though the AutoID and manual verification process described above.

Bat Activity Index (BAI)

2.3.3 To allow for an accurate and reliable comparison of bat passes between detector locations and across all three survey seasons, Bat Activity Index ('BAI') was calculated. BAI is determined by taking the number of bat passes (in this instance per genus, per detector location) and dividing it by the number of hours recorded; this will give the number of bat passes per hour[5].

2.3.4 Full-spectrum sound files are approximately 14 seconds long, so it is not always possible to distinguish if the file contains multiple calls from a single bat or single calls from multiple bats. For this reason, as a measure of standardisation, one individual was recorded for each species recorded in a single sound file and bat 'calls' are referred to as 'bat passes'.

[5] Hundt, L., 2012. Bat Surveys: Good Practice Guidelines (2nd Edition). Bat Conservation Trust, London. [Online] Available at: https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/M4-Newport/C%20-%20Core%20Documents/11.%20Ecology%20and%20Nature%20Conservation/11.2.26%20-%20Bat%20Surveys%20Good%20Practice%20Guidelines%2C%202nd%20edition%2C%20Bat%20Conservation%20Trust%202011.pdf

2.3.5 The calculation of BAI allows relative comparisons to be made to exploration of patterns of usage within the ESA, as well as use of the ESA across different seasons. It also removes any bias created by the variation in the duration of the static detector deployment periods.

2.4 Constraints and Limitations

2.4.1 Minor changes to the placement of each detector have occurred as a result of different surveyors undertaking the deployment and the accuracy of GPS equipment which varied by a maximum of 5 m. These differences were minimal and therefore the data recorded during each season was considered suitable to undertake a reliable comparison.

2.4.2 During bat sound analysis, *Myotis* spp. calls were only identified to genus rather than species level due to the difficulty in identifying these genera to species via sound analysis. There were also a small number of *Pipistrellus* spp. calls which were only identified to genus level. This was mainly due to a number of recordings containing 'social calls'. Common and soprano pipistrelle social calls are very short, and their frequencies can overlap, making species identification difficult. Genus data was included within the assessment and, given that the mitigation for species in each genus will be consistent regardless of which species was recorded, this is not considered a limitation to this assessment. proportion

2.4.3 When interpreting BAI to determine activity levels, consideration has been given to the geographic distribution of each species, as well as the habitats recorded.

2.4.4 Detector E2 in the Summer and detectors B2, B4, C2 and F4 in the Autumn returned a large number of NoID files which could not all be analysed individually to species level within the analysis period. Where this was the case the existing species results were proportionally assigned through the adjusted species totals for these detectors. Therefore, the identification of species numbers based on this method is not considered to be a limitation to the conclusions within this report.

2.4.5 Some detectors were left on-site for longer periods of time but, due to technical failures, recorded data for fewer days than the overall timespan for which they were deployed in the field.

2.4.6 Detectors B_3, E_2 and F_1 were deployed on an older route option and therefore were located further away from the nearest tower than the other detectors.

2.4.7 To allow for temporal comparison, where possible, detectors were deployed at the same locations during Spring and Autumn season; however minor changes to the placement of the detectors may have occurred as a result of different surveyors undertaking the deployment each season.

2.4.8 The timeframe in which a survey is undertaken provides a snapshot of activity in the ESA and will not necessarily detect all evidence of use by a species. Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna such as season, migration patterns and species behaviour. Evidence of species is not always discovered during the survey. This does not mean that a species is absent.

3. RESULTS

3.1 Desk Study

3.1.1 To aid understanding of this large Proposed Development, baseline results are presented with reference to sections. Sections A, B and the southern half of Section C to the River North Esk are in Angus, with the northern half of Section C and all of Sections D-F in Aberdeenshire. Please refer to **Table 11.4.5: Description of Sections** for geographic locations and their associated towers numbers.

Table 11.4.5: Description of Sections

Section	Geographic Locations	Tower Numbers
A	1. Tealing to Ironside Hill 2. Ironside Hill to Upper Hayston 3. Upper Hayston to Nether Drumgley	1. Gantry 2 - Emmock/S210 to S197 2. Gantry 2 - Emmock/S210 to S197 3. S179 to S169
B	1. Nether Drumgley to Woodside 2. Woodside to Baldoukie 3. Baldoukie to Weiris Wood 4. Weiris Wood to Hoodston	1. S168 to S153 2. S152 to S137 3. S136 to S122 4. S121 to S108
C	1. Hoodston to Newton 2. Newton to Northgate 3. Northgate to Lady Jane's Plantation 4. Lady Jane's Plantation to Haughhead	1. S107 to S97 2. S96 to S81 3. S80 to S66 4. S65 to S57
D	1. Haughhead to Auchenzeoch 2. Auchenzeoch to Mid Blairs 3. Mid Blairs to Tannachie 4. Tannachie to Hurlie	1. S56 to S39 2. S38 to S24 3. S23 to S10 4. S9 to S1
E	1. Hurlie to Slug Road 2. Slug Road to Meikledams 3. Meikledams to West Park	1. Gantry 141516/N96 to N86 2. N85 to N68 3. N67 to N60
F	1. West Park to Newhall 2. Newhall to West Cullery 3. West Cullery to Kinnernie Burn 4. Kinnernie Burn to Kintore	1. N59 to N49 2. N48 to N35 3. N34 to N18 4. N17 to N1/Kintore Gantry 456

3.1.2 NBN Atlas and NESBReC identified 3,875 records of bat species within the 10 km study area. No records were located within the ESA. Details are listed below in **Table 11.4.6: NBN Atlas and NESBReC Bat Records (Post-2000) within 10 km of the Proposed Development.**

Table 11.4.6: NBN Atlas and NESBReC Bat Records (Post-2000) within 10 km of the Proposed Development

Species	Scientific Name	Number of Records	Most Recent Record
Soprano pipistrelle	*Pipistrellus pygmaeus*	1,519	2024
Common pipistrelle	*Pipistrellus pipistrellus*	1598	2024
Nathusius' pipistrelle	*Pipistrellus nathusii*	4	2023
Unidentified Myotis	*Myotis* spp.	46	2023
Brown long-eared bat	*Plecotus auritus*	134	2023
Daubenton's bat	*Myotis daubentonii*	220	2024
Natterer's bat	*Myotis nattereri*	41	2023
Unidentified bat species	*Chiroptera*	114	2024
Unidentified pipistrelle	*Pipistrellus* spp.	198	2024

Species	Scientific Name	Number of Records	Most Recent Record
Noctule	*Nyctalus noctula*	1	2013
Lesser noctule	*Nyctalus leisleri*	2	2016

3.2 Field Study

ESA Description

3.2.1 The ESA extends from Tealing in Angus in the south (and the location of the proposed Emmock substation), to the existing Kintore Substation in Aberdeenshire in the north.

3.2.2 In Angus, the ESA passes over the Sidlaw Hills north of Tealing, then into a landscape dominated by farmland, stretching approximately northeast from Forfar to Edzell. It crosses the River South Esk north of Forfar, and the River North Esk (and into Aberdeenshire) southeast of Edzell. The farmland landscape of Angus is dominated by arable farming, with pockets of woodland and forest which are relatively small and/or isolated. The exception to this pattern of land-use and habitats is where the ESA crosses the Sidlaw Hills, southeast of Glamis; the habitats in this location are dominated by heathland with evidence of grouse management.

3.2.3 The ESA continues into Aberdeenshire approximately northeast of the area near Fordoun; this stretch continues to be dominated by arable farmland with relatively small pockets of woodland, the exception to which are the forestry plantations of Capo Plantation, Inverury Wood and Lady Jane's Plantation. From Fordoun, the ESA continues in a more northerly direction through an area of farmland west of Glenbervie that exhibits increasing livestock farming and relatively smaller field sizes. Northeast of Glenbervie, the Site enters the forestry plantation of Fetteresso Forest and the location of the proposed Hurlie substation. The ESA continues north over the upland fringe habitats of Craigneil and into the forestry plantation of Durris Forest. North of Durris Forest, the ESA descends into a landscape of mixed farmland south and north of the River Dee, crossing the river near Kirkton of Durris. The ESA continues approximately north of the River Dee, passing east of Echt and west of Dunecht, before turning north-northeast towards the existing Kintore Substation. The landscape north of Durris Forest exhibits relatively smaller field sixes, with increased livestock farming and a more extensive network of woodland (relative to the stretch in Aberdeenshire from the River North Esk to Fordoun). There are further extents of forestry plantation forming a mosaic with fields of pasture and arable.

3.2.4 For more detailed descriptions of the habitats present within the ESA, see **Volume 5, Appendix 11.2: Habitat and Vegetation Survey Report,** and **Volume 3, Figures 11.3.1** to **11.3.38: Habitat Survey Results**.

Bat Roost Potential Surveys

3.2.5 Three buildings within the ESA were reported by homeowners as having roosting bats, however the bat species, roost size and usage was unknown. One confirmed roost was recorded at the north end of Section B, at Blackhall (NO 54979 62814). The remaining two confirmed roosts were recorded at the north and south ends of Section D, at Cammackmuir (NO 70419 74646) and Annamuick Cottages (NO 79080 84661).

3.2.6 The geographic location of the bat habitat areas recorded along the route sections from south to north, along with their associated levels of bat activity and PRF suitability are described in **Table 11.4.7: Bat Habitat Table**.

Table 11.4.7: Bat Habitat Table

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
Section A					
NO 38082 38498	Between S202 and S201	Balkemback Wood	Habitat type: Coniferous woodland plantation, dominated by Sitka spruce, northwest of Balkemback Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to suitable habitat in the wider landscape as it is an isolated woodland stand surrounded on all sides by agricultural pasture land. Overall, this woodland is classed as Negligible BRP.	Intersects over half of the Limit of Deviation (LOD), extending northeast	11.4.1
NO 40442 43019	Between S186 and S184	Unknown	Habitat type: Coniferous woodland plantation, dominated by Sitka spruce with occasional Scots pine, east of Meikle Kilmundie. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by agricultural pasture land to the west, gorse scrub to the north and south, along with open heathland to the east. Overall, this woodland is classed as Negligible BRP.	Intersects almost half of the LOD, extending southwest	-
NO 40508 43358	Between S185 and S183	Unknown	Habitat type: Coniferous woodland plantation, dominated by Sitka spruce with occasional Scots pine, east of Meikle Kilmundie. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by heathland to the northeast and agricultural pasture land on all other sides. Overall, this woodland is classed as Negligible BRP.	Intersects less than one quarter of the LOD, extending northwest	-
NO 40744 43973	Between S183 and S181	Unknown	Habitat type: Scots pine woodland plantation, southeast of Arniefoul Cottage. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to a few larger woodlands in the landscape, such as woodland at Hunter's Hill through tree lines along field margins via a tributary of the Glen Oglivie Burn to the northwest.	Intersects over one third of the LOD, extending southeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Overall, this woodland is classed as Low BRP (PRF-I).		
NO 40648 44063	Between S182 and S181	Unknown	Habitat type: Coniferous woodland plantation, southeast of Arniefoul Cottage. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to a few larger woodlands in the landscape, such as woodland at Hunter's Hill through tree lines along field margins via the Glen Oglivie Burn to the northwest. Overall, this woodland is classed as Negligible BRP.	Intersects more than half of LOD, extending northwest	-
NO 40283 44908	Between S179 and S177	Unknown	Habitat type: Semi-mature oak woodland plantation within the LOD, with rare sycamore and rowan, south of Upper Hayston Farm. Detectors were deployed in a mature oak woodland adjacent to the northeast, which is classified as LEPO (Long-Established Woodland of Plantation Origin). Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis, including one oak tree at the northeastern boundary which had limb wounds and crevices present. Evidence of bats noted: Static bat detectors A_1a and A_1b were deployed within this woodland for the Summer and Autumn periods, and recorded a total of 12,156 and 5,404 bat passes respectively. Connectivity: Agricultural land borders the western end of the woodland, separating it from larger woodland blocks, such as at Hunter's Hill to the northwest. However, the woodland is connected to an upland birchwood stand in the north and a larch plantation in the northeast. Additionally, a mosaic of upland heathland, gorse scrub and scattered bracken extends southwards from the woodland offering good connectivity, along with commuting and foraging opportunities for bats. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects more than quarter of LOD, extending northeast	11.4.23 and 11.4.24
NO 40181 45583	Between S177 and S175	Unknown	Habitat type: Coniferous woodland plantation, south of Upper Hayston Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: Despite having larger woodland blocks close by, such as at Hunter's Hill to the northwest, this woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Negligible BRP.	Intersects less than quarter of LOD, extending east	-
NO 40950 48842	Between S166 and S165	Unknown	Habitat type: Broadleaved woodland plantation with rowan, ash and oak, southeast of Haughs of Cossans. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland.	Intersects less than quarter of LOD,	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Dean Water to the north, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Negligible BRP.	extending southwest	
Section B					
NO 40940 49615	Between S164 and S163	Unknown	Habitat type: Mixed woodland with oak and beech being abundant with occasional Scots pine, east of Haughs of Cossans. Daytime Bat Walkover survey results: Mature oak, beech and some Scots pine trees within this woodland were identified to have knotholes, broken limbs and lifted bark that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Ballindarg Burn in the west, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects more than quarter of LOD, extending west	11.4.3
NO 40983 50576	Between S163 and S162	Unknown	Habitat type: Mixed semi-mature woodland with oak, sycamore and birch, northeast of Haughs of Cossans. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Ballindarg Burn in the west, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Negligible BRP.	Intersects more than quarter of LOD, extending southeast	11.4.4
NO 42207 51924	Between S158 and S156	Unknown	Habitat type: Wet woodland with willow species, northwest of Dragon Hall Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Lemmo Burn in the northeast, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects eastern boundary of LOD, extending northeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
NO 42540 52573	Between S156 and S154	Unknown	Habitat type: Upland silver birch woodland, northwest of Mosside of Ballinshoe, classified as LEPO. Daytime Bat Walkover survey results: Mature birch trees within this woodland were identified to have a limited number of features that could provide some opportunities for individual numbers of roosting bats on an occasional basis. Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Lemmo Burn in the northeast, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Moderate BRP (PRF-I).	Intersects less than three quarters of LOD, extending northwest	-
NO 42589 52564	Between S156 and S154	Unknown	Habitat type: Lowland mixed deciduous woodland with downy birch dominant and larch, rowan, pedunculate oak abundant. Holly, hawthorn and ash were occasional. Northwest of Mosside of Ballinshoe. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: Despite having a drainage channel linking this woodland to the Lemmo Burn in the northeast, this block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects quarter of LOD, extending northeast	11.4.7
NO 43131 53356	Between S154 and S152	Unknown	Habitat type: Mature broadleaved woodland with willow spp dominant and alder occasional, southwest of Overbow Farm Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects less than half of LOD, extending southeast	-
NO 43617 53895	Between S152 and S150	Woodside LNCS	Habitat type: Cattle grazed upland birch woodland, northwest of Over Bow Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: Static bat detector B_1 was located in this woodland block and recorded a total of 3033 bat passes. Connectivity: This woodland is connected to various large woodlands in the landscape, through tree lines along field margins, via the Black Burn to the west and other large woodland blocks to the northwest and northeast.	Intersects entire LOD, extending southeast	11.4.25

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Overall this woodland is classed as Low BRP (PRF-I).		
NO 44393 55110	Between S148 and S146	Unknown	Habitat type: Broadleaved woodland with birch, oak, sycamore, hawthorn, occasional horse chestnut, willow spp and rare occurrences of alder, northwest of Burnside Farm, classified as LEPO. Daytime Bat Walkover survey results: Some mature broadleaved trees were found with knot holes and rot hollows, including one standing deadwood tree, which may provide some opportunities for individual numbers of roosting bats on an occasional basis. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to various large woodlands in the landscape, through tree lines along field margins, via the King's Burn to the southeast and another large woodland to the southwest. Overall, this woodland is classed as Moderate BRP (PRF-I).	Covers less than three quarters of LOD on the eastern side	11.4.8
NO 44427 55118	Between S148 and S146	Unknown	Habitat type: Scots pine woodland plantation, northwest of Burnside Farm. Daytime Walkover Survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to various large woodlands in the landscape, through tree lines along field margins, via the King's Burn to the southeast and another large woodland to the southwest. Overall this woodland is classed as Low BRP (PRF-I).	Intersects entire LOD, extending southwest	-
NO 44503 55327	Between S147 and S146	Unknown	Habitat type: Wet woodland with hawthorn, alder, sycamore and cherry, south of Cairnwall on the south bank of the King's Burn. Daytime Bat Walkover survey results: Mature broadleaved line of trees along the south bank of the King's Burn with woodpecker holes and rot hollows which may provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to various large woodlands in the landscape, through tree lines along field margins, to the northwest and southwest, via the King's Burn, and another large woodland to the northeast. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects entire LOD, extending northwest	11.4.9
NO 44560 55325	Between S147 and S146	Unknown	Habitat type: Mixed woodland with birch abundant, rowan frequent, oak and Scots pine occasion and Sitka spruce and alder rare, southwest of Wolflaw on the north bank of the King's Burn. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is connected to various large woodlands in the landscape, through tree lines along field margins, to the northwest and southwest, via the King's Burn, and another large woodland to the northeast.	Intersects entire LOD, extending southeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Overall, this woodland is classed as Low BRP (PRF-I).		
NO 44975 56710	Between S143 and S140	Unknown	Habitat type: Broadleaved woodland running along the south embankment of the River South Esk planted with hazel, oak spp and willow spp, northeast of Cairn Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity with riparian woodland stretching along the River South Esk to the northeast and also to the northwest where it connects to larger woodland blocks. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects entire LOD, extending west and northeast	-
NO 45050 56726	Between S143 and S142	Unknown	Habitat type: Scots pine woodland running along the north embankment of the River South Esk, with rare occurrences of birch and sycamore, northeast of Cairn Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity with riparian woodland stretching along the River South Esk to the northeast and also to the northwest where it connects to larger woodland blocks. Overall, this woodland is classed as Low BRP (PRF-I).	Covers less than half of LOD on the eastern side	-
NO 45245 56905	Between S143 and S140	Unknown	Habitat type: Broadleaved woodland with sycamore, beech, ash, willow spp., alder, rowan, downy birch and hazel, east of Inshewan Mansion House. Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on an frequent basis, including one ash mature tree with cracked limbs and rot holes present. Evidence of bats noted: Static bat detector B_2 was located in this woodland block and recorded a total of 20,097 bat passes. Connectivity: This woodland has good connectivity with riparian woodland stretching along the River South Esk to the northeast and also to the northwest where it connects to larger woodland blocks. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects entire LOD, extending northwest and northeast	11.4.26 and 11.4.27
NO 45765 57828	Between S140 and S138	Unknown	Habitat type: Broadleaved woodland planation with poplar, sycamore, willow spp., oak spp., rowan and ash, southeast of Miltonbank Farm, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block.	Intersects a quarter of LOD, extending northwest	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Connectivity: This woodland has fairly poor connectivity to the surrounding landscape being surrounded on all sides by arable cropland but is still linked via a small unnamed tributary running east into the River South Esk that is lined with a mix of tree species where it can connect to larger woodland blocks. Overall, this woodland is classed as Low BRP (PRF-I).		
NO 47041 59421	Between S134 and S132	Unknown	Habitat type: Ancient broadleaved pedunculate oak and downy birch woodland, north of Knowehead Cottage, classified as LEPO. Daytime Bat Walkover survey results: A large number of mature oak trees within this woodland were identified to have limb wounds and crevices that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has fairly poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as High BRP (PRF-M).	Intersects less than a quarter of LOD extending west	11.4.10
NO 47500 59604	Between S133 and S132	Unknown	Habitat type: Sitka spruce woodland planation with sycamore, northeast of Knowehead Cottage. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects less than a quarter of LOD extending east	-
NO 47602 60213	Between S131 and S130	Unknown	Habitat type: Lowland mixed deciduous ancient woodland with beech, alder, sycamore, hawthorn and wych elm riparian woodland, west of Wellford Farm Cottages. Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis, along with one standing deadwood tree and some rocky outcrops beside the Noran Water. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity with riparian woodland stretching along the Noran Water to the northeast and also to the east where it connects to larger woodland blocks. Overall, this woodland is classed as Moderate BRP (PRF-I).	Intersects full LOD extending northwest and east	-
NO 50501 61926	Between S123 and S120	Boggie Wood	Habitat type: Mixed young Sitka spruce, birch, oak, beech and Scots pine woodland planation block within, north of Boggie Cottage. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland.	Intersects over half of LOD	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Negligible BRP.	extending south	
NO 51085 61827	Between S120 and S118	Weiris Wood	Habitat type: Sitka spruce woodland planation, northeast of Knowehead Cottage, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity linking into other woodland blocks to the east and west such as Duns Wood and Roughmount Wood, but is otherwise surrounded on by agricultural land. The Weiris Burn also flows through this woodland. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects less than a quarter of LOD extending south	-
NO 52291 61879	Between S116 and S114	Duns Wood	Habitat type: Mixed young alder, birch woodland with an older Sitka spruce woodland planation block within, southwest of Coe Farm Cottage, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity linking into other woodland blocks to the west such as Weiris Wood, but is otherwise surrounded on by agricultural land. The Weiris Burn also flows past this woodland. Overall, this woodland is classed as Negligible BRP.	Intersects over a quarter of LOD extending south	11.4.11
NO 53628 62011	Between S115 and S111	Lochty Wood	Habitat type: Mixed wet woodland with ash, alder, grey willow and downy birch, west of Lochty Council Houses, classified as LEPO. Daytime Bat Walkover survey results: A line of mature beech and oak trees along road at eastern boundary of the woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: Static bat detector B_4 was located in this woodland block and recorded a total of 9,751 bat passes. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. The Weiris Burn also flows through this woodland. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects full LOD extending south	11.4.12 and 11.4.28

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
Section C					
NO 56858 63131	Between S104 and S102	Belliehill Wood	Habitat type: Mature silver birch, oak, beech, goat willow, rowan, downy birch and Scots pine woodland, west of Nether Belliehill, classified as LEPO. Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features, such as broken limbs, that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: Static bat detectors C_1 and C_2 were located within the southwest and recorded a total of 4508 and 3356 respectively. Connectivity: This woodland has moderate connectivity to the surrounding landscape being surrounded on most sides by arable cropland but it is connected to larger woodland blocks to the northwest, such as Keepers Wood. A drainage channel also connects the woodland to the Cruick Water in the northeast where more riparian woodland habitat is present. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects full LOD extending northwest	11.4.29 and 11.4.30
NO 57482 63274	Between S102 and S100	Little Brechin Wood	Habitat type: Felled Sitka spruce plantation and upland birchwood woodland with occasional pedunculate oak, goat willow Scots pine and beech trees, northwest of Little Brechin, classified as LEPO. Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features, such as vertical trunk hollows and limb wounds that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: No direct evidence of bats was identified within this area. Connectivity: This woodland has fairly poor connectivity to the surrounding landscape being surrounded on most sides by arable cropland but it is connected to larger woodland blocks to the southwest, such as Belliehill Wood. A drainage channel also connects the woodland to the Cruick Water in the northeast where more riparian woodland habitat is present. Overall, this woodland is classed as Moderate BRP (PRF-M).	Covers more than half LOD, extending southeast	-
NO 58070 64115	Between S99 and S96	Bankhead Wood	Habitat type: Mixed woodland with sycamore, silver birch abundant, Scots pine, rowan, beech occasional and rare occurrences of oak, west of Ceann na Bruich, classified as LEPO Daytime Bat Walkover survey results: Some overhanging deadwood trees within this woodland were identified to have features, such as small limb wounds, that could provide some opportunities for individual numbers of roosting bats on an occasional basis. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Moderate BRP (PRF-I).	Intersects less than a quarter of the LOD, extending northeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
NO 59725 65798	Between S93 and S90	Auchenreoch Wood	Habitat type: Alder and birch broadleaved woodland, northwest of Auchenreoch House, classified as LEPO Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Moderate BRP (PRF-I).	Intersects less than a quarter of the LOD, extending southeast	-
NO 60372 66225	Between S90 and S89	Unnamed woodland on the west bank of the West Water	Habitat type: Mature oak, sycamore, silver birch alder and ash riparian broadleaved woodland, southwest of Westwater House. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this area. Connectivity: Connectivity: This woodland has good connectivity with riparian woodland stretching northwest and southeast along the West Water but is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects entire LOD extending northwest and southeast	-
NO 61320 66399	Between S87 and S86	Unknown	Habitat type: Scots pine and maple mixed woodland, east of Westwater House. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by agricultural land. Overall, this woodland is classed as Low BRP. (PRF-I).	Intersects quarter of LOD extending north	11.4.13
NO 61709 66373	Between S86 and S85	Unknown	Habitat type: Scots pine and maple mixed woodland, southeast of Struan. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by agricultural land. Overall, this woodland is classed as Low BRP. (PRF-I).	Intersects over half of LOD extending southeast	-
NO 62369 66842	Between S83 and S82	Unnamed woodland on the West	Habitat type: Beech, maple and ash broadleaved riparian woodland, east of Inveriscandye Cottage, classified as LEPO.	Intersects entire LOD extending	11.4.14 and 11.4.31

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
		Bank of River North Esk	Daytime Bat Walkover survey results: Mature broadleaved trees within this woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis, including one fallen beech tree and standing oak tree with limb wounds present along with another beech with a narrow crevice between the two trunks that could be utilised by bats Evidence of bats noted: Static bat detector C_3 was located in this woodland block and recorded a total of 2,899 bat passes. Connectivity: This woodland has good connectivity with riparian woodland stretching northwest and southeast along the River North Esk and also east along a wooded field margin to the Capo Plantation. Overall, this woodland is classed as Moderate BRP (PRF-M).	northwest and southeast	
NO 63314 67417	Between S80 and S78	Capo Plantation	Habitat type: Felled and cleared woodland, west of Witchfield, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this area. Connectivity: This woodland has good connectivity linking to riparian woodland along the River North Esk to the west along with Inverury Wood to the east via wooded field margins and adjoins with Cleary Wood on the northern boundary. Overall, this woodland is classed as Negligible BRP.	Intersects entire LOD, extending southwest	-
NO 63142 67749	Between S80 and S79	Cleary Wood	Habitat type: Wet birch broadleaved woodland, northwest of Witchfield, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity. Whilst it adjoins with the felled Capo Plantation on the southern boundary, it is otherwise surrounded by arable cropland to the west along with built-up land to the north. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects quarter of LOD, extending north	-
NO 64383 68289	Between S78 and S73	Inverury Plantation	Habitat Type: Mixed Sitka spruce woodland with birch dominant along with occasional beech, willow, and ash around the edges, east of Gawloch, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity. Whilst it adjoins with the Capo Plantation to the southwest, it is otherwise surrounded by mixed agricultural land on all other sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects a quarter of LOD extending south	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
NO 64189 68179	Between S77 and S74	Drumhendy Plantation	Habitat Type: Broadleaved woodland with birch dominant along with occasional beech and rowan, northeast of Gawloch, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity. Whilst it adjoins with Inverury Wood on the southeastern boundary, it is otherwise surrounded by mixed agricultural land on all other sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects over half of LOD extending northwest	-
NO 66395 71421	Between S65 to S62	Burnside of Eslie Plantation	Habitat Type: Mixed Scots pine woodland with Sitka spruce, occasional beech and birch regeneration, southeast of Gourdon Holdings, classified as LEPO. Daytime Bat Walkover survey results: Mature beech trees at the southwest boundary of this woodland were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis Evidence of bats noted: Static bat detector C_4 was located in this woodland block and recorded a total of 738 bat passes. Connectivity: This woodland has moderate connectivity. Whilst it adjoins with the Lady Jane's Plantation and other larger woodland blocks to the southeast, it is otherwise surrounded by mixed arable land on all other sides. Overall this woodland is classed as Moderate BRP (PRF-I).	Intersects over half of LOD extending northwest	11.4.32
NO 66557 71354	Between S65 to S62	Lady Jane's Plantation	Habitat Type: Broadleaved woodland with Sitka spruce, beech and birch regeneration, southeast of Gourdon Holdings, classified as LEPO. Daytime Bat Walkover survey results: Mature beech trees at the northeast boundary of this woodland, by the Dowrie Burn, were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity. Whilst it adjoins with the Lady Jane's Plantation to the northwest, Pitgarvie Wood to the south and the Dowrie Burn to the northeast, it is otherwise surrounded by mixed agricultural land on all other sides. Overall this woodland is classed as Moderate BRP (PRF-I).	Intersects a quarter of LOD extending south	-
NO 67060 72322	Between S61 to S59	Unknown	Habitat type: Scots pine woodland plantation, northwest of Cowieshills Farmhouse. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block.	Intersects boundary of LOD extending northwest	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by arable land. Overall, this woodland is classed as Negligible BRP.		
NO 67630 72469	Between S59 to S58	Unknown	Habitat Type: Broadleaved woodland with abundant sycamore, downy birch, frequent beech, rowan, sessile oak, and occasional wild cherry, north of Cowieshill Cottage. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity. Whilst it adjoins with the felled Knowlies Plantation to the southeast and Greenbottom Wood to the north via a wooded agricultural shelterbelt, it is otherwise surrounded by mixed arable cropland. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects over quarter of LOD extending southeast	-
NO 67790 72704	Between S58 to S57	Greenbottom Wood	Habitat Type: Mixed Scots pine, Sitka spruce, downy birch, north of Cowieshill Cottage, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity. Whilst it adjoins with the felled Knowlies Plantation to the south it is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects under quarter of LOD extending north	-
Section D					
NO 68044 72679	Between S57 and S56	Unknown	Habitat Type: Pedunculate oak and downy birch mixed woodland with frequent occurrences of rowan, hawthorn, beech and cherry, northwest of Haughhead Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity. Whilst it adjoins with the felled Knowlies Plantation to the southwest and Greenbottom Wood to the northwest, it is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects entire LOD extending northwest and southeast	-
NO 70825 74577	Between S49 and S45	Cammackmuir Plantation	Habitat Type: Scattered upland birch woodland with occasional grey willow, east of Monarch House. Daytime Bat Walkover survey results: Mature birch trees within this woodland were identified to have a limited number of features that could provide some opportunities for individual numbers of roosting bats on an occasional basis.	Intersects less than a quarter of LOD extending northwest	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: no direct evidence of bats was identified within this woodland block. Connectivity: This block has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by mixed agricultural land. Overall, this woodland is classed as Moderate BRP (PRF-I).		
NO 72253 75566	Between S42 and S41	Unknown	Habitat Type: Sycamore, oak and willow sp., broadleaved woodland, northwest of Mains of Pittarrow. Daytime Bat Walkover survey results: A granny ash tree at the northeast boundary of this woodland, by the Luther Water was identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis Evidence of bats noted: Static bat detector D_1 was located in this woodland block and recorded a total of 1,852 bat passes. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by agricultural land with limited tree cover along the neighbouring field margins and Luther Water. Overall this woodland is classed as Moderate BRP (PRF-M).	Covers less than half of LOD on the northern side	11.4.33
NO 73063 76255	Between S39 and S38	Unknown	Habitat type: Felled woodland plantation, southwest of Mains of Fordoun Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated felled plantation surrounded on all sides by agricultural land. Overall, this woodland is classed as Negligible BRP.	Intersects less than a quarter of LOD extending northwest	-
NO 74189 77029	Between S35 and S33	Woods of Redhall	Habitat Type: Mixed beech woodland with red cedar, birch, ash, sycamore, north of Redhall House, classified as LEPO. Daytime Bat Walkover survey results: Mature trees within this woodland were identified to have features, such as large crevices, that could provide some opportunities for large numbers of roosting bats on a frequent basis. Evidence of bats noted: Static bat detector D_2 was located in this woodland block and recorded a total of 1,334 bat passes. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by residential land to the northwest and agricultural land on all other sides. Overall this woodland is classed as Moderate BRP (PRF-M).	Intersects entire LOD extending north and south	11.4.15 and 11.4.34
NO 74745 77945	Between S32 and S29	Eastfield Wood	Habitat Type: Sycamore and birch broadleaved woodland, southwest of Cushnie Bungalow, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland.	Intersects three quarters of LOD	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity. Whilst it connects to other larger woodlands to the north such as Big Sheep-park Wood to the north via the Nursery Burn, it is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	extending northwest	
NO 74844 78725	Between S30 and S29	Unknown	Habitat Type: Broadleaved wet willow sp., woodland, northwest of Cushnie Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated stand surrounded on all sides by agricultural land. Overall, this woodland is classed as Negligible BRP.	Covers over half of LOD on the eastern side	-
NO 74811 78886	Between S29 and S28	Unknown	Habitat Type: Broadleaved rowan and birch woodland, northwest of Cushnie Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated stand surrounded on all sides by agricultural land. Overall, this woodland is classed as Negligible BRP.	Covers over half of LOD on the eastern side	-
NO 74652 79908	Between S25 and S23	Unknown	Habitat Type: Scots pine woodland, west of Auchtochter. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity being connected to a tributary of the Bervie Water to the northeast which leads to larger riparian woodland areas. The woodland is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Covers over half of LOD on the eastern side	-
NO 75261 80821	Between S23 and S22	Unknown	Habitat Type: Broadleaved scattered willow woodland, west of Hawkhill. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block.	Intersects entire LOD extending northwest and southeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Connectivity: This woodland has good connectivity stretching northwest and southeast along the Bervie Water to larger riparian woodland areas. The woodland is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).		
NO 75843 80985	Between S22 and S21	Unknown	Habitat Type: Broadleaved woodland, comprising oak and sycamore, surveyed from a distance due to presence of cattle. Daytime Bat Walkover survey results: Direct access could not be gained on health and safety grounds, thus given the tree species and maturity viewed from a distance, a precautionary classification has been assigned. Evidence of bats noted: No direct access obtained, thus no evidence of bats was identified. Connectivity: This woodland has good connectivity as it stretches east-west and meets another woodland block (see row below) stretching north-south as well as further lines of trees in the wider area. The woodland is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as High BRP (PRF-M)	Within the EPZ of Tower S21	-
NO 75828 81151	Between S22 and S20	Unknown	Habitat Type: Young ash and silver birch broadleaved tree plantation, north of Hawkhill. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland due the young age of trees present. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity to the surrounding landscape via the High BRP woodland discussed in the row above. The woodland is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Negligible BRP.	Intersects entire LOD extending north and east	11.4.16
NO 76693 82592	Between S17 and S13	Jacksbank Wood	Habitat Type: Mixed mature beech and Sitka spruce woodland, southeast of Cotbank. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated stand surrounded on all sides by agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects quarter of LOD extending northeast	-
NO 78010 83611	Between S10 and S12	Unknown	Habitat type: Sitka spruce plantation, southeast of Waters Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is adjoined to the Killer Burn but otherwise has poor connectivity to the surrounding landscape being an isolated woodland stand surrounded on all sides by agricultural pasture land.	Intersects less than a quarter of LOD extending southeast	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Overall, this woodland is classed as Negligible BRP.		
Section E					
NO 78983 86925	Between S4 and N86	Fetteresso Forest	Habitat Type: Sitka spruce and larch plantation, southwest of Clachanshiels. Daytime Bat Walkover survey results: A line of mature oak trees at the northern boundary of this woodland were identified to have features that could provide some opportunities for large numbers of roosting bats on a frequent basis Evidence of bats noted: Static bat detectors H 1-4 were located in this woodland and recorded a total of 406, 347, 74 and 78 bat passes respectively. Connectivity: This woodland has good connectivity to the surrounding landscape with extensive woodland cover extending west and east and is drained by various tributaries linking into the Cowie Water. Overall, this woodland is classed as Moderate BRP (PRF-M).	Intersects full LOD extending southwest	11.4.17 and 11.4.35-38
NO 78934 92088	Between N82 and N70	Durris Forest	Habitat Type: Sitka spruce plantation, and felled conifer plantation in the south which had been recently cleared, east of Gennell. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity to the surrounding landscape with extensive woodland cover west and north and is drained by various tributaries linking into the Cowie Water. Overall, this woodland is classed as Negligible BRP.	Intersects full LOD extending southwest	11.4.18
NO 77301 95087	Between N68 and N64	Free Church Wood	Habitat Type: Mixed downy birch and Sitka spruce plantation, northeast of Meikledams. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity to other large woodland blocks to the west, east and south via wooded field margins and the Burn of Sheeoch. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects full LOD extending west	-
NO 76743 96704	Between N62 and N61	Unknown	Habitat Type: Mixed sycamore, silver birch, ash, willow, alder, larch hawthorn, elder and bird cherry woodland, southwest of New West Lodge. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block.	Intersects full LOD extending northeast	11.4.19

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Connectivity: This woodland has good connectivity to other large woodland blocks to the west, east and south via wooded field margins and the River Dee. Overall, this woodland is classed as Low BRP (PRF-I).		
NO 76924 96946	Between N61 and N60	Unknown	Habitat Type: Mixed sycamore, beech rowan, douglas fir, hawthorn, ash, Scots pine, hazel, oak, whitebeam, willow, wild cherry and downy birch woodland, west of New West Lodge. Daytime Bat Walkover survey results: A mature beech tree at the north boundary of this woodland, by the A93 road was identified to have a knothole and broken limbs that could provide some opportunities for individual/large numbers of roosting bats on an occasional/frequent basis Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity to larger areas of woodland to the east and along the River Dee nut is otherwise surrounded on all sides by agricultural and quarried land. Overall this woodland is classed as Moderate BRP (PRF-I).	Intersects full LOD extending east	11.4.20
Section F					
NO 77314 98863	Between N56 and N53	Loch of Park	Habitat Type: Mixed Scots pine, alder and downy birch wet woodland, southwest of Hill of Park House. Daytime Bat Walkover survey results: Several large trees were identified with features that could provide some opportunities for large numbers of roosting bats on a frequent basis. One of these was a large beech tree at the northeastern boundary with limb wounds that could support multiple bats Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity to large areas of woodland to the west and north via woodland corridors, field margins and watercourses such as the Black Burn. Overall this woodland is classed as High BRP (PRF-M).	Intersects over half of LOD extending west	-
NO 77240 99665	Between N53 and N50	Coldstream Plantation	Habitat Type: Felled Scots pine plantation, northwest of Hill of Park House, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity to other large woodland blocks to the southwest but is otherwise surrounded by agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects full LOD extending northeast	-
NJ 77202 01651	Between N47 and N45	Unknown	Habitat Type: Scots pine woodland, northwest of Murphy Howe. Daytime Bat Walkover survey results: Mature trees within this woodland were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis	Intersects full LOD extending southwest	11.4.21 and 11.4.39

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: Static bat detector F_2 was located in this woodland block and recorded a total of 4,826 bat passes. Connectivity: This woodland has moderate connectivity to the surrounding landscape being an isolated woodland stand bordered by residential land to the northwest and agricultural land on all other sides. Overall this woodland is classed as Moderate BRP (PRF-I).		
NJ 76730 03468	Between N41 and N40	Unknown	Habitat type: Sitka spruce plantation, southeast of Waters Farm. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: Aside from a drainage channel leading into the Gormack Burn to the west, this woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Negligible BRP.	Intersects quarter of LOD extending northeast	-
NJ 75591 04529	Between N37 and N34	Backstrip Wood	Habitat Type: Mixed downy birch and Scots pine, beech and Sitka spruce woodland, northeast of South Finnercy Cottage. Daytime Bat Walkover survey results: Mature trees within this woodland were identified to have limb wounds and cracked branches that could provide some opportunities for large numbers of roosting bats on a frequent basis Evidence of bats noted: Static bat detector F_3 was located in this woodland block and recorded a total of 1,098 bat passes. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall this woodland is classed as Moderate BRP (PRF-M).	Intersects quarter of LOD extending northeast	11.4.40
NJ 74930 04707	Between N35 and N33	Marketmuir Wood	Habitat type: Sitka spruce plantation, northeast of Landerberry, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: Aside from a drainage channel leading into the Landerberry Burn to the west, this woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Negligible BRP.	Intersects less than a quarter of LOD extending west	-
NJ 75104 05403	Between N34 and N32	North Kirkton Wood	Habitat type: Mature Sitka spruce, larch and Scots pine plantation, south of South Monecht, classified as LEPO. Daytime Bat Walkover survey results: Mature trees within this woodland were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis	Intersects full LOD	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity to neighbouring woodland blocks such as South Monnecht Wood to the northeast and Braigies Moss to the southeast with several drainage channels flowing through. Overall this woodland is classed as Moderate BRP (PRF-I).	extending northwest	
NJ 74928 06012	Between N32 and N29	Myriewell Wood	Habitat type: Larch and Scots pine woodland, north of South Monecht, with oak, rowan and beech extending to the north. Daytime Bat Walkover survey results: One exposed mature beech tree at the northernmost point of this woodland was identified with crevices created by decay that could provide some opportunities for individual roosting bats on an occasional basis Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall this woodland is classed as Low BRP (PRF-I).	Intersects full LOD extending southwest	-
NJ 74369 06582	Between N30 and N26	Unknown	Habitat type: Mixed shelterbelt woodland with Scots pine, beech and larch, northwest of Myriewell House. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the conifer plantation. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated shelterbelt woodland bordered by agricultural land on all sides. Overall this woodland is classed as Low BRP (PRF-I).	Intersects full LOD extending northwest	-
NJ 73874 07556	Between N25 and N23	Unknown	Habitat type: Broadleaved ash plantation shelterbelt woodland, northeast of Culfossie Cottage. Daytime Bat Walkover survey results: Mature ash trees within this woodland were identified to have features, such as lifted bark, that could provide some opportunities for large numbers of roosting bats on a frequent basis. Connectivity: This woodland has good connectivity to the surrounding landscape being connected to several planted field margins that link the shelterbelt to larger woodland areas. These include Hindhill Wood to the east, Barmekin Wood to the west and Craig-na-laoigh Wood to the northwest. Evidence of bats noted: Static bat detector F_4 was located in this woodland block and recorded a total number of 13,225 bat passes. Overall this woodland is classed as Moderate BRP (PRF-M).	Intersects full LOD extending west	11.4.41
NJ 73936 08943	Between N21 and N17	Tillyfoddie Wood	Habitat Type: Mixed Sitka spruce plantation with birch and Scots pine, north of New Wester Echt, classified as LEPO. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland.	Intersects over three quarters of	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has good connectivity stretching southwest to the Craig-na-laoigh Woodand and is drained by a tributary of the Corskie Burn that flows eastwards to more woodland blocks. The woodland is otherwise surrounded by mixed agricultural land. Overall, this woodland is classed as Low BRP (PRF-I).	LOD on the western side	
NJ 74238 09054	Between N20 and N18	Unknown	Habitat Type: Larch plantation woodland, southwest of Dunecht. Daytime Bat Walkover survey results: Mature trees within this woodland were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall this woodland is classed as Moderate BRP (PRF-I).	Intersects quarter of LOD on the eastern side	-
NJ 74102 09761	Between N18 and N17	Unknown	Habitat Type: Mixed mature birch, Scots pine, beech and holly woodland, southwest of Upper Corksie Steading. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects half of LOD on the western side	-
NJ 74181 10062	Between N17 and N15	Corskie Wood	Habitat Type: Mixed plantation woodland with Norway spruce, larch, birch, beech, Scots pine, west of Upper Corksie Steading, classified as LEPO. Daytime Bat Walkover survey results: Mature Scots pine and beech trees within this woodland were identified to have features that could provide some opportunities for individual numbers of roosting bats on an occasional basis Evidence of bats noted: Static bat detector F_5 was located in this woodland block and recorded a total number of 3,157 bat passes. Connectivity: This woodland has moderate connectivity to woodland blocks to the northwest, such as Glack Wood, but is otherwise surrounded by mixed agricultural on all other sides. Overall this woodland is classed as Moderate BRP (PRF-I).	Intersects over half of LOD on the western side	11.4.22 and 11.4.42
NJ 74940 11029	Between N14 and N12	Unknown	Habitat Type: Mixed Scots pine, sessile oak, silver birch, Hawthorn, alder, Hazel and goat willow woodland, southeast of Bogendinnie. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland.	Intersects half of LOD on the eastern side	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland is adjoined to the Bogendinnie Burn, which links to nearby woodland blocks such as the Hill of Corskie Plantation but is otherwise surrounded by mixed agricultural on all other sides. Overall, this woodland is classed as Negligible BRP.		
NJ 75370 12012	Between N11 and N8	Unknown	Habitat Type: Mixed Sitka spruce plantation with whitebeam, ash, downy birch, sycamore and hawthorn at the western tip, north of Wester Letter Steading. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects under three quarters of LOD on the eastern side	-
NJ 75945 12442	Between N9 and N6	Unknown	Habitat Type: Mixed Birch and larch woodland, northwest Wardes Cottages. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects full LOD extending southeast	-
NJ 76354 12822	Between N6 and N4	Unknown	Habitat type: Mixed maple, willow, birch, ash, alder, rowan and Sitka spruce woodland, northeast of Osborne. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block. Connectivity: This woodland has moderate connectivity to the surrounding landscape being linked to the Park Burn which connects to larger woodland blocks such as at Firley Moss but is otherwise bordered by gorse scrub to the east and agricultural land on all other sides. Overall, this woodland is classed as Low BRP (PRF-I).	Intersects under three quarters of LOD on the western side	-
NJ 76496 13091	Between N6 and N4	Unknown	Habitat Type: Mixed Sitka spruce, Scots pine, rowan, downy birch woodland, southwest of South Leylodge Farmhouse. Daytime Bat Walkover survey results: No features with the potential for roosting bats were identified within the woodland. Evidence of bats noted: No direct evidence of bats was identified within this woodland block.	Intersects over quarter of LOD on the eastern side	-

Grid Reference	Tower Number	Woodland Name	Description of Survey Results [BRP]	Location	Photo Reference
			Connectivity: This woodland has poor connectivity to the surrounding landscape being an isolated woodland stand bordered by agricultural land on all sides. Overall, this woodland is classed as Low BRP (PRF-I).		

Ground-Level Static Surveys

Recording Hours

3.2.7 A total of 5,493.75 hours of recording were undertaken across the three survey seasons, as detailed in **Table 11.4.8: Recording Hours During Each Survey Season.**

3.2.8 Due to variations between survey seasons, only the total number of hours recorded, and numbers of nights are presented. Variation in recording hours per season is due to changes in night length and number of nights deployed.

Table 11.4.8: Recording Hours During Each Survey Season

Season	Total Number of Hours Recorded	Number of Consecutive Nights Recorded
Spring	618.75	75
Summer	2,017.5	287
Autumn	2,857.5	250
Total	5,493.75	612

Weather Data Summary

3.2.9 Data from the Westhill weather station near Aberdeen[6] is summarised in **Table 11.4.9: Summary of Seasonal Weather Data (Averages and Ranges Provided).**

Table 11.4.9: Summary of Seasonal Weather Data (Averages and Ranges Provided)

Average Temperature (°C)	Days Average Temperature Above 8°C	Average Wind Speed (m/s)	Average Precipitation (mm)	Days Precipitation ≤1 mm
Spring				
10.3 (4.5-13.7)	16	13.4 (4.8-25.4)	1.4 (0.0-7.6)	12
Summer				
13.7 (8.6-19.8)	82	16.1 (5.7-29.5)	2.1 (0.0-24.6)	50
Autumn				
10.9 (4.6-15.9)	56	15.4 (6.7-30.3)	2.7 (0.0-30.5)	35

Bat Activity Index (BAI)

3.2.10 The following bat species were recorded during the static detector surveys:

- Common pipistrelle *Pipistrellus pipistrellus;*
- Soprano pipistrelle *Pipistrellus pygmaeus;*
- Nathusius' pipistrelle *Pipistrellus nathusii;*
- Unidentified *Pipistrellus* species;
- Unidentified *Myotis* species;
- Brown long-eared bat *Plecotus auritus; and*
- Noctule *Nyctalus noctule.*

3.2.11 To allow for a comprehensive assessment, all bats are referred to in terms of their genus (*Pipistrellus* spp., *Nyctalus* spp., *Myotis* spp. and *Plecotus* spp.).

[6] Meteostat, 2024. The Weather Keepers Record | Westhill (GB). [Online] Available at: https://meteostat.net/en/place/gb/westhill?s=03091&t=2024-04-01/2024-10-31 [Accessed March 2025].

Species Variation

3.2.12 *Pipistrellus* spp. were dominant during the static surveys, accounting for 97.5% of total bat passes recorded across all three seasons. Soprano pipistrelles made up the vast majority of these passes with a smaller number of common pipistrelles being present and only seven Nathusius' pipistrelle calls being recorded across all three seasons. These Nathusius' calls were recorded at detectors H_4 in the Spring, C_2 and F_4 in the Summer, along with B_4, D_1 and the remaining two calls at C_1 in the Autumn. The remaining bat passes consisted of *Nyctalus* spp. (0.001%), *Myotis* spp. (2.4%) and *Plecotus* spp. (0.2%).

3.2.13 *Pipistrellus* spp. accounted for 93.1% of Spring passes, 96.6% of Summer passes and 98.3% of Autumn passes. *Myotis* spp. were the second-most abundant species, accounting for 6.8% of Spring passes, 3.2% of Summer passes, and 1.5% of Autumn passes. *Plecotus* spp. accounted for 0% of the Spring passes, 0.2% of the Summer passes and 0.1% of the Autumn passes. *Nyctalus* spp. accounted for <0.01% of passes across all three seasons.

3.2.14 *Pipistrellus* spp. are present throughout the Proposed Development, with a greater number of calls were recorded by more detectors in the south than the north. This pattern was similar in both Summer and Autumn seasons. The only time and location that they were not recorded at was for F_3 during Autumn, although they were present in low numbers at F_3 during the Summer (BAI 0.51).

3.2.15 *Myotis* activity was more frequent in south than north of the Proposed Development, particularly in the Autumn. B_2 had the most activity for Myotis in both the Summer (BAI 0.48) and Autumn (BAI 0.26).

3.2.16 Most *Plecotus* activity was recorded in the south around Angus than in the north of the Proposed Development. Activity peaks at A_1a and A_1b Summer (BAI 0.03 and 0.02) along with C_3 Autumn (BAI 0.02).

3.2.17 There were only two *Nyctalus* passes recorded, with one at detector F_2 (BAI 0.0005) in the Summer and at H_1 (BAI 0.0003) in the Autumn, both located in southern Aberdeenshire.

3.2.18 BAI for each genus at each detector location, across each season, are presented in **Table 11.4.10: BAI According to Genus per Detector Location Across Survey Seasons** and on **Volume 3, Figures 11.7.1** to **11.7.23: Bat Survey Results**.

Table 11.4.10: BAI According to Genus per Detector Location Across Survey Seasons

Detector Number	BAI per Survey Season (to two d.p.)			Total BAI
	Spring	Summer	Autumn	
A_1a				6.15
Pipistrellus spp.		5.93	0.12	
Plecotus spp.		0.03	0.00	
Myotis spp.		0.06	0.00	
Nyctalus spp.		0.00	0.00	
A_1b				7.06
Pipistrellus spp.		2.66	4.36	
Plecotus spp.		0.02	0.01	
Myotis spp.		0.00	0.02	
Nyctalus spp.		0.00	0.00	
B_1				4.42
Pipistrellus spp.		1.46	2.89	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.04	0.03	
Nyctalus spp.		0.00	0.00	
B_2				8.52
Pipistrellus spp.		3.31	4.46	
Plecotus spp.		0.00	0.00	

Detector Number	BAI per Survey Season (to two d.p.)			Total BAI
	Spring	Summer	Autumn	
Myotis spp.		0.48	0.26	
Nyctalus spp.		0.00	0.00	
B_3				2.16
Pipistrellus spp.		2.12	0.03	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.01	0.00	
Nyctalus spp.		0.00	0.00	
B_4				5.77
Pipistrellus spp.		4.79	0.92	
Plecotus spp.		0.01	0.00	
Myotis spp.		0.03	0.02	
Nyctalus spp.		0.00	0.00	
C_1				4.78
Pipistrellus spp.		2.20	2.54	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.03	0.01	
Nyctalus spp.		0.00	0.00	
C_2				3.54
Pipistrellus spp.		1.65	1.87	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.01	0.00	
Nyctalus spp.		0.00	0.00	
C_3				3.36
Pipistrellus spp.		1.25	1.84	
Plecotus spp.		0.00	0.02	
Myotis spp.		0.18	0.07	
Nyctalus spp.		0.00	0.00	
C_4				0.50
Pipistrellus spp.		0.36	0.14	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		0.00	0.00	
D_1				4.49
Pipistrellus spp.		0.91	3.57	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		0.00	0.00	
D_2				2.15
Pipistrellus spp.		0.65	1.49	

Detector Number	BAI per Survey Season (to two d.p.)			Total BAI
	Spring	Summer	Autumn	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		0.00	0.00	
E_2				2.04
Pipistrellus spp.		1.65	0.16	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.22	0.01	
Nyctalus spp.		0.00	0.00	
F_1				3.98
Pipistrellus spp.		3.67	0.30	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		0.00	0.00	
F_2				2.41
Pipistrellus spp.		2.39	0.02	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		<0.01	0.00	
F_3				0.54
Pipistrellus spp.		0.51	0.00	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.03	0.00	
Nyctalus spp.		0.00	0.00	
F_4				5.33
Pipistrellus spp.		1.16	4.01	
Plecotus spp.		0.01	0.00	
Myotis spp.		0.14	0.02	
Nyctalus spp.		0.00	0.00	
F_5				1.94
Pipistrellus spp.		1.56	0.38	
Plecotus spp.		0.00	0.00	
Myotis spp.		0.00	0.00	
Nyctalus spp.		0.00	0.00	
H_1				0.66
Pipistrellus spp.	0.65		0.00	
Plecotus spp.	0.00		0.00	
Myotis spp.	0.01		0.00	
Nyctalus spp.	0.00		<0.01	
H_2				0.56

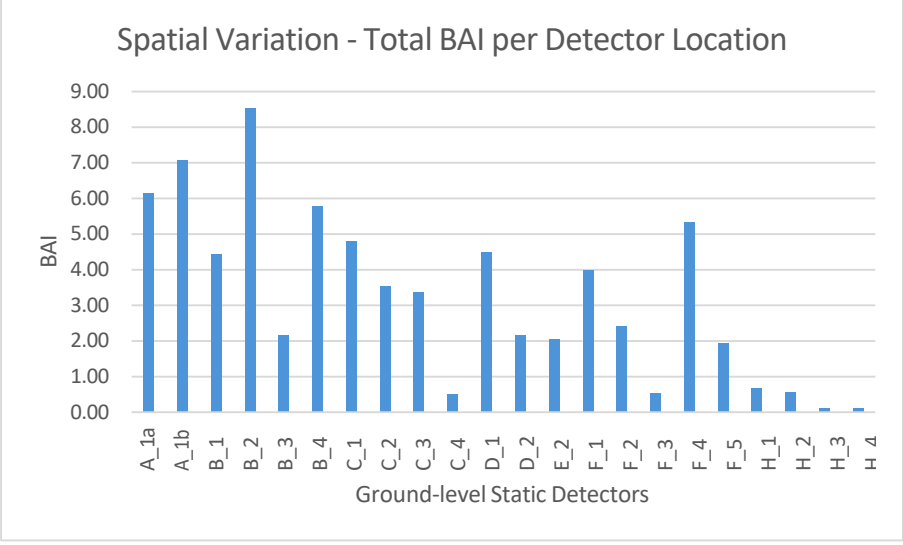
Detector Number	BAI per Survey Season (to two d.p.)			Total BAI
	Spring	Summer	Autumn	
Pipistrellus spp.	0.54		0.00	
Plecotus spp.	0.00		0.00	
Myotis spp.	0.01		0.00	
Nyctalus spp.	0.00		0.00	
H_3				0.12
Pipistrellus spp.	0.06		0.00	
Plecotus spp.	0.00		0.00	
Myotis spp.	0.06		0.00	
Nyctalus spp.	0.00		0.00	
H_4				0.13
Pipistrellus spp.	0.11		0.00	
Plecotus spp.	0.00		0.00	
Myotis spp.	0.02		0.00	
Nyctalus spp.	0.00		0.00	

Spatial Variation – Total BAI

3.2.19 The results from the detectors are shown in **Volume 3, Figures 11.7.1** to **11.7.23: Bat Survey Results**, **Table 11.4.10: BAI According to Genus per Detector Location Across Survey Seasons** and **Chart 11.4.1: Spatial Variation - Total BAI per Detector Location**. While the highest BAI scores were recorded within the south of the ESA, BAI varied widely across the ESA, with scores ranging from 0 to 5.93

3.2.20 Detectors A_1b and B_2 recorded the highest BAI scores (BAI 7.06 and 8.52). These detectors recorded respective totals of 17,840 and 21,051 bat passes. These detectors were located within the wider arable landscape of Angus with many other pockets of woodland interconnected by hedgerows and planted field-margins.

Chart 11.4.1: Spatial Variation - Total BAI per Detector Location



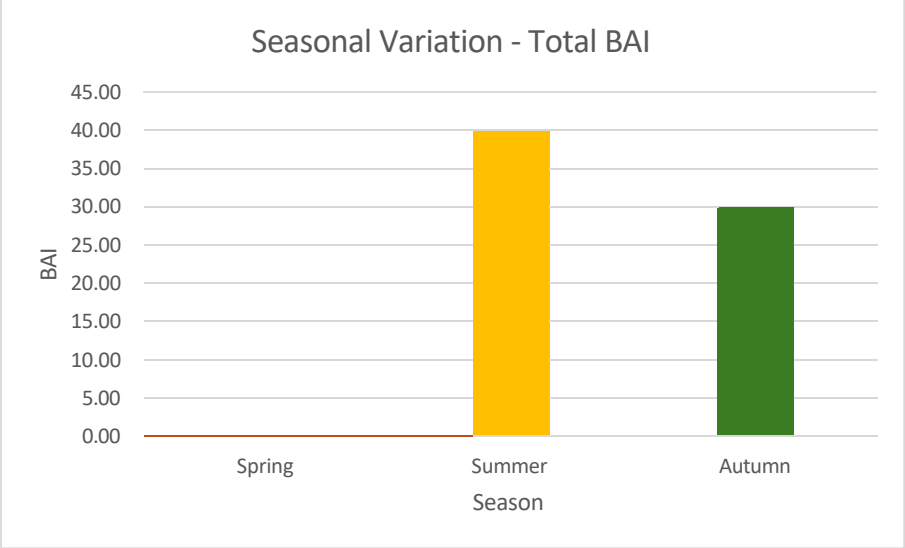
Seasonal Variation – Total BAI

3.2.21 Total BAI was calculated to allow comparison across the three survey seasons (**Chart 11.4.2: Spatial Variation - Total BAI per Season**).

3.2.22 Activity levels were highest in the Summer (BAI 39.57) and second highest in the Autumn (BAI 29.59). Bat activity was considerably lower in Spring (BAI 1.46), although this was also due to a significantly lower number of detectors being deployed at this time.

3.2.23 In total, 83,901 passes were recorded in the Autumn, 79,832 passes were recorded in the Summer and 901 passes were recorded in the Spring.

Chart 11.4.2: Spatial Variation - Total BAI per Season

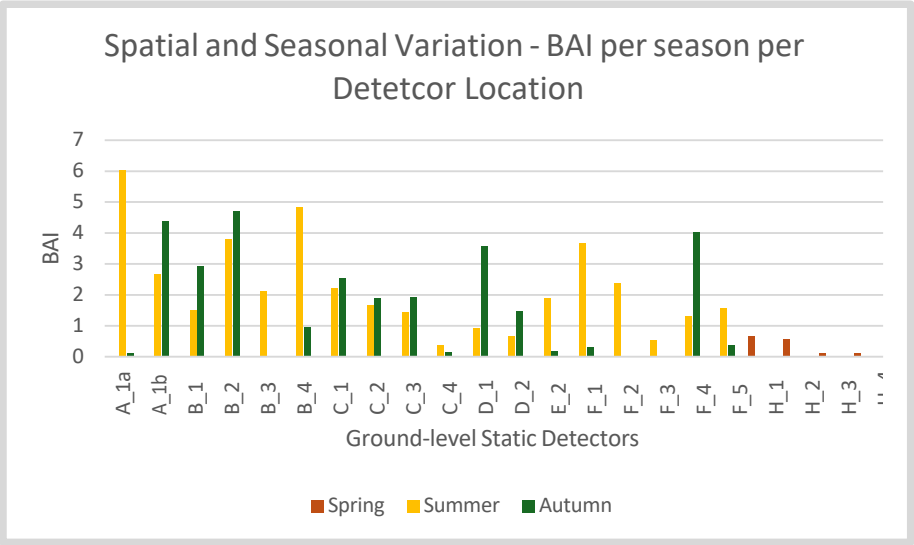


Spatial and Seasonal Variation – BAI per Season per Detector Location

3.2.24 Spatial and seasonal variation at each detector location is shown in **Chart 11.4.3: Spatial and Seasonal Variation – BAI per Season per Detector Location**.

3.2.25 The highest activity was recorded in the Summer, with Detectors A_1a and B_4 recording the highest BAI scores (BAI 6.0 and 4.8 respectively). The remaining detectors had lower BAI scores, ranging from 4.4 to 0.0. The second highest amount of activity was recorded in the Autumn, with Detectors A_1b and B_2 recording the highest BAI scores (at BAI 4.4 and 4.7 respectively). The Spring recorded the lowest activity, with Detectors H-1 and H_2 recording the highest BAI scores (BAI 0.7 and 0.6 respectively).

Chart 11.4.3: Spatial and Seasonal Variation – BAI per Season per Detector Location



Seasonal Variation – BAI per Genus

3.2.26 **Table 11.4.11: Total BAI per Genus per Season** and **Chart 11.4.4: Seasonal Variation – BAI per Genus** summarise BAI per genus, across all seasons.

3.2.27 *Pipistrellus* spp. activity accounted for 97.3% of total bat passes recorded across all three seasons. *Pipistrellus* spp. activity was highest in the Summer (BAI 38.23), followed by the Autumn (BAI 29.1). Activity was lower during the Spring (BAI 1.36).

3.2.28 *Myotis* spp. activity accounted for 2.5% of total bat passes recorded across all three seasons. *Myotis* spp. activity was highest in the Summer (BAI 1.25), followed by the Autumn (BAI 0.45). Activity was lower during the Spring (BAI 0.1).

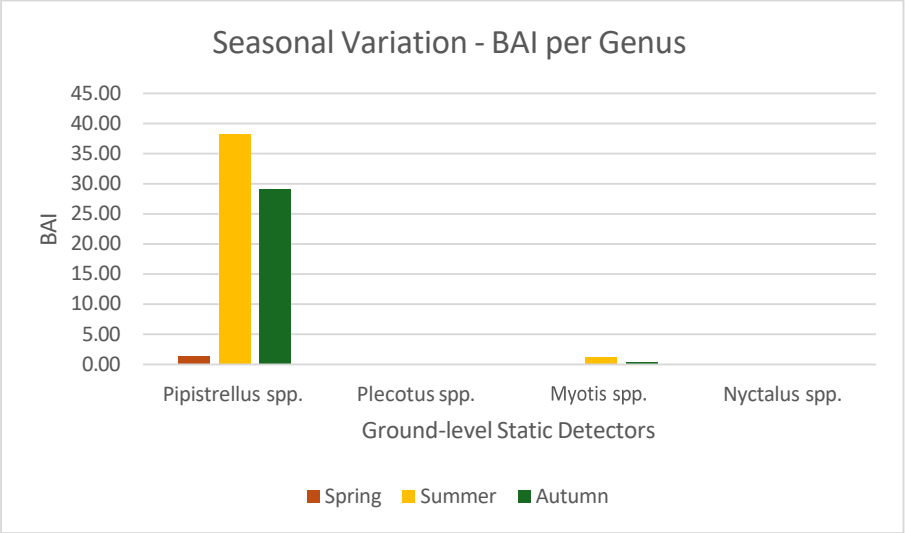
3.2.29 *Plecotus* spp. activity accounted for 0.2% of total bat passes recorded across all three seasons. *Plecotus* spp. activity was highest in the Summer (BAI 0.09), followed by the Autumn (BAI 0.04). Activity was lower during the Spring (BAI 0.0).

3.2.30 *Nyctalus* spp. activity accounted for <0.01% of total bat passes recorded across all three seasons.

Table 11.4.11: Total BAI per Genus per Season

Genus	Spring	Summer	Autumn
Pipistrellus spp.	1.36	38.23	29.10
Plecotus spp.	0.00	0.09	0.04
Myotis spp.	0.10	1.25	0.45
Nyctalus spp	0.00	<0.01	<0.01

Chart 11.4.4: Seasonal Variation – BAI per Genus



4. DISCUSSION AND INTERPRETATION

4.1 Desk Study

4.1.1 The ESA generally offers favourable roosting and foraging opportunities for bats. The majority of the ESA is comprised of agricultural land with some woodland, heathland and scrub habitat assemblages, containing a variety of vegetation communities. The agricultural land, along with extents of coniferous plantation in the northeast of the ESA, have limited potential to support roosting bats. However, there are numerous blocks of broadleaved woodland, along watercourses and within the wider agricultural landscape connected by planted field margins, that offer more commuting and foraging potential for bats within the ESA.

4.1.2 Regarding foraging opportunities, the numerous watercourses present throughout the ESA are likely to provide the most productive invertebrate prey source, with forays into more open habitats during suitable weather conditions. The presence of waterbodies, mature broadleaved woodland and prominent linear features (eg hedgerows and extensive connected broadleaved woodland) means foraging and commuting opportunities for bats are optimal.

4.1.3 Of the 3,875 records noted within the 10 km study area, 3,319 (86.6%) were of common and widespread *Pipistrellus* species. In addition, there were 307 (7.9%) *Myotis* species, 134 (3.4%) *Plecotus* species, 3 (0.08%) *Nyctalus* species and 114 (2.9%) unidentified *Chiroptera* species.

4.1.4 Of the species recorded, most are common and widespread species. 107 of the records were located within the ESA.

4.2 Ground-Level Static Surveys

Species Variation

4.2.1 **Volume 3, Figures 11.7.1** to **11.7.23: Bat Survey Results** provides an overview of the genus variation across the ESA.

4.2.2 *Pipistrellus* spp. were dominant during the static surveys, accounting for 97.5% of total bat passes recorded across all three seasons. The remaining bat passes consisted of *Myotis* spp. (2.4%) and *Plecotus* spp. (0.2%).

4.2.3 *Pipistrellus* spp. activity was highest in the Summer (BAI 38.23), followed by the Autumn (BAI 29.1). Activity was lower during the Spring (BAI 1.36). *Pipistrellus* spp. accounted for 93.1% of Spring passes, 96.6% of Summer passes and 98.33% of Autumn passes.

4.2.4 *Myotis* spp. activity was highest in the Summer (BAI 1.2), followed by the Autumn (BAI 0.4). Activity was lower during the Spring (BAI 0.1). *Myotis* spp. accounted for 6.8% of Spring passes, 3.2% of Summer passes and 1.5% of Autumn passes.

4.2.5 *Plecotus* spp. activity was highest in the Summer (BAI 0.9), followed by the Autumn (BAI 0.4). Activity was lower during the Spring (BAI 0.0). *Plecotus* spp. accounted for 0.0% of Spring passes, 0.2% of Summer passes and 0.1% of Autumn passes.

4.2.6 *Nyctalus* spp. activity accounted for <0.01% of total bat passes recorded across all three seasons with only two passes recorded (BAI 0.0008).

Pipistrellus

4.2.7 Soprano and common pipistrelle accounted for the majority of activity recorded, with 105,470 total passes for soprano pipistrelle, and 50,729 passes for common pipistrelle. In addition, there were 4,266 passes assigned to *Pipistrellus* spp., where the recording could only be verified to genus.

4.2.8 Only seven Nathusius' pipistrelle calls were recorded for the entire survey period, with most of the passes occurring in the autumn.

4.2.9 *Pipistrellus* spp. accounted for 97.5% of all bat species recorded for the entire survey period.

Myotis

4.2.10 *Myotis* spp. accounted for 2.3% of all bat species recorded for the entire survey period, with 3,617 total passes.

Plecotus

4.2.11 *Plecotus* spp. accounted for 0.2% of all bat species recorded for the entire survey period, with 298 total passes.

Nyctalus

4.2.12 *Nyctalus* spp. accounted for <0.01% of all bat species recorded for the entire survey period, with two total passes.

Spatial Variation

4.2.13 Spatial variation across detector locations is shown in **Chart 11.4.1: Spatial Variation - Total BAI per Detector Location**. While the highest BAI scores were recorded within the south of the ESA, BAI was varied across the whole ESA, across the seasons, with scores ranging from 0 to 5.93

4.2.14 Detectors A_1b and B_2 recorded the highest overall BAI scores (BAI 7.06 and 8.52). These detectors recorded respective totals of 17,840 and 21,051 bat passes. These detectors were located in the south of the ESA. Other detectors in the south of the ESA recorded high BAI number of bat passes including A_1a (BAI 6.15), B_1 (BAI 4.4), B_3 (BAI 2.16), B_4 (BAI 5.77), C_1 (BAI 4.78), C_2 (BAI 3.54) and C_3 (BAI 3.36). These detectors recorded respective totals of 12,504, 11,305, 4,378, 12,412, 11,736, 8,668 and 8,359. These detectors were located in a wider arable landscape, with small pockets of woodland and were near to watercourses such as the Rivers South and North Esk.

4.2.15 Detectors in the middle section of the OHL had lower BAI scores including C_4 (BAI 0.5), D_1 (BAI 4.49), D_2 (BAI 2.15), E_2 (BAI 2.04) H_1 (BAI 0.66), H_2 (BAI 0.56), H_3 (BAI 0.12) and H_4 (BAI 0.13). These detectors recorded respective totals of 1,135, 11,969, 5,550, 4,258, 421, 349, 83 and 79 bat passes. These detectors were located in a wider mixed agricultural landscape, with small pockets of woodland and were near to watercourses such as the Cowie Water and Bervie Water.

4.2.16 BAI detector scores increased at the northern section of the route including F_1 (BAI 3.98), F_2 (BAI 2.41), F_3 (BAI 0.54), F_4 (BAI 5.33) and F_5 (BAI 1.94). These detectors recorded respective totals of 8,291, 4,876, 1,097, 14,040 and 4233. These detectors were located in a wider mixed agricultural landscape, with large woodland networks and were near to watercourses such as the River Dee.

4.2.17 There was a distinct seasonal pattern of activity within the ESA. Activity levels were highest in the Summer at a total BAI of 39.57 with the highest scoring detectors being A_1a and B4 (BAI 6.02 and 4.83). Activity levels were also high in the Autumn at a total BAI of 29.59 with the highest scoring detectors being A_1b and B_2 (at BAI 4.39 and 4.72). Activity levels were lowest in the Spring at a total BAI of 1.46 with the highest scoring detectors being H_1 and H_2 (BAI 0.66 and 0.56).

ANNEX 11.4.1 PHOTOGRAPHS

Scottish & Southern Electricity Networks

TRANSMISSION

CONTENTS

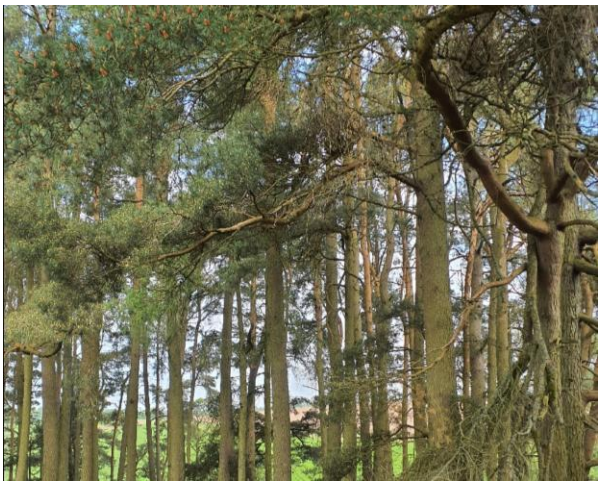
ANNEX 11.4.1 – PHOTOGRAPHS OF HABITATS WITH THE POTENTIAL FOR BAT ROOSTS

1.1 Examples of Habitat with Bat Roost Potential

1.1.1 **Table 11.4.1.1: Example Habitat Photographs** illustrates a variety of habitats within the ESA with the potential to support roosting bats.

Table 11.4.1.1: Example Habitat Photographs

Photograph	Photograph
Section A	
 Photo reference: 11.4.1 Coniferous woodland plantation, dominated by Sitka spruce, northwest of Balkemback Farm. Negligible BRP	 Photo reference: 11.4.2 Semi-mature oak woodland plantation south of Upper Hayston Farm. Moderate BRP (PRF-M)
Section B	
 Photo reference: 11.4.3 Mixed woodland with abundant oak and beech along with occasional Scots pine, east of Haughs of Cossans. Moderate BRP (PRF-M)	 Photo reference: 11.4.4 Mixed semi-mature woodland with oak, sycamore and birch, northeast of Haughs of Cossans. Negligible BRP

Photograph	Photograph
	
Photo reference: 11.4.5 Wet woodland with willow species, northwest of Dragon Hall Farm. Low BRP (PRF-I)	Photo reference: 11.4.6 Upland silver birch woodland, northwest of Mosside of Ballinshoe, classified as LEPO. Moderate BRP (PRF-I)
	
Photo reference: 11.4.7 Lowland mixed deciduous woodland, downy birch dominance with abundant larch, rowan, pedunculate oak, northwest of Mosside of Ballinshoe Low BRP (PRF-I)	Photo reference 11.4.8 Broadleaved woodland with birch, oak, sycamore, hawthorn, northwest of Burnside Farm Moderate BRP (PRF-I)

Photograph	Photograph
 Photo reference: 11.4.9 Wet woodland with hawthorn, alder, sycamore and cherry, northwest of Burnside Farm. Moderate BRP (PRF-M)	 Photo reference: 11.4.10 Ancient broadleaved pedunculate oak and downy birch woodland, north of Knowehead Cottage, classified as LEPO. High BRP (PRF-M)
 Photo reference: 11.4.11 Mixed young alder, birch woodland with an older Sitka spruce woodland planation block within, southwest of Coe Farm Cottage, classified as LEPO. Negligible BRP	 Photo ref 11.4.12 Mixed wet woodland with ash, alder, grey willow and downy birch, west of Lochty, classified as LEPO. Moderate BRP (PRF-M)
Section C	

Photograph	Photograph
	
Photo reference 11.4.13 Scots pine and maple woodland, east of Westwater House. Low BRP (PRF-I)	Photo Reference: 11.4.14 Beech, maple and ash broadleaved riparian woodland, east of Inveriscandye Cottage, classified as LEPO. Low BRP (PRF-I)
Section D	
	
Photo reference: 11.4.15 Beech woodland with red cedar, birch, ash, sycamore, north of Redhall House, classified as LEPO. Moderate BRP (PRF-M)	Photo reference 11.4.16 Young broadleaved tree plantation, north of Hawkhill. Negligible BRP
Section E	

Photograph	Photograph
	
Photo reference: 11.4.17 Sitka spruce and larch plantation, southwest of Clachanshiels. Moderate BRP (PRF-M)	Photo reference: 11.4.18 Sitka spruce plantation, and felled conifer plantation in the south which had been recently cleared, east of Gennell. Negligible BRP
	
Photo reference: 11.4.19 Mixed sycamore, silver birch, ash, willow, alder, larch hawthorn, elder and bird cherry woodland, southwest of New West Lodge. Low BRP (PRF-I)	Photo reference: 11.4.20 Mixed sycamore, beech rowan, Douglas fir, hawthorn, ash, Scots pine, hazel, oak, whitebeam, willow, wild cherry and downy birch woodland, west of New West Lodge. Low BRP (PRF-I)
Section F	

Photograph	Photograph
	
Photo reference: 11.4.21 Scots pine woodland, northwest of Murphy Howe. Moderate BRP (PRF-I)	Photo reference: 11.4.22 Mixed plantation woodland with Norway spruce, larch, birch, beech and Scots pine, west of Upper Corksie Steading, classified as LEPO. Moderate BRP (PRF-I)

1.2 Example Photographs of Static Bat Detectors

1.2.1 Table 11.4.1.2 presents photographs of bat detectors along with descriptions of the habitats in which they were deployed and the BRP potential for each habitat.

Table 11.4.1.2: Photographs of Static Bat Detector Photographs

Photograph	Photograph
Section A	
	
Photo reference 11.4.23 A_1a: Semi-mature oak woodland plantation south of Upper Hayston Farm. Moderate BRP (PRF-M)	Photo reference 11.4.24 A_1b: Semi-mature oak woodland plantation south of Upper Hayston Farm. Moderate BRP (PRF-M)
Section B	

Photograph	Photograph
 Photo reference: 11.4.25 B_1: Cattle grazed upland birch woodland, northwest of Over Bow Farm. Low BRP (PRF-l)	 Photo reference: 11.4.26 B2: Broadleaved woodland with sycamore, beech, ash, willow spp., alder, rowan, downy birch and hazel, east of Inshewan. Moderate BRP (PRF-M)
 Photo reference: 11.4.27 B2: Broadleaved woodland with sycamore, beech, ash, willow spp., alder, rowan, downy birch and hazel, east of Inshewan. Moderate BRP (PRF-M)	 Photo reference: 11.4.28 B4: Mixed wet woodland with ash, alder, grey willow and downy birch, south of Lochty, classified as LEPO. Moderate BRP (PRF-M)
Section C	

Photograph	Photograph
	
Photo reference: 11.4.29 C1: Mature silver birch, oak, beech, goat willow, rowan, downy birch and Scots pine woodland, west of Nether Belliehill, classified as LEPO. Moderate BRP (PRF-M)	Photo reference: 11.4.30 C2: Mature silver birch, oak, beech, goat willow, rowan, downy birch and Scots pine woodland, west of Nether Belliehill, classified as LEPO. Moderrate BRP (PRF-M)
	
Photo reference: 11.4.31 C3: Beech, maple and ash broadleaved riparian woodland, east of Inveriscandye Cottage, classified as LEPO. Moderate BRP (PRF-M)	Photo reference: 11.4.32 C4: Scots pine woodland with Sitka spruce, occasional beech and birch regeneration, southeast of Gourdon Holdings, classified as LEPO. Moderate BRP (PRF-I)
Section D	

Photograph	Photograph
	
Photo reference: 11.4.33 D1: Sycamore, oak and willow sp., woodland, northwest of Mains of Pittarrow. Moderate BRP (PRF-M)	Photo reference: 11.4.34 D2: Beech woodland with red cedar, birch, ash, sycamore, north of Redhall House, classified as LEPO. Moderate BRP (PRF-M)
Section E	
	
Photo reference: 11.4.35 H1 (Hurlie): Sitka spruce and larch plantation, southwest of Clachanshiels. Moderate BRP (PRF-M)	Photo reference 11.4.36 H2 (Hurlie): Sitka spruce and larch plantation, southwest of Clachanshiels. Moderate BRP (PRF-M)

Photograph	Photograph
	
Photo reference: 11.4.37 H3 (Hurlie): Sitka spruce and larch plantation, southwest of Clachanshiels. Moderate BRP (PRF-M)	Photo reference: 11.4.38 H4 (Hurlie): Sitka spruce and larch plantation, southwest of Clachanshiels. Moderate BRP (PRF-M)
Section F	
	
Photo reference:11.4.39 F2: Scots pine woodland, northwest of Murphy Howe. Moderate BRP (PRF-I)	Photo reference: 11.4.40 F3: Downy birch and Scots pine, beech and Sitka spruce woodland, northeast of South Finnercy Cottage. Moderate BRP (PRF-M)

Photograph	Photograph
	
Photo reference: 11.4.41 F4: Broadleaved ash plantation shelterbelt woodland, northeast of Culfosie Cottage. Moderate BRP (PRF-M)	Photo reference: 11.4.42 F5: Norway spruce, larch, birch, beech, Scots pine woodland, west of Upper Corksie Steading, classified as LEPO. Moderate BRP (PRF-I)