EP Ecology Ltd.

Burnbrae, Symington

Preliminary Ecological Appraisal Report

Prepared For: Walker Hines Woodland Services Ltd.
Date 08 July 2024
Revision: Rev.01 (FINAL)

CIEEM REGISTERED PRACTICE 2024-2025

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Revision History

This document has been subject to a quality review process as dictated below.

Revision	Author	Date	Reviewer	Date	Approver	Date	Comment
Rev.01 (FINAL)	C. Smart	02/07/24	A. Laming	04/07/24	E. Paterson	08/07/2024	Approved for client issue (FINAL)

Contents

1 Executive Summary

- EP Ecology was commissioned by Walker Hines Woodland Services Ltd. to conduct a preliminary ecological appraisal to accompany an application for the plantation of woodland parcels in Symington, South Ayrshire.
- The proposed site area was surveyed for habitats and their likelihood to support protected and notable species, including (but not limited to) signs of badgers, water vole, INNS, and pine marten as well as nesting birds and squirrel dreys. This included accessible habitats within 50m of the Site boundaries.
- Several designated sites could potentially be affected by works with three ancient woodland inventory sites being found immediately adjacent to the Site. **Careful pollution prevention and control in line with the Guidelines for Pollution Prevention is advised** to mitigate the risk of this.
- Most of the Site is considered semi-improved grassland with some areas of recently cut improved grassland. **It is recommended that the field margins are retained**, enhanced and that any woodland rides or firebreaks are managed as native meadow to offset the loss of grassland habitat.
- The field boundaries i.e. **hedgerows should also be retained** and, where possible, enhanced.
- Limited signs of any protected species were found over the course of the survey. **Standard mitigation to avoid mammal entrapment is required.**
- Bird activity suggests that many species could be using the nearby woodlands and unmanaged grassland for nesting, and it is advised that **removal of any rank and over-grown vegetation as well as shrubs or trees as required, occur outwith the bird nesting season (April to August inclusive), or pre-works checks for bird nests be conducted.**
- A large rhododendron stand is present in the woodland east of the Site and a rash of plants were noted in the south of the Site. **The Site will have to be regularly monitored for colonisation of new plants and should be removed and disposed of by a qualified invasive weed specialist if they arise.**
- The general habitat of the Site is expected to be of moderate to high value to local bat populations, due to the wide variety of prey items supported by the field margins, hedgerows and semi-natural woodlands within and peripheral to the Site. **It is recommended that the linear features be preserved.**
- **Many trees within the existing linear features contain potential bat roosting features** these should be surveyed where any works will be happening nearby or where trees are being removed.
- General recommendations to improve the Sites value for biodiversity are also made, including installation of hedgehog boxes, bat and bird boxes, and invertebrate hotels/log piles.
- Due to the limited size of the Site the client should consider **discussing off-site improvement options to achieve biodiversity enhancement commitments** expected from the local planning authority.

2 Introduction

2.1 Background

EP Ecology was commissioned by Walker Hines Woodland Services Ltd. (hereafter "the Client") to conduct a Preliminary Ecological Appraisal (PEA) at the site of Burnbrae in Symington, South Ayrshire (approximate central grid reference NS 37298 32070). A preliminary ecological appraisal was required to identify the likely key ecological constraints and opportunities for the project and highlight mitigation or further data collection requirements for progression with the proposals.

This report sets out the baseline ecological conditions including a classification of the habitats present within the Site and notes on their likelihood to support protected or notable species. An assessment of the proposed activities on Site is made with reference to their potential impacts on designated sites and protected or notable species and habitats with identification of the mandatory requirements and recommendations for further consideration for progression with the proposals.

2.2 Description of Proposals

EP Ecology understands that the proposals issued by the Client include: afforestation of multiple woodland parcels comprising productive broadleaves, mixed conifer and native broadleaves. The plans also include access paths for public use.

2.3 Survey Scope

This survey has been undertaken with consideration of the Guidelines for Preliminary Ecological Appraisal[1]. The scope of the survey was to establish a baseline of ecological information and ascertain whether the proposed activities have the potential to affect any designated sites or protected and/or notable species and habitats. Therefore, the following were undertaken:

- A desk-based study to collect information on designated sites and records of protected and/or notable species within 2km of the Site;
- An extended Phase 1 habitat survey field visit undertaken during daylight hours to record the broad habitat types present on site together with any key floral species as well as an assessment of these habitats for their potential to support protected and notable species, and any evidence of protected or notable species was noted; and
- An assessment of the proposed activities in relation to the baseline ecological information to determine the likelihood of ecological constraints to these proposals together with identification of the mandatory requirements for progression, and recommendations for ecological and biodiversity enhancement associated with the proposed activities.

2.4 Report Structure

This report sets out the methods used to establish the baseline ecological information (**Section 3**), the results of the desk and field study (**Sections 4 and 5**), general requirements and recommendations for progression with the project (**Section 6**), site-specific requirements and recommendations for project progression (**Section 7**), project options for biodiversity enhancement **(Section 8**) and is accompanied by a figure showing the location of designated sites (**Appendix A, Figure 1**), phase 1 habitat figure (**Appendix A, Figure 2**), Target notes (**Appendix B**), and a summary of relevant policy and legislature (**Appendix C**).

2.5 Staff

The study was conducted by EP Ecology Ecologist, Christopher Smart. Chris has 4 years' experience as an Ecological Clerk of Works as part of a large infrastructure project and a further 2 years' experience

[1] CIEEM. (2017). *Guidelines for Preliminary Ecological Appraisal (2nd Edition)*. CIEEM, Winchester. 23pp.

as an ecologist. Chris is a qualifying member of CIEEM in the process of upgrading their membership to an associate member.

The report was reviewed and approved by EP Ecology Director, Erik Paterson. Erik is an experienced ecological consultant with over 11 years' experience in the sector. He has worked on dozens of projects from small-scale single dwellinghouse modifications through large industrial developments to multi-million-pound road schemes across Scotland. Erik is a Chartered Ecologist and full member of CIEEM and holds NatureScot licenses for great crested newt survey, otter survey, bat survey (including hibernacula and harp trapping), and holds a NatureScot bat low impact licence.

3 Methods

3.1 Desk Study

The desk study element included map-based searches for designated sites and database queries for protected and/or notable fauna and flora within a 2 km search radius of the Site. The following resources were used for information gathering:

- National Biodiversity Network[2]; and
- Scotland's Environment Webmap[3].

3.2 Field Study

The field study was conducted on 24 June 2024. The prevalent weather conditions were overcast with a constant drizzle at the beginning of the survey petering out to cloudy and dry. Temperatures averaged 19.4°C, cloud cover began as 100% but cleared slightly to 80%. Wind speeds stayed consistent at 2 on the Beaufort scale.

3.2.1 Study Area

The study area for this project was taken to be the entirety of the site and to a buffer of 50m in accessible land.

3.2.2 Phase 1 Habitats

Phase 1 habitat surveys are a standard methodology for recording and mapping broad habitat types of an area. Phase 1 habitats were recorded within the study area taking cognisance of the JNCC guidelines[4] along with an indication of the floral assemblage and structure, condition, and extent of each broad habitat type.

3.2.3 Badgers

Signs of badger (e.g. latrines, push-throughs, paths, and setts) were sought within the Site and to a buffer of 50m with notes taken on the apparent regularity and recency of use and classified in line with best practice guidelines[5].

3.2.4 Pine Marten

Notation of any field signs including scat, sightings, and possible dens within the Site in line with current best practice guidance[6];

3.2.5 Red Squirrel

Notation of any feeding signs, sightings, or potential dreys within the Site in line with current best practice guidance[7];

3.2.6 Bats

Preliminary Roost Assessment of Structures

Structures and natural features within the study area were assessed for their bat roosting potential as per the current BCT guidelines[8] as summarised in **Table 3.1**.

[2] https://nbnatlas.org/
[3] https://map.environment.gov.scot/sewebmap/
[4] JNCC. (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit. 3rd Edition*. JNCC, Peterborough. 80pp.
[5] Scottish Badgers. (2018). *Surveying for Badgers: Good Practice Guidelines.* Version 1.
[6] Birks, J.D.S., Billion, S., Cresswell, W.J. & Dean, W. (eds.) (2012) *UK BAP Mammals: Interim guidance for Survey Methodologies, Impact Assessment, and Mitigation.* The Mammal Society, 96pp.
[7] Gurnell, J., Lurz, P., McDonald, R., & Pepper, H. (2009). *Practical techniques for surveying and monitoring squirrels*. The Forestry Commission, 12pp.
[8] Collins, J. (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition).* Bat Conservation Trust, London.

Table 3.1. Bat roost suitability categories for structures (adapted from BCT best practice guidance).

Suitability	Description
None	No habitat features on site capable of being used by roosting bats.
Negligible	No obvious habitat features likely to be used by bats. However, a small element of uncertainty remains as bats may use small and apparently unsuitable features on occasion. Note, this category includes structures which may include features which are "so small as to be not worth considering".
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat.

Preliminary Roost Assessment of Trees

Trees within the study area were assessed for their bat roosting potential as per the current BCT guidelines[8] as summarised in **Table 3.2**.

Table 3.2. Bat roost suitability categories for trees (adapted from BCT best practice guidance).

Suitability	Description
None	Either confirmed an absence of PRFs within a tree, or the tree is of a size and age where there are unlikely to be any PRFs.
FAR	The tree could not be fully inspected from ground-level and is of a size and/or age where PRFs may be expected which warrants further assessment.
PRF-I	The tree was confirmed to contain potential roosting features, but these features are of a size and/or shape where they would likely only be used by individual bats.
PRF-M	The tree was confirmed to contain potential roosting features, and these features are of a size and/or shape where they could potentially be used by multiple bats.

3.2.7 Otters

Watercourses within the study area were surveyed for signs of otter (e.g. spraint, anal jelly, sign heaps, and resting places). Notes were taken on the apparent age and regularity of use of each sign in line with standard guidance[9].

[9] Chanin, P. (2003). *Monitoring the Otter* Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10. English Nature, Peterborough.

3.2.8 Water Vole

Any watercourses within the study area were assessed for their suitability to support water voles (by looking at the bank structure, vegetation height and composition, and water availability) and any evidence of voles was recorded in line with best practice guidelines[10].

3.2.9 Beaver

Recording of evidence of beaver (dams, burrows, and foraging signs) along watercourses within the Site in line with currently adopted best-practice guidance[11].

3.2.10 Birds

Bird species and nests present within the Site were recorded during the site visit. Notes were taken on the suitability of habitats present for nesting bird species also (e.g. by noting presence and perceived disturbance levels of semi-natural habitats including hedgerows, woodlands, and heath/grasslands etc.)

3.2.11 Amphibians

Ponds (defined as standing water bodies between 1m^2 and 20,000m^2 in area expected to hold water for at least four months of the year[12]) were recorded and assessed for their suitability to support great crested newts (GCN; *Triturus cristatus*) using the Habitat Suitability Index scoring system developed by Oldham *et al*.[13] as amended by ARG UK[14] and O'Brien *et al*.[15]. Ponds were subsequently graded as "poor", "below average", "average", "good" or "excellent" quality in line with the ARG UK guidance note. General notes on the suitability of terrestrial habitats are also taken and in combination with the HSI scoring system can be used as a proxy to identify the likely presence of both GCN and widespread amphibian species.

3.2.12 Reptiles

Broad habitats within the study area were assessed for their suitability to support populations of reptiles by looking at various features (e.g. aspect, potential hibernacula, patch size, and habitat structure or naturalness) in line with best practice guidance[16]. Evidence of reptiles (e.g. sightings or presence of sloughs) was also recorded.

3.2.13 Non-Native Species

The most damaging invasive non-native species *Rhododendron ponticum*, Japanese knotweed *Reynoutria japonica*, giant hogweed *Heracleum mantegazzianum*, and Himalayan balsam *Impatiens glandulifera*) were specifically sought within the site. However, evidence of any other non-native species (e.g. grey squirrel *Sciurus carolinensis* or giant rhubarb *Gunnera manicata*), where observed, were recorded as points within the study area.

3.2.14 Terrestrial Invertebrates

Broad habitats within the study area were assessed for their likelihood to support terrestrial invertebrates of conservation note. There is little available guidance on this and so generally, habitats which are atypical within a local, regional, or national context are considered likely to support invertebrate communities of conservation priority, as are: Semi-natural broadleaved woodland, semi-

[10] Dean, M., Strachan, R., Gow, D., & Andrews, R. (2016). *The Water Voile Mitigation handbook (The Mammal Society Mitigation Guidance Series)*. Eds. Fiona Mathews and Paul Chanin. The Mammal Society, London. 59pp.
[11] Campbell, R.D., Harrington, A., Ross, A. & Harrington, L. (2012). *Distribution, population assessment and activities of beavers in Tayside*. Scottish Natural Heritage Commissioned Report No. 540.
[12] Biggs, J. Williams, P., Whitfield, M., Nicolet, P., & Weatherby, A. (2005). 15 years of pond assessment in Britain: results and lessons learned from the work of Pond Conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 15: 693-714.
[13] Oldham, R.S., Keeble, J., Swan, M.J.S., & Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt (Triturus cristatus). *Herpetological Journal*, 10(4): 143-155.
[14] ARGUK. (2010). *ARGUK Advice Note 5: Great Crested Newt Habitat Suitability Index*. Amphibian and Reptile Groups of the United Kingdom.
[15] O'Brien, D. Hall, J., Miró, A., & Wilkinson, J. (2017). Testing the validity of a commonly-used habitat suitability index at the edge of a species' range: great crested newt *Triturus cristatus* in Scotland. *Amphibia-Reptilia,* 38: 265-273.
[16] Edgar, P., Foster, J., & Baker, J. (2010). *Reptile Habitat Management Handbook*. Amphibian and Reptile Conservation, Bournemouth. 77pp.

natural coniferous woodland, flower-rich grasslands, peatlands, wetlands, and open mosaic habitats on previously developed land in line with expert recommendations[17].

3.2.15 Fish and Fish Habitats

A basic assessment of any water courses within the study area for their accessibility for fish (e.g. through identification of downstream barriers to fish movement) was combined with an assessment of the watercourse for signs of pollutants and presence of three key features which can affect a watercourses suitability for fish: The presence of cover (e.g. vegetation, fallen trees or overhanging banks); the depth of water; and the substrate where it can be seen.

3.3 Study Limitations

To determine presence or likely absence of protected and notable species, often repeated survey visits or survey visits at particular times of the year are required. The purpose of a Preliminary Ecological Appraisal is to provide an assessment of the potential for such species as a "snapshot". Consequently, further targeted surveys may be required to determine the presence or likely absence of protected and notable species and the requirement for this are detailed within **Section 6** of this report.

The survey was undertaken in June which is within the recommended Phase 1 Habitat survey season of April-September. During this season, flora are in a period of growth and their identification is simpler, as such most key species are likely to have been identified. However, dense leaf growth on trees can render assessment for bat roosting potential more challenging, and late-season, tall vegetative growth can render signs of badger, water vole, and otter harder to find. Given the habitats present within the Site, the time of year is not considered a significant limitation to the survey effort for this Preliminary Ecological Appraisal.

Some of the fields within the survey area contained livestock (cows) and although every field was traversed, some areas of fields were not surveyed directly due to safety concerns. This is unlikely to affect the designations within the fields as the habitats appeared to be continuous with those that were directly observed. However, some of the field boundaries (notably hedgerows with trees) could not be assessed and so some potential roosting features may have been missed.

For a similar reason the section of the Rumbling Burn running along the western edge of the Site was not accessed. This could be a significant limitation as at least 350 metres of water course were unable to be assessed for signs of water vole or otter.

Almost all of the buffer area was not accessed as client access permissions were assumed to be limited to the red line boundary and ownership of surrounding fields was unknown. This is unlikely to be a significant limitation as the fields appear to have similar usages and therefor the habitats will be extremely similar to those nearby.

The details included within this report remain valid for a period of one year[18] from the date of issue. If works have not commenced by the end of this period, a repeat assessment may be required.

[17] Cathrine, C. (2020). *How to Consider Invertebrates in Ecology Projects*. CIEEM Webinar, 04 November 2020.
[18] CIEEM. (2019). *Advice Note on the Lifespan of Ecological Reports & Surveys*. CIEEM, Hampshire.

4 Desk Study Results

4.1 Designated Sites

4.1.1 International Sites

International Sites are those sites which are designated in the UK under the international legislature (See **Appendix E**). They include: Special Protection Areas (SPAs), Potential Special Protection Areas (pSPAs), Special Areas of Conservation (SACs), Candidate Special Areas of Conservation (cSAC) and Wetlands of International Importance (Ramsar Sites). These sites are afforded the highest levels of protection in the UK.

There are no identified International Sites within a 2km search buffer of the Site.

4.1.2 National Sites

National sites are those sites designated for biological interest in the UK under National legislature (See **Appendix E**). They include: Sites of Special Scientific Interest (SSSIs), Marine Protected Areas (MPAs) and National Nature Reserves (NNRs).

There is one identified National Site within a 2km search buffer of the Site as shown in **Table 4.1** and **Appendix A, Figure 1**.

Table 4.1. Identified National Sites within a 2km search buffer of the Site.

Site Name	Designation	Features (if known)	Distance & Direction
Dundonald Wood	SSSI	Beetle assemblage; Upland mixed ash woodland	1.83km NW

4.1.3 Local Sites

Locally designated sites include those sites which the local government have designated for wildlife or biodiversity conservation. These include: Local Nature Reserves (LNRs), Sites of Importance for Nature Conservation (SINCs), and Local Nature Conservation Sites (LNCSs).

There are two identified Local Sites within a 2km search buffer of the Site as shown in **Table 4.2** and **Appendix A, Figure 1**.

Table 4.2. Identified Local Sites within a 2km search buffer of the Site.

Site Name	Designation	Features (if known)	Distance & Direction
Coodham	LNCS		1.09km NE
Dundonald Hills	LNCS		1.79km NW

4.1.4 Ancient Woodland Inventory Sites

The Ancient Woodland Inventory of Scotland is a list of woodland sites which are currently wooded and have been continually wooded since at least 1750 and consists of three categories “ancient woodland of semi-natural origin” which are woodlands shown as semi-natural on the Roy maps (1750) or first edition OS maps (1860) and continuously wooded until the present day, “long-established woodlands of plantation origin” which are woodlands shown as plantation on the Roy or OS maps and continuously wooded to the present day, and “other woodlands on Roy maps” which are not shown as woodlands on the OS maps, but are shown as woodland on the Roy maps and likely have only had a short break in continuity of woodland.

There are 19 woodlands on the Ancient Woodland Inventory within a 2km search radius of the Site as shown in **Table 4.3** and **Appendix A, Figure 1**.

Table 4.3. Ancient Woodland Sites within a 2km search radius of the Site.

Site Name (if Known)	Type	Area (hectares)	Distance & Direction
Unknown	Long-Established (of plantation origin)	4.56	0km NE
Catcraig Plantation	Long-Established (of plantation origin)	6.16	0km NW
Unknown	Long-Established (of plantation origin)	6.48	0km S
Unknown	Long-Established (of plantation origin)	13.82	0.25km NE
Unknown	Long-Established (of plantation origin)	4.61	0.44km W
Unknown	Long-Established (of plantation origin)	2.18	0.6km NE
Broad Tongue Wood	Long-Established (of plantation origin)	8.11	0.82km S
Highlees Mount	Long-Established (of plantation origin)	7.71	0.91km NW
Unknown	Long-Established (of plantation origin)	1.95	0.94km NE
Coodham Woods	Long-Established (of plantation origin)	17.53	1.12km E
Highlees Mount	Long-Established (of plantation origin)	2.62	1.14km NW
Unknown	Long-Established (of plantation origin)	11.1	1.53km S
Crow Wood	Long-Established (of plantation origin)	4.87	1.64km S
Dundonald Wood	Ancient (of semi-natural origin)	20.11	1.64km NW
Dundonald Wood	Ancient (of semi-natural origin)	26.93	1.69km NW
Unknown	Long-Established (of plantation origin)	5.76	1.73km SW
Underwood Glen	Other (on Roy map)	2.74	1.76km SE
Underwood Glen	Ancient (of semi-natural origin)	2.26	1.76km SE
Unknown	Long-Established (of plantation origin)	3.07	2km NE

There are three ancient woodland inventory sites directly adjacent to the Site and these are the most likely areas to be negatively affected as a result of the works. The most likely source of negative effects would be pollution in the form of particulates or fuels being mobilised into the soils, leeching into the groundwater or being mobilised into the air. These harmful effects can be largely avoided by not allowing works to progress right up to the adjacent boundaries and by strictly following pollution prevention guidelines as outlined in **Section 6** of this report. The other designated sites found within the background search will also be protected by any actions taken to protect the most proximal sites.

4.2 Protected and Notable Species

Records were received from within 2km search buffer of the Site. These records were then delimited to include only protected or notable species recorded since the year 2000 inclusive[19].

4.2.1 Flora

All wild flora (plants and fungi) in Scotland are protected against intentional or reckless uprooting without the permission of the owner or occupier of the land on which it grows. Other species are listed in Schedule 8 of the Wildlife & Countryside Act 1981 which offers them additional protections, only three species are offered full protection as European Protected Species. Many species are of conservation concern and are listed on national or regional biodiversity lists also.

Records of protected and notable flora are presented within **Table 4.4**.

Table 4.4. Protected and notable flora records received from within 2km of the Site.

Species Common	Species Latin	Designations	No. Records
Bluebell	*Hyacinthoides non-scripta*	WCA-Sch8	1

[19] Absence of presence records of any protected and notable flora and fauna should not be taken as evidence of absence of such flora and fauna.

4.2.2 Mammals

Several mammal species in Scotland are offered full protection as European Protected Species by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) including all species of bat. Furthermore, many Scottish mammals are offered protection by the Wildlife & Countryside Act, with Badgers offered legislative protection by the Protection of Badgers Act 1992[20].

Records of protected and notable mammal species are presented within **Table 4.5**.

Table 4.5. Protected and notable mammal records received from within 2km of the Site.

Species Common	Species Latin	Designations	No. Records
Soprano Pipistrelle	*Pipistrellus pygmaeus*	EPS, WCA-Sch5, UKBAP, SBL	689
Common Pipistrelle	*Pipistrellus pipistrellus*	EPS, WCA-Sch5	55
Brown Long-Eared Bat	*Plecotus auritus*	EPS, WCA-Sch5, UKBAP, SBL	7
Natterer's Bat	*Myotis nattereri*	EPS, WCA-Sch5, SBL	5
Leisler's Bat	*Nyctalus leisleri*	EPS, WCA-Sch5, Near Threatened	2
Brown Hare	*Lepus europaeus*	UKBAP, SBL	1

4.2.3 Birds

All wild birds as well as their occupied nests and eggs are protected by the Wildlife & Countryside Act 1981 (as amended). Those species listed on Schedule 1 of the Wildlife & Countryside Act are offered additional levels of protection. Additionally, birds listed as “amber” or “red” on the Birds of Conservation Concern 4[21] list are those considered to be most at risk in the UK. Records of protected and notable bird species are presented within **Table 4.6**.

Table 4.6. Protected and notable bird records received from within 2km of the Site.

Species Common	Species Latin	Designations	No. Records
Yellowhammer	*Emberiza citrinella*	UKBAP, SBL, Red	3
Barn Owl	*Tyto alba*	WCA-Sch1, SBL	2
Northern Lapwing	*Vanellus vanellus*	UKBAP, SBL, Red	1
Lesser Black-Backed Gull	*Larus fuscus*	Amber	1
Wren	*Troglodytes troglodytes*	Amber	1
Hedge Accentor (Dunnock)	*Prunella modularis*	Amber	1

4.2.4 Amphibians

Widespread amphibian species in Scotland are offered protection from sale by Schedule 5 of the Wildlife & Countryside Act. Only the great crested newt (*Triturus cristatus*) and natterjack toad (*Epidalea calamita*) are offered full protection in Scotland as European Protected Species.

No records of protected or notable amphibian species were located within the background data search.

[20] Badger records are treated as confidential by the data provider and as such are supplied to consultants without spatial reference.

[21] Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D., & Gregory, R. (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands, and Isle of Man. *British Birds*, 108: 708-746.

4.2.5 Reptiles

All reptiles are protected in Scotland by Schedule 5 of the Wildlife & Countryside Act 1981 which protects them against intentional or reckless killing and injury.

No records of protected or notable reptile species were found within the background data.

4.2.6 Non-Native Species

The principal legislature in Scotland which governs non-native species is the Wildlife & Countryside Act (1981). However, the Wildlife and Natural Environment (Scotland) Act 2011 no longer lists specific species to which the legislature applies, instead noting that any species which occurs in the wild Scotland "outside of their native range" is a non-native species and thus it is an offence to release or allow to be released such a plant or animal in to the wild.

Records of non-native species are presented within **Table 4.7**.

Table 4.7. Non-native species records received from within 2km of the Site.

Species Common	Species Latin	Designations	No. Records
Grey Squirrel	*Sciurus carolinensis*	INNS	10

4.2.7 Terrestrial Invertebrates

A number of terrestrial invertebrates are offered full or partial protection by Schedule 5 of the Wildlife & Countryside Act 1981 whilst others are conservation priority species on national or regional lists.

No records received from the background data search were of protected or notable terrestrial invertebrate species.

4.2.8 Fish

Five fish species in Scotland receive full or partial protection under Schedule 5 of the Wildlife & Countryside Act 1981, others are listed as priority species of conservation concern on regional or national lists.

No records were received of protected or notable fish species from the background data search**.**

5 Field Study Results

5.1 Habitats

Phase 1 Habitats are spatially plotted in relation to the site within **Appendix A, Figure 2**.

5.1.1 A.1.1.1. Broadleaved semi-natural woodland

Small pockets of habitat peripheral to the Site can be defined as broadleaved semi-natural woodland. The woodlands are generally very similar in composition although the differences are notable. The canopy is comprised beech (*Fagus sylvatica*), silver birch (*Betula pendula*), downy birch (*Betula pubescens*), oak (*Quercus robur*), cherry (likely *Prunus padus*), ash (*Fraxinus excelsior*), wych elm (*Ulmus glabra*), Scots pine (*Pinus sylvestris*), sycamore (*Acer pseudoplatanus*), horse chestnut (*Aesculus hippocastanum*) and at least two species of willow (*Salix* spp.). The canopy was roughly equal in species distribution with a slight tendency towards silver birch, beech and elm. The shrub layer is frequent in younger silver birch and bramble (*Rubus fruticosus*). Hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), rowan (*Sorbus aucuparia*) and holly (*Ilex aquifolium*) are more occasional within the shrub layer. Dog rose (*Rosa canina*), common gorse (*Ulex europaeus*) and honeysuckle (*Lonicera periclymenum*) is rarely part of the shrub layer. The ground layer is frequent in stinging nettles (*Urtica dioica*), male fern (*Dryopteris filix-mas*), wood avens (*Geum urbanum*) and ground elder (*Aegopodium podagraria*). Spear thistle (*Cirsium vulgare*), sticky willow (*Galium aparine*), common knapweed (*Centaurea nigra*) and bush vetch (*Vicia sepium*) can be found more occasionally. Foxglove (*Digitalis purpurea*) and purple deadnettle (*Lamium purpureum*) could be found rarely, preferring the woodland edges or clearings.

The northeastern woodland is perhaps notable for having a shrub layer dominated by rhododendron (*Rhododendron ponticum*). The semi-natural woodland around Townend House in the east is also somewhat notable for having a frequently higher proportion of horse chestnut.

Image 1. Broadleaved semi-natural woodland along the northeastern edge of the Site.

5.1.2 A.3.1. Broadleaved scattered trees

Two sections of habitat; one along the eastern edge of the Site (contiguous with the woodland around Townend House) and one within the Site to the east can be described as broadleaved scattered trees. Beech frequently makes up the canopy layer with oak, sycamore and ash being rare. The shrub layer is mostly clear with the rare hawthorn. The ground layer is dominated by grass species, predominantly Yorkshire fog (*Holcus lanatus*) with cock's-foot grass (*Dactylis glomerata*) being frequent. Meadow foxtail (*Alopecurus pratensis*), crested dog's tail (*Cynosurus cristatus*) and tufted hairgrass (*Deschampsia cespitosa*) were more occasional with the hairgrass being more frequent in the habitat

near Townend house. Silverweed (*Argentina anserina*), stinging nettles and meadow buttercup (*Ranunculus acris*) were found frequently alongside the grasses. Common chickweed (*Stellaria media*), broadleaved dock (*Rumex obtusifolius*) and a species of horsetail (*Equisetum* sp.) could be found more occasionally with the horsetail tending towards nearby watercourses. Common sorrel (*Rumex acetosa*), common dandelion (*Taraxacum officinale*) and lesser stitchwort (*Stellaria graminea*) were rare.

Image 2. Broadleaved scattered trees with broadleaved woodland behind.

5.1.3 B.2.2. Semi-improved neutral grassland

Most of the fields crossed were grazing pastures, in the process of becoming overgrown, and can be described as semi-improved neutral grassland. Yorkshire fog was dominant within the grasslands and perennial ryegrass (*Lolium perenne*) was abundant. Meadow foxtail and cock's-foot grasses were more occasional. Crested dog's tail was rare and tended towards the margins of the habitat. Creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*) could be found frequently within the grasslands. Broadleaved dock and hop trefoil (*Trifolium campestre*) could be found more occasionally with the hop trefoil tending to clumps within the habitat. Meadow buttercup, soft rush (*Juncus effusus*), common sorrel, common chickweed and common daisy (*Bellis perennis*) were rare with the rush tending towards clumps around poached sections of field.

Image 3. Semi-improved neutral grassland.

5.1.4 B.4. Improved grassland

A couple of fields within the Site were recently cut and had a noticeably reduced species composition. Grass identification was much more challenging due to the recent cut, but Yorkshire fog appeared to be frequent. Fine bladed grasses such as rough meadow grass (*Poa trivialis*) and meadow foxtail appeared to be collectively abundant. Creeping buttercup was also abundant but kept very low. Meadow buttercup and perennial ryegrass were more occasional with the ryegrass seemingly limited to field edges. Soft rush and common daisy were found rarely with the rush tending to clump to particular areas of the field or near drain edges.

Image 4. Improved grassland.

5.1.5 G.2. Running water

Running water refers to the Rumbling Burn which runs across and along the Site as it flows south/southwest. It also includes drains to assist drainage of the surrounding fields.

5.1.6 J.2.1.1. Intact species-rich hedgerow

Most of the fields were bounded by hedgerows with a relatively high species variety leading to their categorisation as intact species-rich hedgerows. Hawthorn was abundant and tended to make up the main backbone of the hedgerow. Sycamore, trained low and shrubby, was a frequent addition to the hedgerow although was less prevalent in hedgerows in the east of the Site. Wych elm was an occasional part of the hedgerow, again trained low and shrubby. Ash, dog rose, bramble, common gorse and blackthorn (*Prunus spinosa*) were rare members of the hedgerows with blackthorn tending to be found in the hedgerows on either side of Townend road. Yorkshire fog was the most abundant species within the underlayer of the hedgerows. Red campion (*Silene dioica*), tufted vetch (*Vicia cracca*), red fescue (*Festuca rubra*) and common sorrel were frequently found along the hedgerows with red fescue seeming to prefer the less disturbed side of the hedgerow such as the roadside. Stinging nettles, little robin (*Geranium purpureum*), spear thistle (*Cirsium vulgare*), meadow foxtail and meadowsweet (*Filipendula ulmaria*) were found occasionally with the meadowsweet tending to form clumps along the edge of the hedgerow. Common hogweed (*Heracleum sphondylium*), greater bird's-foot-trefoil (*Lotus pedunculatus*), rosebay willowherb (*Chamaenerion angustifolium*), cock's-foot grass, sharp-flowered rush (*Juncus acutiflorus*), soft rush and white clover were found more rarely amongst the hedgerow underlayer.

Image 5. Intact species-rich hedgerow running along the northwestern edge of the Site.

5.1.7 J.2.1.2. Intact species-poor hedgerow

The hedgerows within the fields tended to be more species poor. Hawthorn dominated the hedgerows with occasional blackthorn nearby other hedgerows containing it. The ground layers were functionally identical but with the curious absence of red fescue in hedgerows with fields on either side.

Image 6. Intact species-poor hedgerow separating fields.

5.1.8 J.2.2.2. Defunct species-poor hedgerow

Very few of the hedgerows, usually limited to the northeast of the Site, were defunct species-poor hedgerows. These hedgerows tended to contain only hawthorn and the ground layers were reflective of the surrounding grasslands (usually semi-improved neutral grassland) with identical species compositions.

Image 7. Defunct species-poor hedgerow

5.1.9 J.2.3.1. Species-rich hedgerow with trees

Identical to the species-rich hedgerows but with the addition of large trees. Usually ash but in some cases beech, sycamore, cherry or oak. Trees were often not spread out in regular intervals but tended to clump together within 20-30 metres of one another.

The hedgerows bordering the track from Townend house, in the southern half of the Site, are notable as they contained a much wider variety of trees. They contained ash, beech, birch, oak, horse chestnut, willow and cherry.

Image 8. Species-rich hedgerow with trees (right).

5.1.10 J.2.3.2. Species-poor hedgerow with trees

Identical to intact species-poor hedgerow but with the addition of large trees. Tended towards ash but beech, sycamore and oak were also present.

Image 9. Species-poor hedgerow with trees.

5.1.11 J.2.4. Fence

Every field was bounded by stock fences, usually a simple wire fence with barbed wire line on the topmost wire.

5.1.12 J.2.5. Wall

Parts of the northern edge of the Site were bounded by a drystone wall, partially collapsed in some places. This feature is notable for having a long, relatively unobstructed, southern facing aspect.

Image 10. Partially collapsed drystone wall. The walls' condition improves as it proceeds east.

5.1.13 J.4. Bare ground

Bare ground refers primarily to the tarmac roads running peripheral or through the Site. It also refers to a bare earth track leading from Townend house.

All of the hedgerows and all of the peripheral woodlands would be classed as United Kingdom Biodiversity Action Plan (UKBAP) and Scottish Biodiversity List (SBL) priority habitats. The woodlands would be covered as Lowland mixed deciduous woodland for both of these priority habitat categorisations. The South Ayrshire Local Biodiversity Action Plan (LBAP) includes hedgerows and drystone dykes (walls) as priority habitats, both covered somewhat generally as boundary features.

5.2 Flora

There was no notable species of plants located during the survey. The Site and surrounding areas are currently used as pasture or hay meadow (not to be confused with the lowland meadow priority habitat) and it is not normally expected to find communities of note within these habitats. Works must be mindful of notable communities colonising as they continue development, especially if there are significant delays between preparation and operational phases of work. Recommendations to consider floral communities, should they arise, are presented within **Section 6 and 7** of this report.

5.3 Badgers

No signs of badgers (*Meles meles*) were found over the course of the survey. The Site is in a rural location and there is a relatively large unbroken range of open agricultural land to the west of the Site, which could be expected to provide ample territory for badger. Of particular note is the small woodland plantation and farmland mosaic to the immediate northwest of the Site which could be expected to be prime badger territory. A few mammal paths could be found crossing through the Site but the Site appears to see regular use from livestock and is a popular dog walking area for the nearby settlement. As such, any field signs would have been virtually indistinguishable from each other. Badger are more likely to create setts within nearby semi-natural habitats than the occupied livestock fields but it is highly likely that badger are still crossing the Site to forage or access surrounding habitats. As badgers are expected to pass through the Site, requirements and recommendations to consider badger are presented within **Section 6** of this report.

5.4 Pine Marten

No field signs for pine marten (*Martes martes*) were found during the survey and the Site is outwith the currently understood range. Generic mammal entrapment recommendations in **Section 6** will cover pine marten, should the currently understood distribution be incorrect.

5.5 Red Squirrel

No field signs for red squirrel (*Sciurus vulgaris*) were found during the survey and the Site is outwith the currently understood range. As such, red squirrel are not considered further in this report.

5.6 Bats

The Site will have high value to local bat populations as both a foraging and commuting corridor. The Site holds moderate value as a roosting area due to limited number and scope of tree features observed. Local bats are very likely to use the extensive hedgerow connections to traverse the Site moving to and from feeding grounds. Symington is likely to hold a number of roost spaces for common bats such as the pipistrelles (*Pipistrellus* spp.) and we could expect to see them move through the Site to reach the peripheral woodlands such as the woodland plantation to the northwest. The edges of the woodlands are also likely to become focal points for foraging meaning that bats will be within the Site to forage along peripheral features. The hedgerows themselves, particularly those with trees, will be used as feeding corridors in their own right and can be expected to have a wide variety of prey items (indicating a wider range of bat species may be drawn to use them).

A number of buildings are present adjacent to the Site, however, these were outside the scope of the survey and could not be accessed to determine the presence of roosting features.

A large number of trees peripheral to the Site contained features which could be used by roosting bats and a significant (although smaller) number of trees within the Site also contain potential roosting features. Some trees in the field areas which could not be accessed due to livestock are likely to have been missed and the wood around Townend house, presumed to be private property, was also not accessed.

As features which could be utilised by bats are present within the Site, requirements and recommendations relating to bat species are presented within **Sections 6** & **7** of this report. **Table 5.1** below shows the results of the roost assessment which could be carried out on trees within the Site.

Table 5.1. Preliminary Roost Assessment results for trees within the Site.

TN	Description / Potential Roosting Features	Evidence of bats?	Roost Potential
1	Semi-mature beech with the following features: • Western aspect at 4 metres height. Branch fracture with rot and cavity; and • Northern aspect at 8 metres height. Old fracture with rot and cavity.	No	PRF-I
2	Mature beech with the following features: • Southeast aspect at 5 metres. Branch fracture with rot and cavity; and • East aspect, ground to 6 metres height. Ivy coating.	No	PRF-I
3	Young beech with the following feature: • Southeast aspect at 4.5 metres height. Branch fracture with rot and cavity.	No	PRF-I
4	Mature oak with the following features: • Southeast aspect at 11 metres height. Branch fracture with rot and cavity; and • Delaminated bark near trunk apex.	No	PRF-I
5	Mature oak with the following feature: • Southeast aspect at 8 metres. Old branch fracture with rot and cavity.	No	PRF-I
6	Mature beech with the following feature: • Southeast aspect at 4 metres height. Knothole with rot and cavity which appears to lead up main trunk.	No	PRF-M
7	Young beech with the following feature: • Southeast aspect at 1.5 metres height. Knothole with rot and cavity.	No	PRF-I
8	Mature ash with the following feature: • Southeast aspect at 8 metres height. Old branch fracture with sizeable hole, large enough for owl. Appears to be hollow at top.	No	PRF-I
9	Mature beech with the following feature: • Southeast aspect at 3 metres height. Old branch fracture with possible upward facing cavity.	No	PRF-I
10	Mature oak with the following features: • Southeast aspect at 7 metres height. Branch fracture with rot and cavity around collar; and • Southeast aspect at 8 metres height. Branch fracture with rot and cavity around collar.	No	PRF-I
11	Ash afflicted with dieback and the following feature: • South aspect at 3.5 metres height. Branch fracture with presumed cavity.	No	PRF-I
12	Mature oak with the following feature:	No	PRF-I

	• Southeast aspect at 9 metres height. Weld with cavity		
13	Sycamore with the following feature: • Dense ivy coat.	No	PRF-I
14	Ash afflicted with dieback and the following feature: • Dense ivy coat.	No	PRF-I
15	Mature sycamore with the following feature: • Dense ivy coat.	No	PRF-I
16	Mature beech with the following feature: • Butt rot with cavity leading up main trunk.	No	PRF-M
17	Mature beech with the following features: • North aspect at 3 metres and 7 metres height. Knotholes with rot and cavity.	No	PRF-I
19	Mature sycamore with the following feature: • East aspect 3 metres. Very old branch fracture with cavity. Possible rot and cavity extending up trunk.	No	PRF-M
22	Mature dying sycamore with the following feature: • South aspect at 4 metres height. Branch fracture with rot and cavity.	No	PRF-I
23	Semi mature ash with the following feature: • North aspect at 2.5 metres height. Knothole with rot and cavity leading up main trunk.	No	PRF-M
24	Mature ash with the following feature: • West aspect at 3 metres height. Knothole with rot and cavity.	No	PRF-I
25	Mature sycamore with the following features: • South aspect butt rot with large cavity; • South aspect at 8 metres. Branch fracture with rot and cavity; and • Southeast aspect at 6 metres and 10 metres height. Branch fractures with rot and cavity.	No	PRF-M
26	Dying ash with the following feature: • East aspect at 2.5 metres. Long split with rot and cavity.	No	PRF-I
27	Dying ash with the following feature: • West aspect at 3 metres height. Knothole with rot and cavity.	No	PRF-I
28	Mature ash with the following feature: • South aspect at 4 metres height. Knothole with rot and cavity; and • South aspect at 4.5 metres height. Rot hole.	No	PRF-I
29	Mature beech with the following feature: • South aspect at 4 metres. Knothole with rot and cavity.	No	PRF-I
30	Mature beech with the following feature: • Southeast aspect at 4 metres height. Knothole with rot and cavity.	No	PRF-I
31	Mature beech with the following feature: • Southeast aspect at 4 metres height. Branch fracture with rot and cavity.	No	PRF-I
32	Mature ash with the following feature: • Southeast aspect at 3.5 metres height. Knothole with rot and cavity	No	PRF-I
33	Mature ash with the following feature: • Northeast aspect at 4.5 metres height. Knothole with rot and cavity	No	PRF-I
34	Mature beech with the following features: • East aspect at 4 metres height. Knothole with rot and cavity; and	No	PRF-I

- East aspect at 6 metres height. Branch fracture with rot and cavity.

5.7 Otters

No signs of otter (*Lutra lutra*) were found over the course of the survey but a fairly large section of the burn was unable to be surveyed. The Rumbling burn has multiple feeding burns and eventually leads to the Pow burn and the Firth of Clyde. Due to how connected the Rumbling burn is to other watercourses it is possible that otter may explore nearby/into the Site. Any otter found nearby the Site are likely just visiting as they explore connected habitats and as such should be protected from harm by the generic entrapment avoidance recommendations made in **Section 6** of this report. Due to the limited survey of the burn a specific protected species survey of the watercourse is also recommended in **Section 7**.

5.8 Water Vole

No signs of water vole (*Arvicola amphibius*) were located over the course of the survey but a fairly large section of the burn was unable to be surveyed. Similar to otter, the watercourses are well connected enough to suspect water vole may have colonised the Site areas nearby. Due to the limited survey of the burn a specific protected species survey of the watercourse is recommended within **Section 7**.

5.9 Beaver

No signs of beaver (*Castor fiber*) were located over the course of the survey and the area is far outside the known distribution within the U.K. As such beavers are not expected to be a concern on this project and are not considered further in this report.

5.10 Other Mammal Species

No signs of brown hare (*Lepus europaeus*) were found during the survey, but they appear within the background data search. The Site contains habitats that would be expected to find brown hare foraging within and they could be expected to be moving through the Site. Brown hare are protected during the closed season (1st February – 30th September) and gain protection from cruelty when entrapped (similar to rabbit). Generic recommendations to prevent mammal entrapment, present in **Section 6** of this report, should protect brown hare within the perspective of the project.

5.11 Birds

Bird activity was largely focussed around the hedgerows and often species were identified through song rather than visual confirmation. The exceptions to this were the larger birds such as carrion crow (*Corvus corone*) and lesser black-backed gull (*Larus fuscus*) spotted loafing in the field interiors. A single buzzard (*Buteo buteo*) was observed above the woodland plantation immediately northwest of the Site being fended off by a pair of magpie (*Pica pica*). House martin (*Delichon urbicum*) were localised to the farm buildings within the Site and the swifts (*Apus apus*) were only observed on the northern edge, close to Langholm farm. The hedgerows and trees are obvious focal points for bird nests both within and peripheral to the Site, but it is highly likely that the fields/field margins are being used for nesting by meadow pipit (*Anthus pratensis*). It is possible that skylark (*Alauda arvensis*), despite not being recorded during the survey, also use the field and field margins for nesting. A couple of nests (**TN 11, image 11 and TN 20, image 12**) were noted in the peripheral habitats to the Site but their occupiers and usage could not be determined from the ground. One of the potential bat roosting features (**TN 8, image 23**) is a hole large enough that it could be used by owls (particularly *Strix Aluco*¸Tawny owl) but again no further evidence of owls occupying the roost were found.

The bird species noted during the survey visit and their conservation designations are presented within **Table 5.2**.

Table 5.2. Bird species observed within the Site during the PEA survey.

Species common	Species Latin	Designations
Linnet	*Linaria cannabina*	SBL, Red
Common Swift	*Apus apus*	SBL, Red
Meadow Pipit	*Anthus pratensis*	Amber
Hedge Accentor (Dunnock)	*Prunella modularis*	Amber
Lesser Black-Backed Gull	*Larus fuscus*	Amber
Carrion Crow	*Corvus corone*	
Robin	*Erithacus rubecula*	
Blue Tit	*Cyanistes caeruleus*	
Goldfinch	*Carduelis carduelis*	
Common Buzzard	*Buteo buteo*	
Pheasant	*Phasianus colchicus*	
Common Blackbird	*Turdus merula*	
Great Tit	*Parus major*	
Swallow	*Hirundo rustica*	
Magpie	*Pica pica*	

Image 11. Large nest near the top of a mature oak, potentially a raptor nest.

Image 12. Nest materials in the nook of an old branch fracture.

5.12 Amphibians

No definitive signs of amphibians were found during the survey and they are absent from the background data. The Site is outwith the currently understood range of Great Crested Newt (*Triturus cristatus*) in Scotland. It can be expected that common U.K species such as Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*) would be found moving throughout the Site. Thus, good practice recommendations to safeguard amphibians are presented within **Section 6** of this report.

5.13 Reptiles

No signs of reptiles were noted during the survey and they are absent from the background data. The habitat of the Site, particularly the edges of the woodland could be considered good habitat and the semi-improved neutral grassland has enough sward variation to be considered good basking habitat. However, considering that the Site and surrounding habitats are relatively disconnected from good habitat in the wider area, it is unlikely reptiles will reside there. Due to a small possibility of reptile presence, good practice recommendations to safeguard reptiles are presented within **Section 6** of this report.

5.14 Non-Native Species

Two relatively large sections of rhododendron (Rhododendron ponticum) are present in the eastern and southern areas of the Site. The eastern woodland is particularly notable for having a thick shrub layer dominated by rhododendron and it is unclear whether control measures are an option (as it is outwith the red line boundary). The development will have to be constantly aware of colonisation during the different phases of construction, particularly around periods of rest such as weekends or holidays. Any areas which have been disturbed by clearance for example, and then left for a time, should also be regularly checked for non-native colonisation. **Section 6** of this report has recommendations and requirements for controlling invasive non-native species within the Site.

5.15 Terrestrial Invertebrates

No notable terrestrial invertebrates were recorded during the survey and habitats adjacent to the Site are unlikely to provide suitable opportunities for communities of note. Any notable communities which may exist nearby are unlikely to be lost as a direct result of works.

5.16 Aquatic Ecology

No signs of fish or notable fish habitats were found over the course of the survey. That being said, burns and drainage ditches are likely to feed into higher quality habitats downstream and as such, Pollution Prevention Guidelines within **Section 6** should be followed.

6 General Requirements and Recommendations for Project Progression

Table 6.1 includes generic requirements and recommendations for progression with this project based on the data collected during the survey. Where there is any doubt about the practicality of the mitigative elements presented below, advice should be sought from a suitably qualified ecologist.

Table 6.1. Requirements and Recommendations for mitigating effects on identified ecological receptors.

Ecological Receptors	Impacts	Mandatory Requirements	Recommendations
Designated sites, priority habitats, and aquatic environments.	Deposition of pollutants resulting in damage to key receptors	It is a **mandatory requirement** that the Guidelines for Pollution Prevention[22] be adhered to at all times during these and ongoing works. In particular, those relating to the storage of machinery and chemicals (GPP2, PP7, GPP8, GPP13 & GPP26), and works near water (GPP5) should be adhered to. It is also a **mandatory requirement** that measures be engineered into the construction process which negates the mobilisation of soils and airborne pollutants such as dust.	It is **recommended** that consultation with a suitably qualified ecologist, the planning authority, and any engineering contractor be commissioned to engineer a suitable Construction Environmental Management Plan (CEMP) which would ensure that effects to national sites during the construction and operational phases of this project can be negated.
Flora and invertebrates	Damage to existing floral communities and those of surrounding ecosystem, due to escape of exotic flora.		It is **recommended** that any landscaping and planting for the site use only native floral species of local provenance so as to prevent the establishment of non-native flora within the local area, and to keep the Site with the general ecological character of the surrounding ecosystems. It is **recommended** that any floral species be introduced using seed collected from similar habitats locally and introduced gradually so as to establish a natural balance of floral species within this habitat, and so as not to cause damage to the habitats within the Site.

[22] https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/

Ecological Receptors	Impacts	Mandatory Requirements	Recommendations
Protected Terrestrial Mammal Species	Entrapment of protected terrestrial mammals within open excavations or stored equipment and machinery resulting in death.	There is the possibility that protected mammal species (notably badger or otter) may pass through the site when dispersing throughout the wider landscape. Consequently, it is a **mandatory requirement** that any open excavations which are created as part of the works should be provided with a slope of no greater than 45° which will ensure that any mammals which become entrapped whilst moving through the landscape are able to escape. Where mammal entrapment occurs, all works should stop and the advice of a suitably qualified ecologist should be sought immediately. Prior to the commencement of works each day, stored equipment (e.g. pipes or machinery) **must** be checked prior to their use or the starting of machinery. This is to ensure that any protected terrestrial mammals who may be using them for shelter are not entrapped. Where mammals are noted within stored material or machinery, a suitably qualified ecologist should be contacted to advise.	It is **recommended** that any open excavation is not left open-topped and be covered over overnight by wooden panelling or equivalent and that any materials stored onsite (e.g. barrels or pipes) be stored within sealed containers to minimise risk of mammal use or entrapment.
Bats, invertebrates, and other nocturnal wildlife.	Loss or degradation of habitat due to spill of artificial lighting.		It is **recommended** that, if any lighting be used during or post development, exterior lighting be avoided or be low-level, motion-sensitive or alternatively able to be switched on and off, and be directional to minimise the light spill into semi-natural habitats. Artificial lighting is harmful to wildlife by altering circadian rhythms and altering the availability and spatial spread of resources. Guidance on artificial lighting design which would be wildlife friendly is available from the Institute of Lighting Professionals[23].

[23] https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/

Ecological Receptors	Impacts	Mandatory Requirements	Recommendations
All wildlife	Damage to- or loss of-habitats through vegetation clearance.		It is **recommended** that, wherever possible, existing trees and florae be retained within the plot. However, we appreciate that root protection zones may make this an unviable option and so suggest that the use of standards/heavy standards in the landscaping regime would help to retain the value within the site for wildlife passage. Wherever possible, these should form linear stands of trees in unlit areas and should comprise native species to encourage invertebrate diversity within the plot thus benefiting predatory species.
All Wildlife	Severance of habitats causing population divergence		To prevent barriers to dispersal, designs for the proposals should account for "green" corridors within the proposed development. These should look to include: • Linear floral planting which connect each side of the Site without interruption including interruption by artificial lighting; • Gaps in and beneath boundary fences which would permit passage by wildlife species (generally minimum of 300mm width and height); and • Consideration to underpasses within any road infrastructure proposed which would facilitate passage by wildlife.
Birds	Destruction of active bird nests.	As active bird nests are protected by law from destruction, it is a **mandatory requirement** that measures be put in place to safeguard nesting birds during any vegetation clearance as part of these proposals. If the works programme cannot be amended to facilitate works outside of the nesting bird season, it is **suggested** that a pre-works check for nesting birds be undertaken no more than 48 hours prior to works. If active nests were found, there would be **no other option** but	It is **recommended** that any vegetation clearance be completed outwith the nesting bird season (e.g. outwith March to August inclusive). This reduces the risks of damaging or destroying active birds nests.

Ecological Receptors	Impacts	Mandatory Requirements	Recommendations
		to delay works until nests have fledged chicks which could be a period of up to ten weeks.	
Amphibians and reptiles	Reckless killing or injury during works.	It is a **mandatory requirement** that reptiles be safeguarded from intentional or reckless killing or injury during works within the site.	It is **recommended** that a fingertip search of the Site for amphibians be made prior to the commencement of digging. Where identified, amphibians should be moved out of the way of the works area. **Adders should not be touched** and, if located, **works should be delayed** until these have left the Site of their own accord.
Non-native Species	The spread of invasive weeds outside of the Site through movement of contaminated soils.	It is a **mandatory requirement** that invasive species not be allowed to- or caused to- spread during the ongoing works.	

7 Site-specific Requirements and Recommendations for Project Progression

Table 7.1 includes all identified requirements and recommendations for progression with this project based on the data collected during the survey. Where there is any doubt about the practicality of the mitigative elements presented below, advice should be sought from a suitably qualified ecologist.

Table 7.1. Requirements and Recommendations for mitigating effects on identified ecological receptors.

Ecological Receptor	Impacts	Mandatory Requirements	Recommendations
UKBAP / SBL Priority Habitats	Damage or degradation to UKBAP Priority habitats within and adjacent to the site during the construction and operational phases of the project.	It is a **mandatory requirement** that the UKBAP and SBL priority habitats (lowland mixed deciduous woodland and hedgerows) are retained. It is **further recommended** that these habitats are protected from any indirect effects originating from the proposed development.	It is **recommended** that the LBAP habitats (hedgerows and drystone dyke) are retained as much as possible and are protected from any indirect negative effects originating from the proposed development. It is **further recommended** that these habitats are enhanced by either expanding them or by ensuring a connection between them and other semi-natural habitats.
Bats	Damage to- or loss of potential bat roosts	As PRF-M and PRF-I bat roosting potential has been identified in trees within the Site, if works using heavy plant or machinery within 30m of any of these trees is required, then further surveys to identify the presence of bats and their roosts, and characterise any roosts present are a **mandatory requirement** in line with current good working practice should any works be undertaken that may affect, or be in close proximity to, these trees. As a guide, any works within 15m of potential roosting features could cause impacts on bat roosts. The survey effort should be in line with the current BCT Guidelines (4th Edition), this should comprise: • Aerial assessment (tree-climbing by a licensed bat worker); or • Up to three dusk emergence surveys conducted in the period May to September	It is **recommended** that any lost roost potential is replaced by installing bat boxes in woodlands within/around the Site. More specific recommendations are made within the enhancement recommendations (**Section 8**) of this report.

Ecological Receptor	Impacts	Mandatory Requirements	Recommendations
		inclusive (with a minimum of two of these in May-August inclusive); • Surveys should be led by a licensed bat worker; • Surveys should commence no less than 15 minutes prior to sunset and end no less than 90 minutes after sunset; • Surveyors should be equipped with detectors capable of recording full-spectrum sound files; • Surveyors should make use of night vision aids (e.g. infrared cameras or thermal imaging cameras) that are capable of recording and with correct illumination as applicable; • Surveys should be spaced a minimum of three weeks apart; and • Surveys should be conducted in appropriate weather conditions (e.g. a minimum of 10°C dusk temperature, little to no wind, and little to no rain). For trees containing PRF-M features, three visits will be required in order to satisfy the licensed bat worker, local planning authority, and NatureScot of the size and status of any roosts and inform an application for a licence to disturb, damage, or destroy the roost.	
Otter	Damage to- or loss of otter holts, couches or rests	Due to the limited survey of the watercourses on the Site it is a **mandatory requirement** that a protected species survey for otter takes place prior to the works. Otter surveys can take place at any time of year but should avoid periods immediately after prolonged heavy rainfall or high water.	
Water Vole	Damage to- or loss of active water vole burrows.		It is **recommended** that works leave a 10-metre boundary from the top of watercourse banks to leave

Ecological Receptor	Impacts	Mandatory Requirements	Recommendations
			space for water vole to colonise the Site, should it become valuable.
Non-native Species	The spread of invasive weeds outside of the Site through movement of contaminated soils, plant, or personnel.		Given the proximity of large stands of rhododendron to the Site, it is **recommended** that regular surveys for invasive weeds take place within the Site. This would include the period after the works have completed. The surveys and any necessary control measures should be completed by a competent invasive weed specialist.

8 Project Options for Biodiversity Enhancement

This section includes all identified recommendations for Biodiversity Enhancement during progression with this project based on the data collected. Where there is any doubt about the practicality of the recommendations presented below, advice should be sought from a suitably qualified ecologist.

Ecological Receptor	Suggested Enhancement
Grasslands	We would encourage the development to retain as much of the semi-improved grassland as possible by either limiting the land take of the development or by incorporating the existing grassland within the landscaping. The field margins tend to be where the greatest variety of species are contained and it is strongly recommended that the margins are retained both to support the remaining diversity and to act as pollinator corridors around the proposed development. We would also encourage the client to maintain any firebreaks/woodland rides as native meadow. Implementing a late winter/early spring cutting regime (January/February) would help open the sward to encourage a wider range of flora to grow. The client can also consider seeding, ideally after the cuts, to provide flora that are missing from the current assemblage. A Mavisbank[24] or MG5 meadow[25] mixture provides many of the species we might expect to find in a lowland grassland. Both mixtures also contain yellow rattle (*Rhinanthus minor*) a species which can help control grass growth without cutting as often. For a more focussed planting effort (as the mixes already contain some species present within the grassland) the client may wish to consider vegetative plugs of some of the species present in the mixes instead of seeding the whole mixtures. We would recommend that the client consider planting/seeding some yellow rattle as this will naturally shift the grassland develop into a more ecologically valuable area over time. Areas of grass near hedgerow or woodland edges should consider using a mix similar to a hedgerow meadow mix[26] and woodland meadow mix[27] respectively. These mixes contain more shade tolerant species with the woodland mix containing the most shade tolerant species. After establishment, the habitats should only require a single cut per year in early spring to maintain the composition (preferably very early spring). Ideally the cuts would not be to ground level as this can damage some plant species, cutting to 15cm sward height will be appropriate in most instances. The management plan should include multiple cut heights within the habitat, if possible, to create a more complex habitat structure and we would encourage the client to consider a rotational cutting regime to create the same effect. It is very important that the arisings from cutting are removed from the habitat. The arisings will act as a source of nutrients that can skew the plant species quite heavily or encourage colonisation from undesirable species. If a species becomes over dominant it may be necessary to cut more often. The ideal time to cut will vary depending on the species being controlled but generally the management plan will be aiming to cut in spring or autumn and prior to the offending species seeding, this will often lead to a second cut in late summer or autumn. If the species being controlled is particularly vigorous it may require multiple cuts throughout spring and summer.

[24] https://www.scotiaseeds.co.uk/shop/mavisbank-mix/
[25] https://www.scotiaseeds.co.uk/shop/mg5-meadow-mix/
[26] https://www.scotiaseeds.co.uk/shop/hedgerow-mix/
[27] https://www.scotiaseeds.co.uk/shop/woodland-mix/

Ecological Receptor	Suggested Enhancement
	As the non-developed area within the Site is very limited it may be necessary (to demonstrate an ecological enhancement for the client to consider off-site improvements. We would recommend the client open a discussion with the local council (South Ayrshire) as they may have a site already earmarked for improvement. If sufficient agreement is made prior to the beginning of the works the client may be able to "recycle" turf layers unable to be used within the Site by transplanting them to the improvement area earmarked by the council. If transplanting the turf becomes a viable option we would strongly recommend that the improvement area be as local as possible to prevent the introduction of a floral composition not in keeping with the surroundings.
Hedgerows	Within the current landscaping plans there does not appear to be any hedgerow planting, but we would encourage the client to consider some along the linear boundaries within the development such as between woodland plantation parcels. We would also strongly recommend that the existing hedgerows be retained and enhanced where possible. Ideally the client would consider a species-rich hedgerow with intermittent trees but even a species-rich hedgerow without trees would greatly improve connectivity along the periphery of the Site as well as through, if installed between parcels or along paths. Hedgerows should be constructed of at least three native woody species and are typically 70% hawthorn (*Crataegus monogyna*) with the remaining 30% being other woody species. Other woody species includes blackthorn (*Prunus spinosa*), hazel (*Corylus avellana*), smaller willow species such as goat willow (*Salix caprea*), alder (*Alnus glutinosa*), yew (*Taxus baccata*) and holly (*Ilex aquifolium*). The alder and yew may have to be maintained regularly to keep them trained low and shrubby. With woody species forming the main hedgerow skeleton the planting can include climbers such as honeysuckle (*Lonicera periclymenum*), guelder rose (*Viburnum opulus*), bittersweet (*Solanum dulcamara*), dog rose (*Rosa canina*), bramble (*Rubus fruticosus*) and common ivy (*Hedera helix*). Those hedgerows which can be planted with intermittent trees along the length should consider native trees such as those in the woodland section below. Ideally hedgerows will be planted in such a way that they connect to woodland habitat or other hedgerows, (which eventually connect to woodland habitat) ensuring that hedgerows form connections between semi-natural habitats enhances their value as an ecological feature. For the purposes of this report, plantation woodland parcels are not considered connective features between semi-natural habitats as ultimately they will be felled thereby removing their ecological value entirely. Existing retained woodland and any new planted woodland which is exempt from being felled will be considered connective features. Managing hedgerows can be a relatively simple affair depending on the final aims of the landscaping. Hedgerows should be cut once every two or three years to promote maximal blossoming for pollinators and encourage the hedgerow to grow thick. Ideally, each hedgerow would be cut rotationally i.e. the western hedgerow one year, the southern hedgerow the following year and the eastern hedgerow the next again year. The hedgerows should be trimmed to an 'A' shape (in cross section), with a wider base narrowing towards the top, to provide maximum value/protection for wildlife whilst allowing light to reach the surrounding ground flora. The timing of hedgerow trimming is extremely important to wildlife. Trimming should always occur outwith the breeding bird season (March to September inclusive) and, where possible, should be delayed until January or February to allow the berries to be foraged over winter.
Woodland	No current plans appear to discuss the removal of any existing trees within the Site but, if trees must be removed, we would encourage that any trees being removed are done so outwith the nesting bird season else a nesting bird check will be required the morning of

Ecological Receptor	Suggested Enhancement
	their removal. We would encourage that the removed trees be kept within the habitat as dead/decaying wood as this is an important woodland niche that would be relatively rare within the newly established plantation. The wood can be simply piled in a discreet corner of the nearby woodland habitat (if the landowner permits) or in a discreet corner of the Site near the woodland habitat. We would encourage that the species used within any tree planting regime are all native. Species such as oak (*Quercus robur*), Scot's pine (*Pinus sylvestris*), wych elm (*Ulmus glabra*), birch (both *Betula pubescens* and *Betula pendula*), alder (*Alnus glutinosa*), aspen (*Populus tremula*), willow (*Salix* spp.), ash (*Fraxinus excelsior*), bird cherry (*Prunus padus*), crab apple (*Malus sylvestris*), elder (*Sambucus nigra*), wild cherry (*Prunus avium*), rowan (*Sorbus aucuparia*), juniper (*Juniperus communis*) and yew (*Taxus baccata*) are recommended. Given the presence of the species in the nearby woodland habitat we would recommend species appropriate for lowland woodlands but not already found nearby such as aspen, rowan, juniper, yew, cherry, plum and crab apple. Woodlands benefit from having a defined scrub layer and so any attempt at woodland creation should include shorter shrubby species such as elder, hawthorn, blackthorn and goat willow. A shrub layer should be established enough that it is definable but should not block all light from reaching the woodland floor. The current development proposal appears to include native broadleaf plantings which are presumably not intended as commercial crop. If the current proposal is not final then we would encourage the client consider native broadleaf plantings along the edges of woodland rides/fire breaks so that a permanent green corridor of grassland and woodland will cross parts of the Site. Creating woodland is an incredibly long process as multiple decades are required for woodlands to mature, and centuries may be required for woodland communities to meet climax definitions. This process can be kickstarted by using heavy standard (or greater) plantings. We would recommend a variety of tree ages within the initial plantings and subsequent woodland management should consider thinning/further plantings to create as broad an age range of trees both for the woodland as a whole and for each individual species. Woodland management tends to operate on much longer timescales than the other habitats mentioned in this report, but any planted woodlands should be inspected regularly to keep track of trees which have failed to establish. Selective cutting regimes may help to keep the ground layer open as the young trees establish themselves and should be considered in instances where thick shrubby vegetation begins to block young saplings (dogwood is a common offender). In this particular site, an aggressive cutting regime of spruce may be required to control their spread from nearby plantation parcels. Further new plantings may be required if tree ages or species begin to be favoured heavily by a small number of species. In the unlikely event that all plantings become well established trees, there may a requirement for selective thinning. Thinning is unlikely to be required within the first 5-10 years but becomes gradually more likely as the age of the woodland progresses. Thinning should be selective, ensuring that the trees being removed are not of uniform age or species to maintain the woodland complexity and diversity. Any thinned trees may have to be removed from site but, if minimal dead wood exists within the habitat, the plan should consider leaving one or two piles of dead wood to add complexity. Felled trees can be cut into sections and left in discreet woodpiles in corners of the Site. Dead wood is a desirable feature of woodlands and as such a small number of trees failing to take is perfectly acceptable, provided is not the majority of a single age-class or species.

Ecological Receptor	Suggested Enhancement
	As the non-developed area within the Site is very limited, it may be advisable for the client to consider offering assistance managing the woodland habitat around Townend house and to the east to achieve biodiversity enhancement. Complete removal of rhododendron would greatly help the existing woodlands to develop a native shrub layer and should also open up the ground layer to form features we would recognise of long-established woodlands. Removal of rhododendron will also be beneficial for the development plans as it will severely limit the spread of rhododendron into the newly established plantations and by extension the amount of effort required to keep the new plantations clear of it.
Hedgehog (*Erinaceus europaeus*)	Installation of hedgehog boxes within the landscaping would encourage uptake of the Site by hedgehogs. These boxes should be in a quiet area not subject to human or vehicular traffic, should face away from the prevailing wind conditions and be out of direct sunlight. A siting beneath existing or freshly planted shrubs would suffice. The boxes should include an opening of approximately 13cm x 13cm in diameter and should include an internal "baffle" with a sharp turn to prevent access from predatory species such as foxes or cats. Uptake of these boxes can be further increased by ensuring that there are suitable gaps (of 13cm x 13cm) beneath any fencing instated around the development.
Bats and Birds	Installation of bat and bird boxes within the landscaping of the Site would increase their suitability for these species. For birds, a mix of box sizes and type in line with RSPB guidance would increase the value for nesting species. For bats, it is recommended that woodcrete boxes which are "self-cleaning" (e.g. which are open at the bottom to allow droppings to fall free from the box and subsequently not require regular cleaning by a licensed bat worker) would enhance the Site for bat species. Guidance on the type and siting of bat boxes is available from the bat Conservation Trust[28]. It must be noted that bat boxes cannot be moved once installed and so careful placement with consideration to disturbance and lighting is strongly recommended.
Amphibians, reptiles, and Invertebrates	Log piles / Hibernacula could be instated within the Site which would provide suitable habitat for amphibians as well as for invertebrate species including saprophytic species such as beetle larvae. These should be instated within a sunny spot and within landscaping measures. Where possible, log piles should seek not to be too tightly piled to ensure there are gaps or varying sizes to create a number of different microclimates which would suit a wider variety of species. These may need to be regularly replaced. We would expect that the plantation parcels may have some preparation to create drainage for the woodland crop and so we would encourage the construction of swale and ponds to take advantage of this. Ideally, any swale/pond would be constructed to be a semi-natural habitat in its own right. The client can achieve this by planting the swale with marsh, wet tolerant and pond emergent vegetation to act as both a filtration system and semi-natural space for biodiversity. Encouraging the swale to lead to a semi-enclosed marshy area or even a pond could drastically expand the planting regimes available to the client encouraging a much more diverse set of species as well as introducing entirely new habitats to the immediate surroundings. A larger marshy area or pond would also give more space to plant filtration vegetation (such as rushes and reed mace) between the plantations and a main watercourse (such as the Pow burn). Depending on how wet local climatic conditions can be maintained we could expect marsh species such as water

[28] https://www.bats.org.uk/our-work/buildings-planning-and-development/bat-boxes

Ecological Receptor	Suggested Enhancement
	mint (*Mentha aquatica*), marsh woundwort (*Stachys palustris*), ragged-robin (*Silene flos-cuculi*), marsh-marigold (*Caltha palustris*) and meadowsweet (*Filipendula ulmaria*) to establish relatively easily. In wetter areas/ponds, we may even expect pond/emergent vegetation to establish such as flag iris (*Iris pseudacorus*), brooklime (*Veronica beccabunga*), water forget-me-not (*Myosotis scorpioides*) and creeping jenny (*Lysimachia nummularia*) to establish with relative ease. A properly constructed swale should remain wet most of the year and could become a valuable resource for local amphibians and invertebrates to use.
Invertebrates	Insect hotels including solitary bee houses could be instated within the new landscaping, in a sunny area next to suitable invertebrate foraging (e.g. wildflower planting). This would serve to increase the available habitat for invertebrate species and would in turn benefit the wider ecosystem through provision of additional ecological functions and through increased food resource for predatory species. Many of the suggestions discussed will directly benefit invertebrate populations by providing a wider variety of micro-climates and foraging options. It is recommended that the Client consider creating mounds for invertebrates[29] [30] if possible. An invertebrate mound/bank is best placed with a long south facing aspect and a hedgerow could be installed on the northern edge of the mound to provide additional screening for the development. Invertebrates will benefit from the broadest possible floral compositions, and we would recommend a blend of seed mixtures and potentially some vegetative plug plantings around any available landscaping areas. The client may wish to specifically include certain species such as common dog-violet (*Viola riviniana*), clover (*Trifolium* sp.), dyer's greenweed (*Genista tinctoria*) and bird's-foot-trefoil (*Lotus corniculatus*) to attempt to draw nationally important species such as pearl-bordered fritillary (*Boloria euphrosyne*), garden dart (*Euxoa nigricans*), white-spotted sable moth (*Anania funebris*) and dingy skipper (*Erynnis tages*) to the Site.

[29] http://www.magnificentmeadows.org.uk/assets/pdfs/How_to_create_an_earth_mound_for_wildlife.pdf
[30] https://butterfly-conservation.org/sites/default/files/2024-01/Butterfly%20Bank%20Factsheet_FINAL.pdf

Appendix A: Figures

Figure 1: Designated Sites.

EP Ecology Ltd.

Key

- Site Boundary
- 2KM Buffer
- Ancient Woodland Sites
- Local Nature Conservation Sites
- Sites of Special Scientific Interest

Title:

Figure 1: Designated Sites

Project:

Burnbrae, Symington

0 1 2 km

Figure 2: Phase 1 Habitat Survey Results.

EP Ecology Ltd.

Key

- Site Boundary
- 50m Buffer
- Target Notes

Habitats:

- Broadleaved Semi-natural Woodland
- Rhododendron Scrub
- Broadleaved Scattered Trees
- Semi-improved Neutral Grassland
- Improved Grassland
- Bare Ground
- Not Assessed

Linear Features:

- Running Water
- Intact Species-rich Hedgerow
- Intact Species-poor Hedgerow
- Defunct Species-poor Hedgerow
- Species-rich Hedgerow with Trees
- Species-poor Hedgerow with Trees
- Stock Fence
- Drystone Wall - Partially Collapsed

Title:

Figure 2: Phase 1 Habitat Survey Results

Project:

Burnbrae, Symington

0 250 500 m

Appendix B: Target Notes

NGR	TN	Note
NS3714332259	1	Semi-mature beech. W asp 4m, branch fracture with rot and cavity. N asp 8m. Old fracture with rot and cavity.
NS3715632262	2	Mature beech. Se asp 5m. Branch fracture with rot and cavity. E asp ground to 6m, ivy coating
NS3744832405	3	Young beech, se asp 4.5m. Branch fracture with rot and cavity.
NS3746332426	4	Mature oak. Se asp 11m. Branch fracture with rot and cavity. Delamination bark at top of tree.
NS3746832432	5	Mature oak. Se asp 8m. Old branch fracture with rot and cavity
NS3747732447	6	Mature beech. Se asp 4m. Knothole with rot and cavity which appears to lead up main trunk
NS3747232442	7	Young beech. Se asp 1.5m. Knothole with rot and cavity
NS3747132446	8	Mature ash. Se asp 8m. Old branch fracture with sizeable hole, large enough for owl. Appears to be hollow at top.
NS3748132451	9	Mature beech. Se asp 3m. Old branch fracture with possible upward facing cavity.
NS3749132469	10	Mature oak with large nest near top
NS3749132469	11	Mature oak. Se asp 7m. Branch fracture with rot and cavity around collar. 8m. Branch fracture with rot and cavity around collar
NS3749832482	12	Ash afflicted with dieback. S asp 3.5m branch fracture with presumed cavity
NS3750632493	13	Mature oak. Se asp 9m. Weld with cavity
NS3800932274	14	Sycamore with ivy coating
NS3801232277	15	Ash afflicted with dieback and ivy coat.
NS3823332225	16	Mature sycamore with ivy coating
NS3822732220	17	Mature beech. Butt rot with cavity leading up main trunk
NS3820032194	18	Mature beech. N asp 3m and 7m. Knothole with rot and cavity
NS3816232159	19	Bird nest in mature beech, old large branch fracture nook
NS3812332157	20	Mature sycamore. E asp 3m. Very old branch fracture with cavity. Possible le rot and cavity extending up trunk
NS3808332202	21	Building remains and associated rubble
NS3810132176	22	Old building remains, overgrown with nettle
NS3808332181	23	Mature dying sycamore. S asp 4m. Branch fracture with rot and cavity
NS3807632165	24	Semi mature ash. N asp 2.5m. Knothole with rot and cavity leading up main trunk
NS3808032161	25	Mature ash. W asp 3m. Knothole with rot and cavity.
NS3809632158	26	Mature sycamore. S asp butt rot with large cavity. S asp 8m. Branch fracture with rot and cavity. Se asp 6m and 10m. Branch fracture with rot and cavity.
NS3745232007	27	Dying ash. E asp 2.5m. Long split with rot and cavity.
NS3745832006	28	Dying ash. W asp 3m. Knothole with rot and cavity.
NS3747431206	29	Rhododendron
NS3747031196	30	Rhododendron
NS3748031220	31	Rhododendron
NS3753131274	32	Rhododendron
NS3757531302	33	Rhododendron
NS3759231314	34	Rhododendron
NS3760731327	35	Rhododendron

NGR	TN	Note
NS3762631339	36	Rhododendron
NS3763831347	37	Rhododendron
NS3765031356	38	Rhododendron
NS3765031364	39	Rhododendron
NS3765031388	40	Rhododendron
NS3733731792	41	Mature ash. S asp 4 and 4.5m. Knothole with rot and cavity. Rot hole.
NS3721031839	42	Mature beech. S asp 4m. Knothole with rot and cavity
NS3724231990	43	Mature beech. Se asp 4m. Knothole with rot and cavity.
NS3724632003	44	Mature beech. Se asp 4m. Branch fracture with rot and cavity
NS3724632011	45	Mature ash. Se asp 3.5m knothole with rot and cavity
NS3725832039	46	Mature ash. Ne asp 4.5m. Knothole with rot and cavity
NS3724932040	47	Mature beech. E asp 4m and 6m. Knothole with rot and cavity. Branch fracture with rot and cavity.

Appendix C: Preliminary Roost Assessment Results

Image 13. PRA Ref TN 1. Semi-mature beech. Branch fracture with rot and cavity.

Image 14. PRA Ref TN 1. Semi-mature beech. Branch fracture with rot and cavity.

Image 15. PRA Ref TN 2. Mature beech. Branch fracture with rot and cavity.

Image 16. PRA Ref TN 2. Mature beech. Dense ivy coating.

Image 17. PRA Ref TN 3. Young beech. Branch fracture with rot and cavity.

Image 18. PRA Ref TN 4. Mature oak. Branch fracture with rot and cavity.

Image 19. PRA Ref TN 4. Mature oak. Delaminated bark near apex.

Image 20. PRA Ref TN 5. Mature oak. Old branch fracture with rot and cavity around collar.

Image 21. PRA Ref TN 6. Mature beech. Knothole with rot and cavity, possibly leading up main trunk.

Image 22. PRA Ref TN 7. Young beech. Knothole with rot and cavity.

Image 23. PRA Ref TN 8. Mature ash. Old branch fracture with sizable hole. Appears to be hollow through top of the branch.

Image 24. PRA Ref TN 9. Mature beech. Old branch fracture with upward facing cavity.

Image 25. PRA Ref TN 10. Mature oak. Branch fracture with rot and cavity around collar.

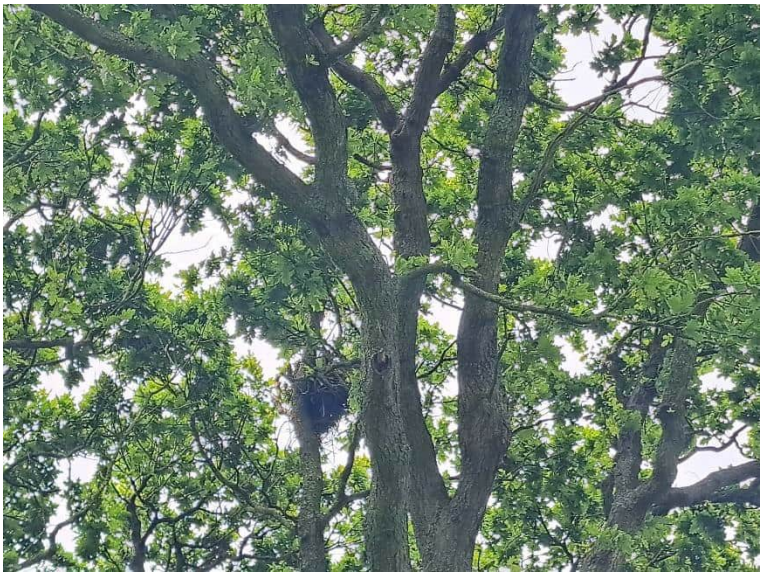

Image 26. PRA Ref TN 10. Mature oak. Branch fracture with rot and cavity around collar.

Image 27. PRA Ref TN 11. Ash with dieback. Branch fracture with presumed cavity.

Image 28. PRA Ref TN 12. Mature oak. Weld with cavity.

Image 29. PRA Ref TN 13. Sycamore. Dense ivy coat.

Image 30. PRA Ref TN 14. Ash with dieback. Dense ivy coat.

Image 31. PRA Ref TN 15. Mature sycamore. Dense ivy coat.

Image 32. PRA ref TN 16. Mature beech. Butt rot with cavity leading up trunk.

Image 33. PRA ref TN 17. Mature beech. Knothole with rot and cavity.

Image 34. PRA ref TN 17. Mature beech. Knothole with rot and cavity.

Image 35. PRA ref TN 19. Mature sycamore. Very old branch fracture with cavity. Rot possibly extending up main trunk.

Image 36. PRA ref TN 22. Mature sycamore. Branch fracture with rot and cavity.

Image 37. PRA ref TN 23. Mature ash. Knothole with rot and cavity leading up main trunk.

Image 38. PRA ref TN 24. Mature ash. Knothole with rot and cavity.

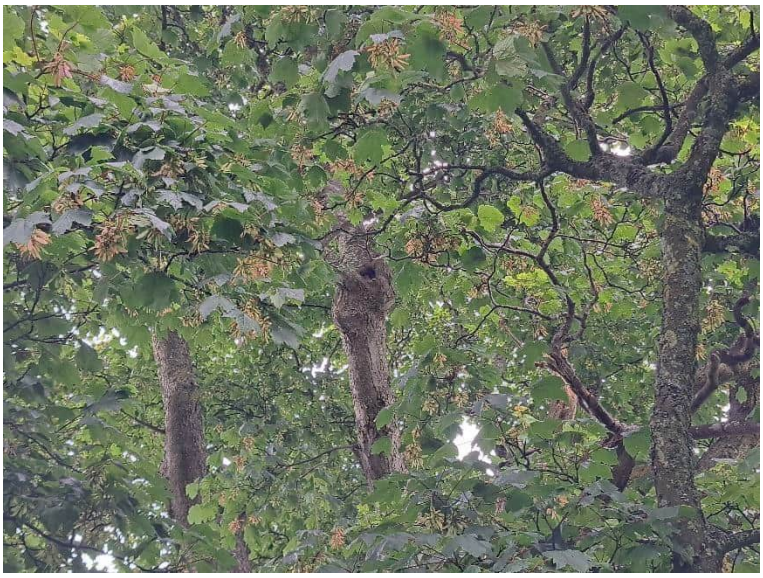

Image 39. PRA ref TN 25. Mature sycamore. Branch fracture with rot and cavity.

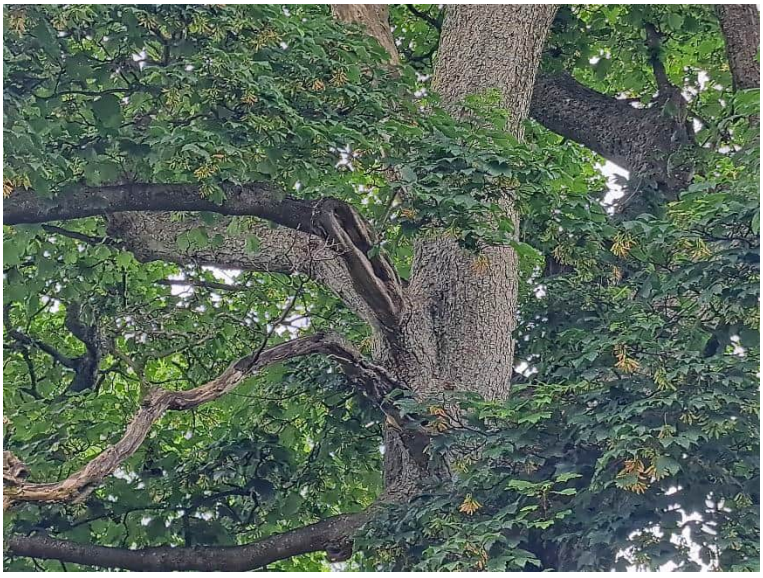

Image 40. PRA ref TN 25. Mature sycamore. Branch fracture with rot and cavity.

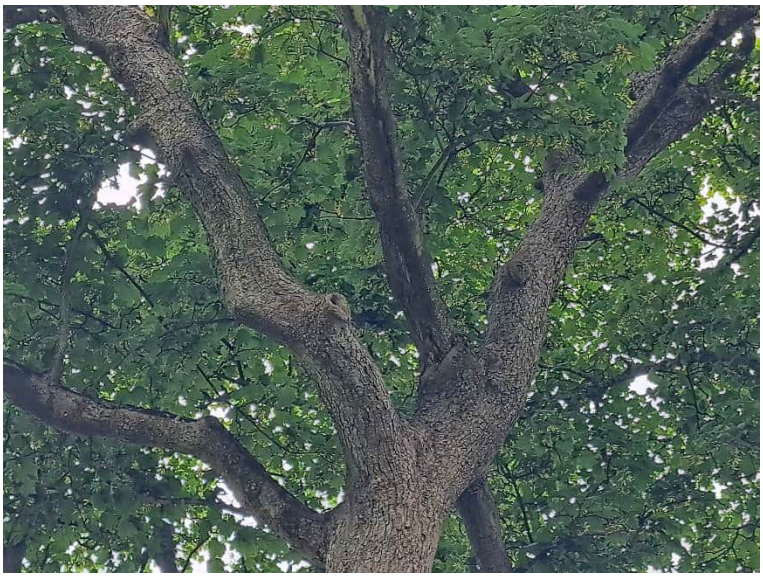

Image 41. PRA ref TN 25. Mature sycamore. Branch fracture with rot and cavity.

Image 42. PRA ref TN 26. Dying ash. Long split with rot and cavity.

Image 43. PRA ref TN 27. Dying ash. Knothole with rot and cavity.

Image 44. PRA ref TN 28. Mature ash. Knothole with rot and cavity.

Image 45. PRA ref TN 28. Mature ash. Rot hole.

Image 46. PRA ref TN 29. Mature beech. Knothole with rot and cavity.

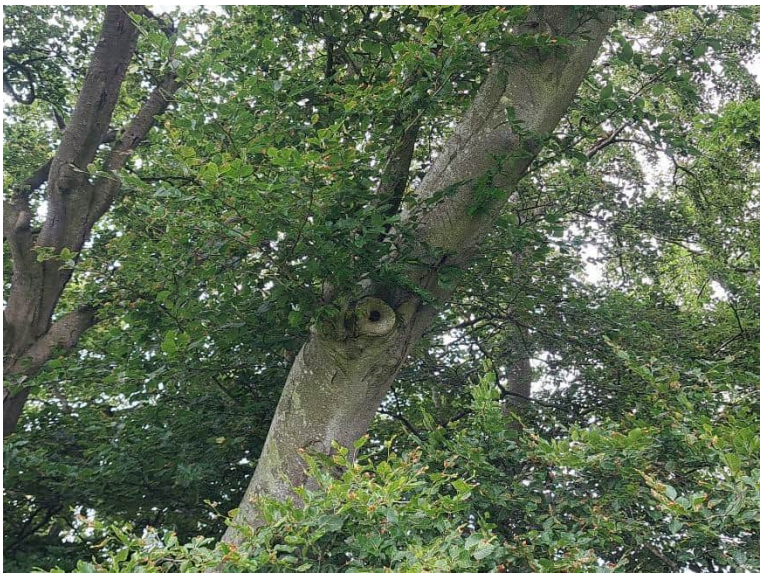

Image 47. PRA ref TN 30. Mature beech. Knothole with rot and cavity.

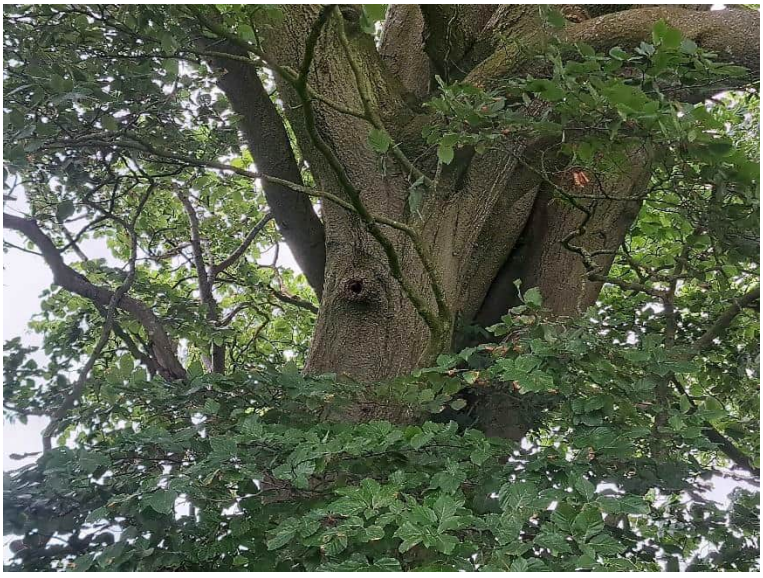

Image 48. PRA ref TN 31. Mature beech. Branch fracture with rot and cavity.

Image 49. PRA ref TN 32. Mature ash. Knothole with rot and cavity.

Image 50. PRA ref TN 33. Mature ash. Knothole with rot and cavity.

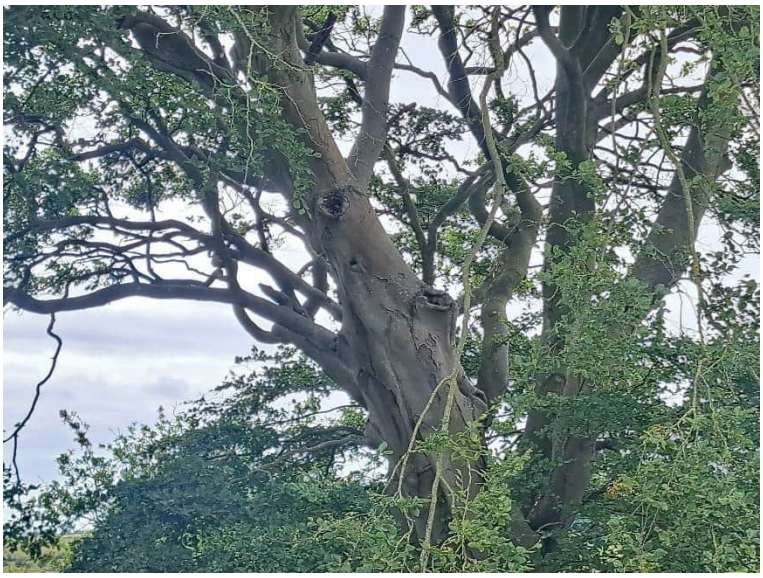

Image 51. PRA ref TN 34. Mature beech. Knothole with rot and cavity.

Image 52. PRA ref TN 34. Branch fracture with rot and cavity.

Appendix D: Legislation

European Union (Withdrawal Agreement) Act (2020)

The European Union Withdrawal Act sets out the legislative procedure that the UK will follow until a withdrawal agreement with the European Council has been reached. In respect of protected species and Sites, the legislation as set out below remains enacted as it stands until amended.

Bern Convention (1982)

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the Convention and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the EC Birds Directive (1979) and the EC Habitats Directive (1992). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985, Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CRoW).

Habitats Directive

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species (Amendment) Regulations 2012 in England, and Wales, and via the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland. In Scotland, the Habitats Directive is transposed by The Conservation (Natural Habitats &c.) Regulations 1994, see below for details.

Birds Directive

The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

The Conservation (Natural Habitats, &c.) Regulations (1994) as amended in Scotland (EPS)

The Habitats Regulations 1994 (as amended in Scotland) implement the species protection requirements of the European Directive 92/43/EEC on the conservation of natural habitats (the Habitats Directive) in Scotland on land and inshore waters (0-12 nautical miles). Following a European Court of Justice ruling against the UK Member State in 2005, there have been several amendments to the Regulations which apply only to Scotland (made in 2004, 2007, 2008(a) and 2008(b)).

This regulation makes it an offence to disturb European Protected Species deliberately or recklessly. Their places of shelter are fully protected, and it is an offence to damage, destroy or obstruct access to or otherwise deny the animal use of a breeding site or resting place, whether deliberate or not. It is also an offence to disturb in a manner that is likely to significantly affect the local distribution or abundance of the species; impair its ability to survive, breed or reproduce or rear its young.

Wildlife and Countryside Act (EU Exit) (1981) and Nature Conservation (Scotland) Act (2004) (WCA-Sch*)

The Wildlife and Countryside Act (1981) is the main piece of legislation pertaining to biodiversity in the UK and forms the basis for most of the other wildlife and biodiversity legislation that has come into being over recent years. In Scotland, it was updated in 2004 by the Nature Conservation (Scotland) Act. The W&C Act makes it an offence to intentionally:

- kill, injure, or take any wild animal or bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built;
- take or destroy an egg of any wild bird;

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5;
- interfere with places used for shelter or protection by a wild animal;
- intentionally disturb animals occupying such places;
- The Act also prohibits certain methods of killing, injuring, or taking wild animals.

A provision is made within the Act for the granting of licences that allow above actions to be made legal in certain situations. Finally, the Act makes it an offence to intentionally:

- pick, uproot or destroy any wild plant listed in Schedule 8; or any seed or spore attached to any such wild plant unless authorised;
- uproot any wild plant not included in Schedule 8,
- sell, offer, or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Part 14 of the Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9.

The Nature Conservation (Scotland) Act (2004) strengthens the above legislation by including reckless" acts, which means that in Scotland, not knowing about the above is not a permissible defence for committing an illegal act. This Act also strengthens the designated sites legislation by enhancing the protection for SSSIs and puts a Biodiversity Duty on every public body.

Nature Conservation (Scotland) Act 2004

The Act places duties on public bodies in relation to the conservation of biodiversity, increases protection for SSSI, amends legislation on Nature Conservation Orders, provides for Land Management Orders for SSSIs and associated land, strengthens wildlife enforcement legislation, and requires the

preparation of a Scottish Fossil Code and a Scottish Marine Wildlife Watching Code. It also amends the legislation for protected species, introducing new conditions to the 'incidental results of a lawful operation' defence for all wild birds and certain species of animal and plant.

The Act places a duty on every public body to further the conservation of biodiversity consistent with the proper exercise of their functions.

It also requires Scottish Ministers to designate one or more strategies for the conservation of biodiversity as the Scottish Biodiversity Strategy, and to publish lists of species of flora and fauna and habitats of principal importance.

Wildlife and Natural Environment (Scotland) Act 2011

This Act has brought in new provisions governing the introduction of non-native species in Scotland. Non-native species (those plants and animals which have found their way to a new habitat through human activity) can be harmful to our environment. Some non-native species may become invasive, damaging, or displacing native species.

The Protection of Badgers Act (1992)

The Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004) comprehensively protects badgers and their setts. Offences under the act include killing, injuring, or taking a badger, or to damage, destroy or obstruct setts or to disturb badgers in a sett. Licences are available for specific purposes, including development, to allow some of these actions to be carried out legally.

Scottish Biodiversity List (SBL)

The Scottish Biodiversity List is a list of animals, plants, and habitats that Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. The Scottish Biodiversity List was published in 2005 to satisfy the requirement under Section C Appendix C - Legislation 2(4) of The Nature Conservation (Scotland) Act 2004.

The purpose of the list is to help public bodies carry out their Biodiversity Duty by identifying the species and habitats which are the highest priority for biodiversity conservation in Scotland. The Scottish Biodiversity List has been updated to take account of changes to the UKBAP priorities list.