COMBINED 2023 PROTECTED SPECIES REPORT

(Confidential Protected Species Information Contained Within)

NOVEMBER 2024

Standen Phase 5 and 6,
Littlemoor Road,
Clitheroe,
BB7 1HF

URBAN GREEN

QUALITY MANAGEMENT

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1 Technical Executive Summary

1.1 Overview

1.1.1.1 Taylor Wimpey is proposing to develop land at Littlemoor Road in Clitheroe (hereafter referred to as 'the site'). The proposals include the development of a residential estate in two phases, with associated hard and soft landscaping and areas of public open space (POS).

1.1.1.2 A Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) was conducted at the site in February 2022. Based on the results of the PEA and PRA assessments, a suite of protected species surveys were recommended. These protected species surveys were conducted in 2023, and their key findings and recommendations are summarised in the section below.

1.1.1.3 The site is predominantly comprised of improved grassland fields, with broadleaved woodland, scattered trees, hedgerows, two watercourses, and a building.

1.1.1.4 Much of the grassland is to be lost in order to facilitate development with a number of trees to be felled as part of the proposals also. One of the hedgerows and the barn building (B1) are also to be lost. While much of the woodland and watercourses are to be retained, though may be impacted by construction activities as detailed within the associated PEA.

1.2 2023 Protected Species Summary Results

Breeding Bird Survey

1.2.1.1 The associated PEA for the site (Urban Green, 2022a) identified optimal habitats for nesting birds onsite. Therefore, further surveys in the form of breeding bird surveys were carried out to identify and assess presence, focusing on the presence of breeding birds and any habitats which were deemed most likely to support breeding birds within the site.

1.2.1.2 Urban Green appointed Eyrie Ecology and Ornithology Ltd. to undertake breeding bird surveys. The surveys were undertaken between March and July 2023, comprising six CBC surveys in total.

1.2.1.3 The survey area is considered to support a breeding bird assemblage that is important at a **District level**, based upon the total number of breeding species recorded (45).

Barn Owl Surveys

1.2.1.7 Three Vantage Point (VP) surveys were undertaken on site at the optimum time of year between June and August (two surveys between June and July and one survey in August).

1.2.1.8 During the surveys, no barn owls were observed in association with the barn or any mature trees with suitability to support breeding on site.

1.2.1.9 One foraging Barn owl was recorded on site, flying from the direction of the southern woodland, hunting across the eastern area of the site, and returning to the southern woodland.

1.2.1.10 The presence of this owl suggests that the on-site barn may provide breeding suitability for barn owls and shows that the land around the barn provides suitable foraging and commuting habitats, as such, enhancements to be implemented within the rough grassland and open areas (particularly along the woodland and watercourse edge) have been recommended.

Invertebrate Surveys

1.2.1.11 Urban Green appointed Andy Jukes, BSc (Hons), MCIEEM FRES, of Conops Entomology Ltd. to undertake invertebrate surveys.

1.2.1.12 Surveys were undertaken between May and September 2023 following those recommended in the Natural England guidance document 'Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation' (Drake et al., 2007). In some instances, a bespoke method was created for the site assessment but still retains the overall approach to assessing features and habitats for conservation assessment. The bespoke methods relate to the extent of the free-ranging sampling.

1.2.1.13 A total of 186 species were recorded within the survey area, with two species having a national status (which may be later revised). The tall sward and scrub onsite were deemed an area of high species diversity, with 72 species recorded within this habitat.

1.2.1.14 The site was assessed as being of District (low) importance for invertebrates with the edges of the fields, hedges with trees, and woodland fringes to the Pendleton Brook and its tributary, being of highest value.

Bat Surveys

1.2.1.15 A suite of bat surveys were undertaken on site during the survey season of 2023.

1.2.1.16 Three emergence/re-entry surveys were completed at building B1. Bat activity was found to be fairly consistent between the two dusk emergence surveys undertaken on site, with a low number of common pipistrelle observed to be foraging around the building and associated hedgerow with trees. The re-entry survey returned little activity throughout. No roosting activity was recorded in relation to B1 and the structure was assessed as not supporting a bat roost.

1.2.1.17 Ten transect surveys and five static deployment periods were completed on site. These activity surveys found that the site is an important foraging and commuting resource for local bat populations, particularly the southern boundary of the site associated with the woodland and tree-lined watercourse, as well as the central block of woodland through the site.

1.2.1.18 Mitigation recommendations have been made, that should be implemented within the site design and during the construction period, as well as potential enhancements that could be integrated into the site design to maintain and increase the sites value to commuting, foraging, and roosting bats.

1.2.1.19 Further survey work in relation to trees T4 and T5 is required, due to issues encountered on site during the survey attempts.

Reptile Surveys

1.2.1.20 Reptile surveys were recommended in the PEA to identify and assess presence/likely absence of reptiles, focusing on the habitats which were deemed most likely to support reptiles within the site. During the PEA, the site was found to provide value for foraging and commuting reptiles.

1.2.1.21 Seven presence/likely absence surveys were undertaken between March and September 2023 following standard guidance detailed within the Herpetofauna Workers' Manual (Gent & Gibson, 2003) and reptile survey guidance (Froglife, 1999; Sewell et al., 2013).

1.2.1.22 No reptile species were recorded during the surveys and therefore are deemed likely to be absent from the site.

Water Vole Surveys

1.2.1.23 Urban Green, in collaboration with Ecology Elements, completed water vole surveys on site.

1.2.1.24 Presence/likely absence surveys were undertaken on the 16th of May 2023 and 8th of August 2023, following standard guidance in accordance with the Water Vole Conservation Handbook (Strachan, Moorhouse & Gelling, 2011). The following characteristics for determining the presence of water voles were assessed: sightings, droppings and latrines, burrows, above-ground nests, feeding stations and lawns, prints and runs.

1.2.1.25 No evidence of water voles was recorded during either survey of the Survey Area of Pendleton Brook. Evidence of bank vole was recorded within one area of the banking, although the burrows appeared historic and not in current use.

Otter Surveys

1.2.1.26 An otter survey was conducted on 17th April 2023 by Jake Healy, Ecologist and Max Grindle, Assistant Ecologist.

1.2.1.27 Otter were confirmed to use Pendleton Brook as spraints were identified within the search area, with the inclusion of potential otter holts.

1.2.1.28 The potential holts were present immediately adjacent to the site.

1.2.1.29 And as a result, further monitoring surveys have been recommended to be completed at these locations to assess potential otter presence and use and inform relevant mitigation.

1.2.1.30 If it is confirmed to be a holt, the proposed development will require a Natural England European Protected Species Licence to allow the works to proceed.

2 Introduction

2.1 Background to the Scheme

2.1.1.1 Taylor Wimpey is proposing to develop land at Littlemoor Road in Clitheroe (hereafter referred to as 'the site'). The proposals include the development of a residential estate in two phases, with associated hard and soft landscaping and areas of public open space (POS). The spine road for the development has already gained outline approval and will run through the site in an east to westerly direction.

2.1.1.2 Urban Green has been appointed to undertake further ecological surveys following recommendations outlined within the associated PEA undertaken at the site by Urban Green in February 2024.

2.2 Site Context

2.2.1.1 The site is located at National Grid Reference SD 74382 40702 and comprises a total area of approximately 17.2ha (see Figure 1).

Figure 1- Site Extent

2.2.1.2 The site is located on the rural-urban fringe of Clitheroe town, which is present approximately 1km north of the site. An un-named tributary of Pendleton Brook (a tributary of Mearley Brook which flows into the River Ribble) is present onsite running north to south-west through the centre of the site.

2.2.1.3 Pendleton Brook borders the south of the site running from east to west. The River Ribble is located approximately 1.5km west of the site, with Mearley Brook present approximately 350m west of the site. Residential properties are located to the north, north-west and west of the site with arable grassland present on all other aspects. Areas of woodland are present within the wider area to the south of the site. The A59 is present approximately 600m east of the site.

2.3 Previous Surveys

2.3.1.1 A Preliminary Ecological Appraisal (PEA) including a Preliminary Roost Assessment (PRA) were conducted on 10th February 2022 by Ecologist Jake Healy and Senior Biodiversity Consultant Maisie McKenzie (Ref: UG1451_ECO_PEA_01).

2.3.1.2 The PEA found the site to comprise predominantly of improved grassland with various hedgerows and scattered trees dissecting numerous fields.

2.3.1.3 Two areas of broadleaved woodland were present within the site boundary as well as an unnamed tributary of Pendleton Brook running through the centre of the site from north to south-west. Pendleton Brook itself flowed adjacent to the southern boundary of the site.

2.3.1.4 A single building was present located in the north-west compartment of the site, comprising an abandoned brick barn building in a state of disrepair.

2.3.1.5 The PEA identified that the site had suitability to support a range of notable and protected species of fauna and recommended further survey work for the following species:

- Invertebrates
- Reptiles
- Breeding Birds
- Barn Owl
- Bats
- Water Vole
- Otter

2.3.1.6 During the first breeding bird survey, kingfisher were identified utilising Pendleton Brook, and as such, specified kingfisher surveys were then instructed.

2.4 Purpose of this Report

2.4.1.1 This report had been prepared in order to collate and detail the methods, findings and conclusions of all further survey work undertaken on site as a result of the recommendations detailed in the PEA (Urban Green, 2022a).

2.4.1.2 The National Planning Policy Framework (NPPF) (2023) and other Local Planning Policies are considered throughout and any ecological enhancements recommended are advised to be in line with relevant planning policies.

2.4.2 Lifespan of Report

2.4.2.1 In accordance with the CIEEM's Advice Note on the Lifespan of Ecological Reports and Surveys (CIEEM, 2019), the results of this survey work will remain valid for a period of 18 months from the date of survey.

2.4.2.2 As such the validity of survey results within this report differs for each species surveyed. However, the various surveys were conducted on site during the optimal survey period in 2023. It is therefore recommended that should the proposed development not progress by the start of the 2025 survey season, March 2025 (18 months post the 2023 survey season), then a suitably qualified ecologist should be contacted to discuss the validity of the report and any survey effort that may have to be repeated.

5 Barn Owl Surveys

5.1 Introduction

5.1.1 Barn Owl Ecology

5.1.1.1 Barn owl (*Tyto alba*) are a largely nocturnal and crepuscular species, that tend to roost in trees and buildings. The main habitat requirements include the presence of tussocky, rank grassland, which harbours the barn owl's main prey species, short-tailed voles (*Microtus agrestis*). Their diet also includes other voles, mice, and shrews, and as such any habitat supporting such prey may be used as hunting grounds for barn owl. Accordingly, permanent grasslands, hay meadows, woodland, hedgerows, and riverbanks are all habitat types also associated with the species.

5.1.1.2 The barn owl is a cavity nester, favouring large cavities within mature hedgerow trees, or the ledges typically found in older farm buildings. The species has adapted well to nest boxes, and it is likely that a significant proportion of the breeding population – estimated to be in excess of 25% - now uses them for breeding. Incubation begins with the first egg and, since consecutive eggs are laid at intervals of c.2 days, the resulting brood of chicks can vary in age by as much as two weeks. This strategy increases the chances of at least some chicks surviving if prey availability is low during the chick rearing period; the oldest and largest chicks will receive food first, at the expense of the last to hatch. (BTO, 2023)

5.1.2 Legislation

5.1.2.1 Barn owl are covered by the basic legal protection afforded to most wild birds as well as extra legal protection against disturbance when nesting.

5.1.2.2 The Wildlife & Countryside Act 1981 provides protection for barn owl and most other wild bird species in England, Scotland and Wales. The eggs and nests of most bird species are also protected. Specifically, under Part 1, Section 1 (1), it is an offence to intentionally:

1. Kill, injure or take any wild bird.

2. Take, damage or destroy the nest of any wild bird while that nest is in use or being built.

3. Take or destroy an egg of any wild bird.

5.1.2.3 Birds listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are afforded additional protection, which makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependant young of such a bird.

5.2 Methodology

5.2.1 Desk Study

5.2.1.1 Sources of information used in the desk study are presented in Table 8.

Table 8 – Desk Study Sources of Information.

Source	Date Consulted	Information Sought
MAGIC website (www.magic.gov.uk)	09/02/2022	Locations of statutory designated sites within 1km of the site boundary. Locations of Natura 2000 sites (Ramsar, Special Area of Conservation (SAC) and Special Protection Area (SPA)) within 5km of the site boundary. Locations of European Protected Species Licences (EPSL) and Class Licences within 1km.
Natural England (https://designatedsites/.naturalengland.org.uk/)	09/02/2022	Relevant statutory designated site citations.
JNCC (https://jncc.defra.gov.uk/	09/02/2022	Information on European wildlife sites. Details of relevant Section 41 species and habitats.
Lancashire Environment Record Network (LERN)	09/02/2022	Locally designated wildlife sites within 1km of site boundary. Records of protected and notable species within 1km of the site boundary.
Lancashire Local Biodiversity Action Plans	09/02/2022	Species and habitats which are given special conservation status at the local level.

5.2.2 Barn Owl Survey

5.2.2.1 Due to health and safety constraints regarding the barn onsite (B1), detailed in Section 5.3, vantage point surveys were deemed the most suitable survey methodology and were conducted on site.

5.2.3 Vantage Point Surveys

5.2.3.1 Three vantage point surveys were conducted on site under the guidance of Josh Broster MCIEEM, Director and Principal Ecologist/Ornithologist at EYRIE Ecology and Ornothology LTD. The first two surveys were conducted between the 1st June and 16th July (the peak survey period for breeding barn owl), with the third visit conducted on the 3rd August to pick up any late summer breeding activity.

5.2.3.2 Each survey involved three ecologists positioned specially to provide a good visual coverage if the barn and the surrounding habitat.

5.2.3.3 Surveyors were in position a minimum of 1 hour before sunset until 1 hour after sunset on dry, still evenings in conditions optimal for barn owl activity following best practice guidance.

5.2.3.4 Surveys included watching the areas of interest for a period of two hours whilst scanning all suitable habitat present and looking for observation of barn owl and listening for barn owl calls/begging chicks.

5.2.3.5 The barn owl surveys were aided by Jake Healy MSc, Ecologist at Urban Green, Max Grindle, BSc, Ecologist at Urban Green, Barnaby Indio Gardner and Toby Mills BSc, Assistant Ecologists at Urban Green, and Katy Ellen, Seasonal Ecologist at Urban Green.

Table 9. Survey Details

Survey Number	Start Time/Finish Time	Weather Conditions	Surveyors
Survey 1 – 07/06/2023	20:09pm/22:39pm	**Cloud cover (oktas/8)**- 1/8 **Temperature (°C)**- 16°C start, 11°C finish **Wind Speed (mph)**- 9mph start, 8mph finish	VP1 – Barnaby Gardner VP2 – Jake Healy VP3 – Josh Broster
Survey 2 – 03/07/2023	20:30pm/23:00pm	**Cloud cover (oktas/8)**-1/8 start, 2/8 finish **Temperature (°C)**-13°C start, 12°C finish **Wind Speed (mph)**-9mph	VP1 – Max Grindle VP2 – Jake Healy VP3 – Josh Broster
Survey 3 – 03/08/2023	20:04pm	**Cloud cover (oktas/8)**- 3/8 start, 4/8 finish **Temperature (°C)**- 16°C start, 14°C finish **Wind Speed (mph)**- 12mph start, 10mph finish	VP1 – Toby Mills VP2 – Katy Ellen VP3 – Josh Broster

5.3 Constraints to the Survey

5.3.1.1 Due to the current state of the barn and the health and safety risks posed by its unsafe nature an internal check of the barn could not be completed and a buffer zone surrounding the building was fenced off. As such an internal check of the barn could not be completed and as such vantage point surveys were undertaken.

5.3.1.2 Whilst vantage point surveys can confirm breeding presence, they cannot always be relied upon to confirm breeding absence.

5.3.1.3 Where a lack of records is found during the desk search for a defined geographical area does not imply a lack of presence, and it does not necessarily imply that there is a lack of ecological interest; the area may be simply under-recorded.

5.4 Results

5.4.1 Desk Study

Habitat Suitability

5.4.1.1 The site offers the potential to support birds of prey and barn owl. The presence of the barn and surrounding trees provide suitable nesting habitat for barn owl and the surrounding fields and tree lines offer good foraging potential for the species. Owl pellets were found inside the barn during the original PEA (Urban Green, 2023).

5.4.1.2 The site also offers the potential to support birds of prey through good quality foraging habitat and the broadleaf woodland and scattered trees offering nesting and perching value to such species in the area. This is confirmed from frequent Kestrel (*Falco tinnunculus*) and Tawny owl (*Strix aluco*) sightings on site visits.

5.4.1.3 As such, the site, including the surrounding land, has been confirmed as providing nesting and foraging potential for barn owl.

Local Data Records

5.4.1.4 No records of barn owl were returned within the local data search conducted for the site. However, chance conversations with locals using the public footpath that runs through the site detailed records of the species utilising the site extent over recent years.

5.4.2 Vantage Point Surveys

Survey 1- 07/06/2023

5.4.2.1 No observations of barn owl were recorded by any surveyors during the entirety of the survey.

5.4.2.2 Though two observations of kestrel were observed in relation to the barn building. The first observation was recorded by VP3 and flew past the barn in a northerly direction at 20:45. The second observation was recorded by both VP2 and VP3 at 21:33 and involved a prey delivery into the building via a cavity in the southern facing gable end.

Survey 2- 03/07/2023

5.4.2.3 No observations of barn owl were recorded by any surveyors during the entirety of the survey.

5.4.2.4 Though two observations of kestrel were recorded by VP3. The first was recorded at 20:30 and involved two young birds flying between mature trees exhibiting begging calls, flying towards the barn, with the second record comprising young kestrel calls coming from the barn at 22:01.

5.4.2.5 At 23:00 VP3 recorded two young tawny owl calling within the southern extent of woodland.

Survey 3- 03/08/2023

5.4.2.6 Two observations of barn owl were recorded on site during the survey, both recorded at VP1 within the eastern extent of the site. The first was recorded at 21:20 comprising one barn owl commuting across the site in a northerly direction before perching on metal fencing and foraging within the tall grassland and then commuting offsite. The second observation was recorded at 21:26 comprising one barn owl commuting south through the site into the block of woodland at the southeastern boundary of the site. The hunting activity was not observed as being successful with no prey caught.

5.4.2.7 VP3 recorded one instance of calling tawny owl at 21:53 within the southern block of woodland off-site.

Survey summary

5.4.2.8 Over the three surveys undertaken on site, barn owl activity was only recorded briefly during the final survey and comprised foraging activity before commuting off site. It is possible that this bird made its way down along the woodland edge from the direction of the farm to the east, where barn owl presence has been reported previously. Therefore, the site was confirmed to provide foraging value to barn owl.

5.4.2.9 No barn owl activity was recorded in relation with the barn throughout the survey effort and as such breeding activity on site for 2023 has been discounted.

5.4.2.10 Observations of tawny owl and kestrel were both recorded on site during the surveys with an adult kestrel caught delivering prey to the southern gable of the barn during the first survey.

5.5 Assessment and Mitigation

5.5.1 Evaluation

5.5.1.1 Based on the findings of the surveys, the site was confirmed to provide foraging value to barn owl, while breeding activity for the species was not recorded on site during the 2023 season.

5.5.1.2 However, this year's national nest monitoring results for barn owl suggest that 2023 has been a particularly poor year for breeding barn owl nationally due to very low vole numbers. Therefore, given that barn owl were confirmed foraging on site, it is possible that the site does provide breeding suitability, though was simply not in use during the summer of 2023.

5.5.1.3 As such, it is recommended that mitigation measures are implemented detailed below in Section 5.5.2.

5.5.2 Mitigation

5.5.2.1 Under current proposals the barn on site is to be demolished to facilitate development. Demolition should be sensitively undertaken during the least likely breeding period (typically taken to be October to December) and should be conducted under the supervision of a suitably qualified ecologist. This also accounts for other birds likely to use the barn for breeding, such as kestrel that were confirmed breeding within the barn during the survey effort.

5.5.2.2 As the building is to be demolished, there is the potential that a historical breeding site is to be lost and as such it is recommended that two barn owl boxes are erected on site and considered within the design. Boxes are to be installed prior to the demolition of the barn or any tree removal and should either be affixed to retained trees within the development or pole mounted and be positioned in sensitively selected locations within the site.

5.5.2.3 The locations of the boxes need to be in an area of appropriate green space being retained as part of the development, that provides connectivity to suitable foraging habitat and should have a buffer of at least 60m from the construction area during works. Should ground works need to take place within 60m of these boxes the entrances will need to be temporarily capped and then reopened, once works within the 60m buffer have been completed.

5.5.2.4 Once all works on site have been completed the risk of disturbance to breeding barn owl is greatly reduced though, there is still some level of risk present through recreational activity of homeowners/dogwalkers. As such, it is recommended that the landscape designs seek to incorporate a 20m buffer, either through erection of fencing or planting to restrict close access and the risk of vandalism.

5.5.2.5 It is also recommended that the landscape design seeks to retain the most valuable foraging and commuting habitat on site, specifically the rough grassland margins and open areas along the woodland and watercourse edges through the centre of the site and along the southern boundary. And, where possible, new areas of rough grassland should be created on site.

5.5.2.6 Once a layout for the site has been finalised an ecologist shout be consulted to advise on the optimal locations for the placement of barn owl boxes.

Table 10. Example Nest Box

Nest Box Type	Image
Triangular Barn Owl Nest Box NHBS (2023) Nest Box Body: * Height: 77.5cm * Width: 89cm * Depth: 44cm * Material: Exterior grade plywood * Total Weight: ~11kg	

5.5.3 Other Considerations

5.5.3.1 The results of the surveys undertaken on site also revealed the presence of breeding kestrel and tawny owl on site. As such, it is recommended that bird boxes targeting these species are also installed in suitable areas within the site.

6 Invertebrate Surveys

6.1 Introduction

6.1.1.1 Conops Entomology Ltd was commissioned in March 2023 by Urban Green to undertake a survey of land at Clitheroe prior to possible development.

6.1.1.2 The scope of this survey is to undertake an invertebrate assessment of land at Clitheroe that may be impacted by a proposed development (referred to hereafter as 'the site'). The assessment appraised the key habitats and/or features of the site through the recording of invertebrates. The data are used to assess the value to invertebrates of those habitats or features in order to evaluate the site for its importance as an invertebrate resource. From the collection of data and subsequent assessment and valuation, suitable recommendations could then be put forward in the event that some or all of those features or key habitats may be impacted by a proposed development.

6.1.1.3 The site is located at OS grid reference SD7447440612.

6.2 Methodology

6.2.1.1 The methods used for the assessment are those recommended in the Natural England guidance document *Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation* (Drake *et al.*, 2007). In some instances, a bespoke method has been created for the site assessment but still retains the overall approach to assessing features and habitats for conservation assessment. The bespoke methods relate to the extent of the free-ranging sampling.

6.2.2 Sweep Netting

6.2.2.1 This method provides the main proportion of the survey element and is the most efficient method for cataloguing a site's invertebrate resource. Sweep netting involves the use of a long-handled sweep net being swept over vegetation such as stands of grasses or flowers, or along scrub fringes in order to gather invertebrate material.

6.2.3 Spot Sampling

6.2.3.1 Spot sampling is employed to collect large, conspicuous invertebrates such as bees and wasps from flowering plants, and to supplement the sweep samples. Spot sampling is often the most effective method for recording species from high-fidelity niches.

6.2.4 Beating

6.2.4.1 Trees and scrub are beaten to dislodge any invertebrates on the leaves and branches. These are collected from a white sheet, and the contents retained for later examination.

6.2.5 Pitfall Traps

6.2.5.1 A series of pitfall traps (totalling six traps) are sited on woodland edge at two locations across the site.

6.2.6 Survey Timing

6.2.6.1 The site was visited on six occasions:

6.2.6.2 Visit dates:

- 06 May 2023 – cloud and sun, 16–18°C,
- 07 June 2023 – sunny, 16–17°C;
- 30 June 2023 – light rain, 16–18°C;

- 17 July 2023 – cloud, 16–18°C;
- 02 August 2023 – cloud and light rain, 16°C; and
- 13 September 2023 –sunny, 15-16°C.

6.2.7 Result Analysis

6.2.7.1 Tables 1 and 2 provide a breakdown of the site's invertebrate resources and highlight any species of significance recorded during the surveys.

6.2.7.2 Tables 3 and 4 have been generated using the Pantheon software package. Pantheon is an analytical tool developed by Natural England and the Centre for Ecology & Hydrology to assist invertebrate nature conservation in England. Site data in the form of species lists can be imported into Pantheon, which then analyses the species within the lists, assigning them to habitats and resources. Pantheon also consigns the most up-to-date national status to the species where it is available.

6.2.7.3 Pantheon is also capable of other outputs such as Specific Assemblage Types (SATs) (see Table 14).

6.2.7.4 A SAT is characterized by stenotopic species (those that can withstand only a narrow range of environmental conditions). SATs are therefore more tightly defined than 'habitats' or 'resources' and sit within a parent habitat or Broad Assemblage Type (BAT). More than one SAT can sit within a parent BAT.

Example:

BAT: F2 – grassland and scrub matrix

SAT: F211 – herb-rich dense sward

F212 – dense scrub

6.2.7.5 The information obtained from Pantheon can then be used to assign quality to sites and their features, assist in management decisions, and facilitate requirement for further surveys, where required and appropriate.

6.2.7.6 Pantheon was first made publicly accessible in April 2018 and is the primary analytical tool used by entomologists in site evaluation. It is also the tool recognized and preferred by Natural England. For more information on this new resource, see http://www.brc.ac.uk/pantheon/.

6.2.7.7 Not all species of importance are expressed in the following tables, as they do not form part of the Pantheon analysis and/or their specific requirements are not yet fully understood.

6.3 Results Summary

6.3.1.1 A total of 186 species from the sampled groups were recorded during the surveys.

6.3.1.2 A total of two species recorded have a national status, though it is recognized by many of the national recording schemes that a number of these no longer warrant their current status and that they may need revising. This total does not include research-only moths.

6.3.1.3 The full list of species recorded can be found in Appendix 12.

Table 11. Species breakdown

Site	Total no. of species recorded	Total no. of species of importance*	Species of importance (%)
Site	186	2	3.7

*Note: some species do not warrant nationally significant status.

Table 12. Species of Importance

Scientific name	Vernacular name	National/local status	Habitat preferences and species notes
Elodes minutus	A beetle	Nationally Scarce	Well-vegetated wetlands, shallow freshwater ponds.
Elodes pseudominutus	A beetle	Nationally Scarce	Well-vegetated wetlands, shallow freshwater ponds.

Table 13. Resource-usage table (taken from Webb *et al*, 2017)

Broad biotope	Habitat	No. of species	No. of species with conservation status (excluding research-only moths)	Species with conservation status (excluding research-only moths)
open habitats	tall sward & scrub	72	–	–
tree- associated	shaded woodland floor	32	–	–
tree- associated	arboreal	24	–	–
tree- associated	decaying wood	17	–	–
wetland	running water	13	–	–
wetland	wet woodland	11	–	–
Tree-ssociated	wet woodland	11	–	–
wetland	acid & sedge peats	10	–	–
wetland	marshland	9	3	*Elodes pseudominutus* (NS), *Elodes minutus* (NS)
open habitats	short sward & bare ground	5	–	–

Table 14. SAT table (taken from Webb *et al*, 2017)

Broad biotope	SAT	SAT code	No. of species	No. of species with conservation status (excluding research-only moths)	Conservation status	Reported condition
tree-associated	bark & sapwood decay	A212	10	–	–	Unfavourable (10 species, 19 required)
open habitats	rich flower resource	F002	7	–	–	Unfavourable (7 species, 15 required)
open habitats	scrub edge	F001	5	–	–	Unfavourable (5 species, 11 required)
open habitats	scrub- heath & moorland	F003	2	–	–	Unfavourable (2 species, 9 required)
open habitats	montane & upland	F221	1	–	–	Unfavourable (1 species, 8 required)
wetland	fast flowing streams & waterfalls	W113	1	–	–	Unfavourable (1 species, 3 required)

6.4 Discussion

6.4.1 Limitations

6.4.1.1 2023 experienced extremes in weather from a dry and cold spring to a hot and dry June followed by a wet July and August, off the back of 2022, which saw a protracted drought and a series of heatwaves. Little to no rain for many months over the two years coupled with extreme heat events has widely been reported as having a significant impact on invertebrate numbers. This rapid decline of invertebrates results in difficulty recording species diversity, as many species are now operating at very low densities and numbers.

6.4.1.2 Results therefore are on average lower than expected, and species lists are broadly dominated by common species. It is still possible to reflect fairly the value of a site, though, through the analysis and discussion, and by using the experience of the invertebrate ecologist.

6.4.1.3 Owing to high public presence and possible vandalism on the site, flight-interception traps were not used on deadwood features. This has been accounted for in the assessment of the deadwood invertebrates.

6.4.2 Habitats

6.4.2.1 The site is represented by a range of habitats broadly covering three biotopes: 'open habitats', 'tree-associated', and 'wetland'. However, it is the open terrestrial biotope that overwhelmingly dominates the site in terms of species associations and physical extent of each habitat. This is supported by the other biotopes, and both the tree-associated and

wetland biotope contribute to the overall value of the site and opportunities to invertebrates.

6.4.2.2 The habitat that is the most prominent across all areas of the site is the tall sward and scrub habitat, with a moderate total of 72 species of association recorded. The resource is dominated by solitary bees and wasps, true bugs such as shield bugs and ground bugs, and also flies, particularly hoverflies. There are, however, no species noted by Pantheon as being of particular value to the habitat.

6.4.2.3 The second most speciose habitat on the site is the shaded woodland floor, with 32 species of association. No species are noted as being scarce or threatened. The habitat is limited to peripheral areas of the site and occupies a small footprint, so this total, although not high, is significant for the site.

6.4.2.4 The arboreal habitats, similar to the shaded woodland floor, are restricted on the site but still possess a moderate resource of invertebrates, dominated by flies and, to a lesser extent, beetles. This resource is complemented by the decaying wood resource, which on the site is present on both shaded wooded areas and hedgerow trees. These locations are thought to be the most notable on the site, as there is a good resource of deadwood features along these hedgerows.

6.4.2.5 Owing to the presence of the Pendleton Brook along the southern boundary to the site, running-water invertebrates are noted. This resource includes a range of river margin flies. Thirteen species of association are recorded. None, however, are scarce or threatened.

6.4.2.6 The site includes other resources, though these are of lower value than the aforementioned resources. The marshland, which is present only on the low-lying areas adjacent to the Pendleton Brook, includes nine species of association, with two being of national significance.

6.4.3 SATs

6.4.3.1 The site has a limited number of SATs associated with it, highlighting its lack of habit and consequently niche complexity. Where SATs do occur with any value, they are associated with the woodland elements of the site.

6.4.3.2 The most notable SAT is the bark and sapwood decay SAT (A212) with 10 species of association (where the threshold for favourable status is 19). The total falls short by nine species, suggesting the resource is not well developed. However, it is thought that this total is likely to be higher than the survey suggests, as sampling was restricted to active searching of deadwood, and no passive flight-interception traps were used. The actual value of the SAT is therefore likely to be more significant.

6.4.3.3 The next most prominent SAT on the site is the rich flower resource (F002), with seven species of association (where the threshold is 15). This is a low total for this SAT and highlights the lack of flowering plants across the site and also the continuity of flowering plants through the seasons. The current resources are dominated by spring blossom and umbellifers.

6.4.3.4 Scrub edge (F001) holds a species-of-fidelity total of 5 (where the threshold is 11). This is again a low total where there is a significant scrub fringe element to the site. This is in part due to the interface it creates with the open grassland (the other being the weather in 2023). The open grassland is dominated by coarse grasses with little diversity within the sward. This impacts the adjoining scrub fringe interface's potential.

6.4.3.5 There are other SATs noted by the analysis, but they are represented by only one or two species of fidelity and therefore of low intrinsic value to the site.

6.4.4 Species

6.4.4.1 The survey of the site recorded 186 species and two species identified by Pantheon as being of value, which is a low scarce species number.

6.4.4.2 Owing to the challenging weather conditions of 2023, the lists of species is slightly lower than expected, but they do still present a strong cross-section of species that are reflective of the habitats on the site. In particular, the survey highlights the key areas of the site, those being deadwood and scrub fringes.

6.4.4.3 The two species of national significance are two related beetles. Both species inhabit high-water-table marshy ground and pond margins. They were recorded on the low-lying wet areas adjacent to the Pendleton Brook in the south-east corner of the site.

6.4.4.4 There are no other species of national significance, but there are lists of species that are noteworthy. As highlighted by the SAT analysis, the deadwood species are of some value to the site. This includes a suite of hoverflies including *Sphegina clunipes* and the soldier beetle *Malthodes marginatus*. Both species inhabit decaying timbers, with the hoverfly also being found in semi-saturated wood in streams (log jams). The cranefly *Lipsothrix remota* was also recorded from semi-saturated wood. A strong population occurs in the tributary to the Pendleton Brook that runs through the centre of the site.

6.4.5 Site Assessment Summary

6.4.5.1 The survey recorded 186 species from the target groups, including two species of importance. As noted, this is a low total of scarce species but reflective of the habitats present and their lack of complex niches.

6.4.5.2 Although much of the site (the field interiors) is of low value to invertebrates owing to the improved character of the fields, there is potential along the edges of the fields, hedges with trees, and woodland fringes to the Pendleton Brook and its tributary. The potential value is for woodland and wood edge invertebrates, though the presence of two nationally scarce beetles suggests that the saturated soils of the low-lying areas of the site may also be of value to other invertebrates that occupy a similar niche.

6.4.5.3 Owing to the deadwood features on the site along with the wooded habitats and potential value of saturated soils, the site is considered to be of some value (see Site evaluation section), and so a number of recommendations are put forward in the Recommendations section to offset any impacts from a proposed development.

6.4.5.4 The key with any invertebrate compensation is to create mosaics that include interfaces and strong juxtapositions of habitats and features, as it is these that often generate the opportunities to species indicative of brownfield sites, including many of those of value at the site.

6.4.6 Site Evaluation

6.4.6.1 The site comprises, or is thought to comprise (see Limitations section), a moderate invertebrate fauna but only includes two species with a nationally significant status, thus highlighting the lack of variation across much of the site. However, the site does have good lists of indicative species of woodland features.

6.4.6.2 The valuation of the site takes into consideration the range of species recorded, including the scarce species, the overall assemblages, and the importance of the habitats to the species. It also considers the context of the year's weather, the site, and/or its species in relation to the local area and further afield.

6.4.6.3 From considering the above summary information and data collected from the surveys, it is suggested that any impact on the site's key features and species should be considered to be of **District (low) importance**.

6.4.6.4 The site is considered to be of District (low) importance and not one of a lower status, owing to the site possessing two nationally significant species and having a good list of species associated with wooded habitats that are not widely replicated across all areas. For example, the species associated with wood decay and semi-saturated wood in streams are species only generally found in unmanaged streams or those that are managed for conservation.

6.5 Recommendations

6.5.1 Important note

6.5.1.1 The priority should always be to retain key areas of habitat in situ.

6.5.1.2 Where this cannot be done, a further replicant habitat mosaic should be created. This should be of high quality and managed to retain its desirable character.

6.5.1.3 All invertebrate-related mitigation should be undertaken on low-fertility soils.

6.5.1.4 As the site and its key species are associated with a range of features, a complex mosaic of features are required to support the invertebrates that currently use the site.

6.5.1.5 The success of any mitigation for loss of part or all of the site's key features will be dependent on incorporating key features in juxtaposition with one another and creating features that are abundant, extensive, and optimal.

6.5.2 Flowering swards

6.5.2.1 As the site is noted for its lack of a flower resource, this is one of the best and easiest ways to increase the value of a site for invertebrates. A flower mix should be as varied as possible and therefore include the following:

- common bird's-foot trefoil (Lotus corniculatus);
- common knapweed (Centaurea nigra);
- bush vetch (Vicia cracca);
- hawkbits (Leontodon spp.);
- hawkweeds (Hieracium spp.);
- labiates (Lamiaceae);
- ragwort (Jacobaea vulgaris);
- meadow vetchling (Lathyrus pratensis);
- other trefoils (Fabaceae);
- other vetches (Vicia spp.);
- common fleabane (Pulicaria dysentarica);
- ox-eye daisy (Leucanthemum vulgare);
- yellow rattle (Rhinanthus minor);
- red clover (Trifolium pratense); and
- woundworts (Stachys spp.).

6.5.3 Scrub fringe

6.5.3.1 Scrub is an important interface with open flowery habitats.

6.5.3.2 It is also important for deadwood beetles and flies that utilize its spring blossom as adults.

6.5.3.3 Scrub, or any trees, should not shade out important areas of flowery areas.

6.5.3.4 Where scrub is needed to produce an interface, it should be positioned on the northern side of the mosaic.

6.5.3.5 Where additional scrub planting is required, only use native species. The following species provide a continuity of flowers from early spring to summer:

- apples (Malus domestica agg.);
- blackthorn (*Prunus spinosa*);

- cherry plum (Prunus cerasifera);
- field maple (*Acer campestre*);
- hawthorn (Crataegus monogyna);
- plums (Prunus domestica agg.);
- rowan (Sorbus aucuparia); and
- willows (*Salix* spp.).

6.5.4 Deadwood

6.5.4.1 It is recommended that the woodlands be retained. They have intrinsic value in their own right and also buffer and protect the water courses.

6.5.4.2 Where any areas/or individual trees cannot be retained, rework the tree trunks on site as deadwood features. They should be retained in as large a volume as possible (i.e. do not section them up into short 'logs').

6.5.4.3 Tree trunks can be placed in semi-shade and full sun to benefit the widest range of invertebrates. The majority should be simply dragged to the edge of a woodland to keep them as intact and whole as possible.

6.5.4.4 Some can be inserted into the ground to replicate standing deadwood.

6.5.4.5 The key for deadwood resources is 'the larger the better'.

6.5.5 Wetlands

6.5.5.1 Although wetlands did not feature strongly in the survey analysis, it is evident that high-water-table habitats such as marshes are an element of that site that increases diversity. As such, impacts to the hydrology of low-lying areas should be avoided, and a pond cluster is recommended to increase the value of wetlands. This cluster of ponds should include a range of ponds with different profiles and depths. In this way, even during times of drought, at least one pond should be designed to retain some water. This will benefit not only the aquatic and semi-aquatic invertebrates but also a wide range of wildlife.

6.5.5.2 The ponds do not need to be juxtaposed with any specific feature but will work best where they form part of a matrix with other invertebrate features, in particular the scrub fringe.

7 Bat Surveys

7.1 Methodology

7.1.1 Desk Study

7.1.1.1 Sources of information used in the desk study are presented in Table 15.

Table 15 – Desk Study Sources of Information

Source	Date Consulted	Information Sought
Online aerial imagery	02/02/2024	Review of satellite imagery.
MAGIC website (www.magic.gov.uk)	02/02/2024	Locations of granted EPSL within 5km of the site.
Lancashire Environment Record Network (LERN)	21/01/2022	Records of bats within 1km of the site boundary.

7.1.2 Emergence/Re-entry Surveys

7.1.2.1 Two emergence and one re-entry survey were undertaken following guidance set out in Collins (2016), which was the most up to date guidelines at time of surveying.

7.1.2.2 All surveys were conducted by four suitability qualified ecologists.

7.1.2.3 The surveys were conducted using handheld BatScanner and Batbox Duet bat detectors. Surveyors were positioned around the building to observe the Potential Roosting Features (PRFs) identified during the PRA.

7.1.2.4 The emergence surveys started at least 15 minutes before sunset until approximately 1.5 to 2 hours after sunset. The re-entry surveys started approximately 1.5 to 2 hours before sunrise, until 15 minutes after sunrise.

7.1.2.5 A Night Vision Aid (NVA) was used on two of the three survey visits to assist in data collection. The Night Fox Red Infra-Red Camera was mounted on a tri-pod and positioned facing the building with the most suitable PRFs and was left to record throughout the duration of the survey. An external infra-red lamp was set up adjacent to the camera to illuminate the building.

7.1.2.6 Summary of the survey details are provided in Table 16, and each surveyors' relevant bat surveying experience is detailed within Appendix 14. Figure 3 provides a plan illustrating surveyor positions.

Figure 3. Surveyor positions for B1

Table 16. Emergence/Re-entry Survey Details

Date	Sunset/ sunrise time	Survey time	Surveyors	Weather conditions at sunset
17/05/23	21:08	20:53 – 22:38	S1 – Jake Healy S2 – Adam Ousby S3 – Jennifer Furby S4 – Siobhan Smyth	Temp: 11°C Cloud cover: 7/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None
15/06/23	23:12	21:27 – 23:42	S1 – Katy Ellen S2 – Adam Ousby S3 – Jennifer Furby S4 – Jake Healy	Temp: 20°C Cloud cover: 0/8 oktas Wind: 0 Beaufort Precipitation (Ppt): None
16/08/23	05:49	04:19 – 06:04	S1 – Jenny Darby S2 – Nathan Morton S3 – Jake Healy S4 – Siobhan Smyth	Temp: 11°C Cloud cover: 2/8 oktas Wind: 0 Beaufort Precipitation (Ppt): None

7.1.3 Transect Surveys

7.1.3.1 Due to the site being assessed as providing high commuting and foraging value to bats, activity transect surveys were undertaken in accordance with the most up to date guidance at the time (Collins, 2016).

7.1.3.2 Two transects were conducted on site monthly from May to September (inclusive).

7.1.3.3 Transects started at sunset and lasted for approximately 2 hours.

7.1.3.4 The transect route was predetermined following the fieldwork undertaken for the associated PEA (Urban Green, 2022a) and was plotted in such a way to include all of the most valuable features present on the site.

7.1.3.5 Transects were conducted by two surveyors walking at a steady pace and stopping at 10 pre-determined listening points for a period of 5 minutes.

7.1.3.6 The surveys were conducted using an Anabat Scout bat detector which was set to record the entirety of the survey.

7.1.3.7 Surveyors noted down the number of bat passes, activity, and species recorded at each listening point and while traversing between points.

7.1.3.8 The direction of the transect route, depicted in figure 4, was reversed on all even numbered surveys to prevent spatial-temporal biases.

7.1.3.9 Table 17 summarises the survey details.

Table 17. Transect Survey Details

Transect Number	Date	Sunset/sunrise time	Surveyors	Weather conditions at sunset
1	11/05/23	20:58	S1 – Jake Healy S2 – Max Grindle	Temp: 12°C Cloud cover: 2/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None
2	23/05/23	21:17	S1 – Jake Healy S2 – Katy Ellen	Temp: 14°C Cloud cover: 2/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None
3	09/06/23	21:37	S1 – Jake Healy S2 – Katy Ellen	Temp: 13°C Cloud cover: 2/8 oktas Wind: 3 Beaufort Precipitation (Ppt): None
4	19/06/23	21:44	S1 – Max Grindle S2 – Katy Ellen	Temp: 17°C Cloud cover: 0/8 oktas Wind: 0 Beaufort Precipitation (Ppt): None
5	10/07/23	21:38	S1 – Toby Mills S2 – Katy Ellen	Temp: 16°C Cloud cover: 3/8 oktas Wind: 3 Beaufort Precipitation (Ppt): None
6	24/07/23	21:20	S1 – Jake Healy S2 – Megan Taylor	Temp: 13°C Cloud cover: 2/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None
7	09/08/23	20:55	S1 – Jake Healy S2 – Katy Ellen	Temp: 13°C Cloud cover: 3/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None

Transect Number	Date	Sunset/sunrise time	Surveyors	Weather conditions at sunset
8	24/08/23	20:19	S1 – Jake Healy S2 – Megan Taylor	Temp: 14°C Cloud cover: 0/8 oktas Wind: 0 Beaufort Precipitation (Ppt): None
9	07/09/23	19:45	S1 – Jake Healy S2 – Katy Ellen	Temp: 24°C Cloud cover: 6/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None
10	21/09/23	19:10	S1 – Jake Healy S2 – Megan Taylor	Temp: 11°C Cloud cover: 2/8 oktas Wind: 1 Beaufort Precipitation (Ppt): None

Figure 4. Transect Route.

7.1.4 Static deployments

7.1.4.1 As detailed in the best practice guidance (Collins, 2016), the activity surveys included the deployment of static bat detectors each month (May – September).

7.1.4.2 Three static detectors were deemed suitable for the size of the site. The detectors used were Anabat Chorus static detectors.

7.1.4.3 Static detectors were deployed for a period of five consecutive nights in dry suitable conditions and were placed in particular habitats of interest.

7.1.4.4 Table 18 summarises the details of each deployment.

Table 18. Summary of static deployments

Deployment Period	Dates	Static Number	Grid reference	Habitats present	Weather conditions
Deployment 1 - May	11/05/23 - 15/05/23	Static 1	SD 74520 40349	Small block of woodland adjacent watercourse. SE corner of site	Mainly clear with highs of 18°C and lows of 6 °C. No rain.
		Static 2	SD 74553 40627	Linear block of woodland, with small stream running through centre. Centre of the site	
		Static 3	SD 74201 40763	Small block of woodland/scrub adjacent Littlemoor Road. SW corner of the site.	
Deployment 2 - June	08/06/23 - 12/06/23	Static 1	SD 74509 40698	Linear hedgerow feature with mature trees present. Centre-west of site.	Mainly clear with highs of 30°C and lows of 9°C. Period of heavy rain on 25/06/23
		Static 2	SD 74586 40663	Linear block of woodland, with small stream running through centre. Centre of the site	
		Static 3	SD 74524 40353	Small block of woodland adjacent watercourse. SE corner of site	
Deployment 3 - July	25/07/23 - 30/07/23	Static 1	SD 74524 40353	Small block of woodland adjacent watercourse. SE corner of site	Mainly clear with highs of 20°C and lows of 13°C. Intermittent periods of rain throughout.
		Static 2	SD 74607 40725	Linear block of woodland, with small stream running through centre. Centre of the site	
		Static 3	SD 74391 40552	Block of woodland where two watercourses converge. Centre-south of site.	
Deployment 4 - August	02/08/23 - 06/08/23	Static 1	SD 74524 40353	Small block of woodland adjacent watercourse. SE corner of site	Mainly clear with highs of 18°C and lows of 10°C. Intermittent periods of rain throughout.
		Static 2	SD 74607 40725	Linear block of woodland, with small stream running through centre. Centre of the site	
		Static 3	SD 74391 40552	Block of woodland where two watercourses converge. Centre-south of site.	
Deployment 5 - September	07/09/23 - 11/09/23	Static 1	SD 74417 40387	Linear block of trees adjacent watercourse. Centre-south of site.	Mainly clear with highs of 25°C and lows of 13°C.

Deployment Period	Dates	Static Number	Grid reference	Habitats present	Weather conditions
		Static 2	SD 74450 40778	Linear hedgerow adjacent abandoned barn building. Western aspect of site.	Periods of showers on 11/09/23
		Static 3	Malfunction		

7.1.5 Data Analysis

Emergence/Re-entry surveys

7.1.5.1 The footage recorded on the NVA during the emergence surveys was reviewed in its entirety, focussing on times where bats had been recorded by surveyors during the field survey.

Activity Surveys

7.1.5.2 The recordings collected during both the transect surveys and static deployments were transferred from the SD cards onto a desktop and saved on file.

7.1.5.3 The recordings were input into Anabat Insight to be analysed and were run through an auto identification tool at 99% confidence interval.

7.1.5.4 All calls were than reviewed by an ecologist to check species identification and correct any wrongly identified species or any calls that were left blank

7.2 Constraints to the Survey

7.2.1.1 Due to the surveys being conducted by observation during low light conditions, this may cause constraint of visual assessments. No surveyors were visually constrained during the survey, other than that of low light conditions, and all potential roosting features were observed throughout the survey time period. NVA equipment was used during emergence/re-entry surveys where possible to alleviate this constraint.

7.2.1.2 Myotis Alcathoe (*Myotis alcathoe*), brandt's (*Myotis brandtii*), Daubenton's bat (*Myotis daubentonii*) and whiskered (*Myotis mystacinus*) bat are often difficult to distinguish between by handheld detectors and sound analysis. As such, the species have been recorded as Myotis sp. throughout the report.

7.2.1.3 Static detectors malfunctioned on occasion when left in the field and as such, some nights did not record any activity. On Deployment 5, Static 3 did not record throughout the entire survey period. Due to the large number of calls recorded for the site, this is not anticipated to have had a major constraint on the outcome of the surveys.

7.2.1.4 Due to the condition of Trees 4 and 5, they were unsafe to climb manually. Efforts were made to get a Mobile Elevated Work Platform (MEWP) on site to aid further inspection of PRFs. However, this could not be facilitated and as such further survey work could not be completed. Further survey effort is necessary as detailed in Section 7.5.7.

7.3 Results

7.3.1 Desk Study

Data Records

7.3.1.1 Nine records of bats were returned within the data search, including records of common pipistrelle (*Pipistrellus pipistrellus*), unidentified pipistrelle species (*Pipistrellus* spp.), as well as a record of an unidentified bat species (*Chiroptera* spp.).

7.3.1.2 Six records were related to roosts, with one record relating to an unidentified pipistrelle maternity roost. The closest record was located approximately 450m west of the site from 2015 and was related to a common pipistrelle roost.

7.3.1.3 Two records were related to field signs, and both were attributed to common pipistrelle. The closest record was located approximately 1.4km west of the site.

7.3.1.4 All species of bat returned are listed on the Lancashire Local Biodiversity Action Plan and all bats, excluding the common pipistrelle, are listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Granted EPSLs within 5km

7.3.1.5 A total of 12 granted European Protected Species Licences (EPSLs) were returned within 5km of the site, based on consultation with MAGiC.

7.3.1.6 These licenses spanned from 2011 to 2029 and related to common pipistrelle, soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auritus*), and whiskered bat.

7.3.1.7 The closest licence (Ref: 2018-34104-EPS-MIT) was located approximately 200m south of the site. This licence was to allow for the impact and damage of a breeding site and for the damage and destruction of a resting place for common pipistrelle and soprano pipistrelle between 2018 - 2023.

7.3.2 Emergence/Re-entry Surveys

Dusk Emergence – 17/05/2023

7.3.2.1 Bat activity was consistent throughout the survey, with surveyors 2 and 3 recording the most activity.

7.3.2.2 The first pass was recorded at 21:20, 12 minutes after sunset, by S3 and was observed commuting south from behind the surveyor towards B1 and beyond, comprising a single common pipistrelle.

7.3.2.3 Bat activity was semi regular thereafter, with all surveyors recording bat passes on a frequent basis. The majority of records were attributed to common pipistrelle, though occasional records of brown long-eared, soprano pipistrelle and noctule (*Nyctalus noctula*) were also recorded.

7.3.2.4 The majority of activity was identified as a small number of common pipistrelle foraging around the exterior of the building and the adjacent hedgerow/scrub habitats.

7.3.2.5 The final pass was recorded by S3 at 22:37 comprising a common pipistrelle that was heard, not seen.

7.3.2.6 None of the surveyors recorded an emergence or re-entry within or associated with B1.

Dusk Emergence – 15/06/2023

7.3.2.7 Activity levels were similar to previous survey, with all surveyors recording regular activity surrounding the building and adjacent habitats.

7.3.2.8 The first pass was recorded at 22:04, 22 minutes after sunset, by S1, S2, and S4. S4 observed the single common pipistrelle commuting from the east of the site in westerly direction beyond southern aspect of the building.

7.3.2.9 Common pipistrelle again were the dominant species, though occasional noctule and soprano calls were also recorded.

7.3.2.10 Surveyor 4 highlighted that a minimum of 2 common pipistrelle were consistently foraging around the south-western aspect of the building until the end of the survey.

7.3.2.11 No bat activity was recorded to roosting behaviour in relation to the building or any of the potential roosting features surveyed.

Dawn Re-entry – 16/08/2023

7.3.2.12 Activity during the survey was fairly limited with only a small number of passes recorded by all surveyors.

7.3.2.13 The first pass was recorded at 04:24, 5 minutes into the survey, by S3 comprising a heard but not seen record of common pipistrelle.

7.3.2.14 Common pipistrelle were the exclusive species recorded on site during the survey.

7.3.2.15 Activity appeared to be lesser than previous surveys, with foraging activity similarly recorded surrounding the exterior of the building and associated habitats.

7.3.2.16 The final pass was recorded at 05:16, 33 minutes before sunrise, commuting north past the building towards the residential estate adjacent the site.

7.3.2.17 No activity that suggests roosts are present within B1 was recorded.

Summary

7.3.2.18 Bat activity was found to be fairly consistent between the two dusk emergence surveys undertaken on site, with a low number of common pipistrelle observed to be foraging around the building and associated hedgerow with trees.

7.3.2.19 Rarer instances of soprano pipistrelle, noctule, and brown long-eared were also recorded using the site.

7.3.2.20 The dawn survey recorded little activity.

7.3.2.21 No roosting activity was observed in relation to the building, though the activity levels and timings of recordings suggest that there is roosting activity within the wider landscape.

7.3.3 Transect Surveys

Transect 1 – 11/05/23

7.3.3.1 Starting at 20:58 the first call was recorded at 21:01, 3 minutes after sunset, comprising a faint *Myotis* pass. Activity fluctuated throughout the survey with Listening Points 5, 7, 9, and 10 providing the highest number of passes. These areas were strongly correlated with woodland and watercourse habitats, that are expected to be of value to bat species.

7.3.3.2 Common pipistrelle were the dominant species during the survey (65.2%), with occasional soprano pipistrelle (28.1%) passes and rare passes of *Myotis* (4%), noctule (2%), and unidentified bat (0.8%) also recorded.

7.3.3.3 A total of 253 bat calls were recorded during the survey.

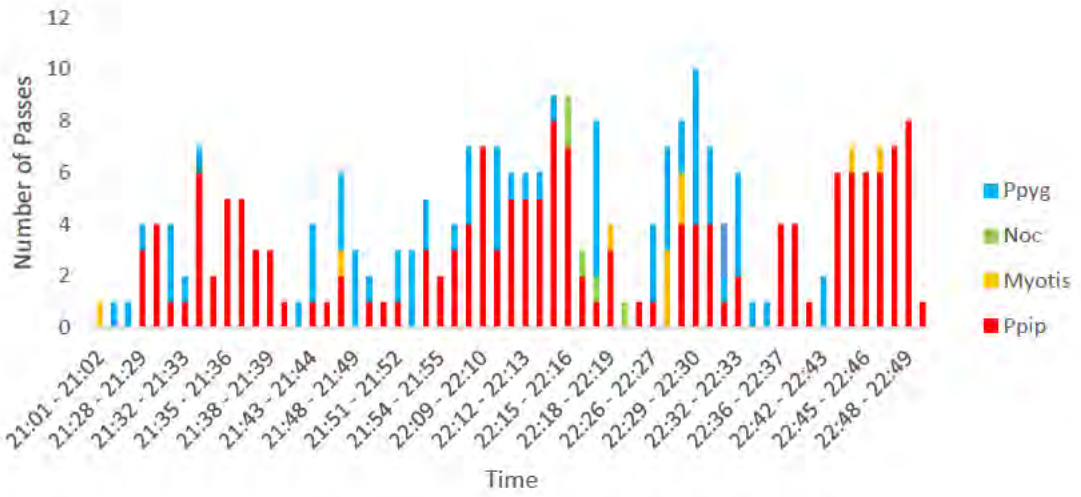


Figure 5. Number of passes per minute by species during Transect 1.

Transect 2 – 23/05/23

7.3.3.4 Transect 2 returned a similar level of activity to Transect 1 with an equal number of total passes recorded (253).

7.3.3.5 However, soprano pipistrelle (43.9%) was the dominant species, while common pipistrelle was also abundant (38.7%). Rarer instances of *Myotis* (9.5%) and noctule (7.9%) were recorded also.

7.3.3.6 The first pass was recorded at 21:31, 14 minutes after sunset, attributed to noctule.

7.3.3.7 Activity was relatively low until Listening points 8 and 7 where the most activity throughout the survey was recorded, this also corresponded with highest species diversity, with all 4 species recorded within these areas.

7.3.3.8 Listening Points 8 and 7 corresponded with the block of woodland and watercourse comprising the southern border of the site.

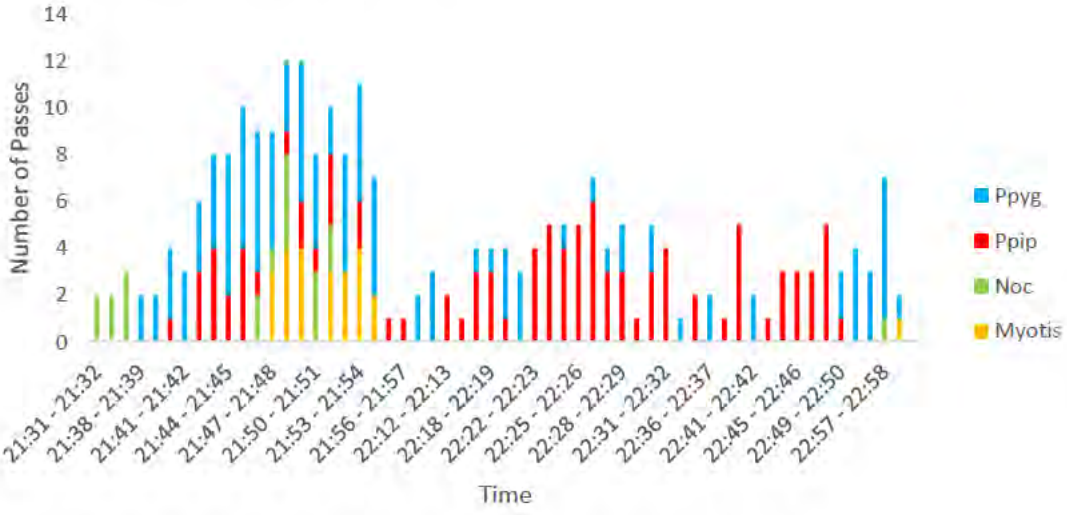


Figure 6. Number of passes per minute by species during Transect 2.

Transect 3 – 09/06/23

7.3.3.9 Transect 3 recorded a slightly lower level of activity compared to the previous two surveys, with a total of 170 bat passes recorded.

7.3.3.10 Common and soprano pipistrelle were again the dominant species recorded comprising 48.2% and 34.7%, respectively. Occasional passes of noctule (5.3%) and Myotis (11.8%) were also recorded.

7.3.3.11 The first call comprised a soprano pipistrelle at 22:08, 31 minutes after sunset while traversing between Listening Points 3 and 4, followed by a noctule pass at 22:09. Activity was then predominantly made up of irregular passes of common and soprano pipistrelle, until 22:46 when Myotis calls became more regular and activity levels increased.

7.3.3.12 This increase in activity levels and species diversity, again corresponded with Listening Points 7 and 8 at the south of the site along the watercourse and within the block of woodland.

7.3.3.13 A lull in activity then occurred until Listening Point 10 when activity became slightly more regular until the end of the survey, corresponding with the central linear block of woodland.

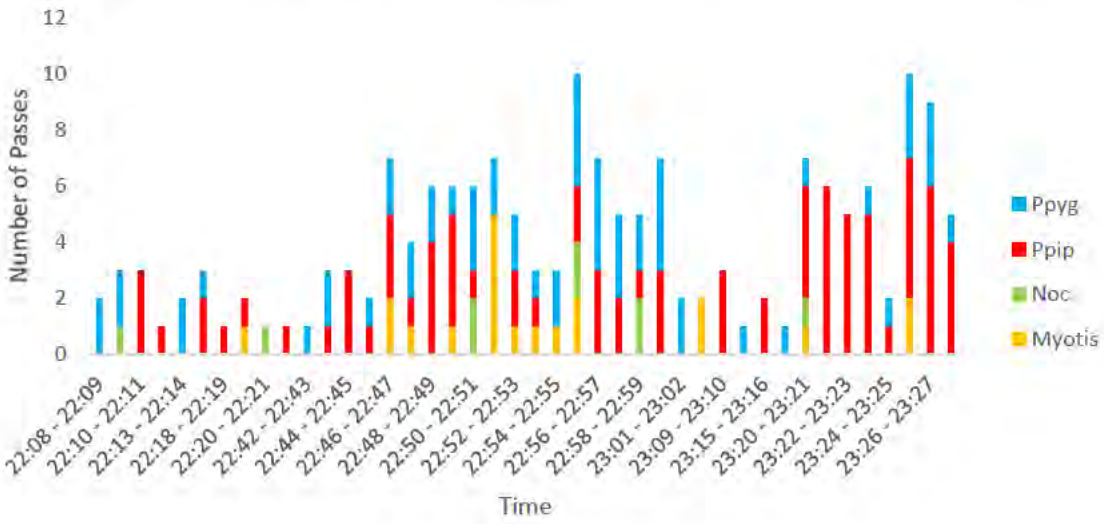


Figure 7. Number of passes per minute by species during Transect 3.

Transect 4 – 19/06/23

7.3.3.14 Transect 4 recorded the lowest level of activity thus far, with only 159 calls recoded during the survey.

7.3.3.15 Soprano pipistrelle were the dominant species recorded comprising 62.9% of the calls. Common pipistrelle activity was much reduced compared to previous surveys with only 26.4% of calls attributed to this species. *Myotis* and noctule made up the remainder of the calls recorded, comprising 7.5% and 3.1%, respectively.

7.3.3.16 As opposed to the previous surveys activity levels were higher in the first stages of the survey and became lower later on.

7.3.3.17 Again, the highest level of activity coincided with Listening Points 8 and 7, though activity was attributed to pipistrelle species here.

7.3.3.18 All four species were recorded at Listening Point 7, before activity levels dropped greatly from that point onwards until the end of the survey.

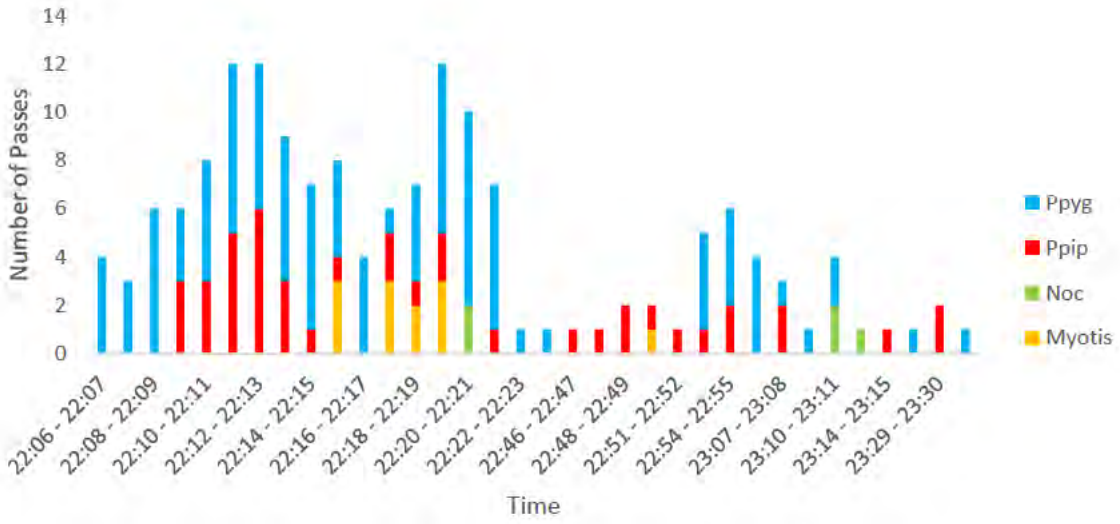


Figure 8. Number of passes per minute by species during Transect 4.

Transect 5 – 10/07/23

7.3.3.19 Transect 5 returned a similar level of activity to Transects 1 and 2 with a total of 248 calls recorded during the survey.

7.3.3.20 Soprano pipistrelle were the most abundant species (51.2%) followed by common pipistrelle (29.8%), with noctule (13.7%) and *Myotis* (5.2%) also recorded occasionally.

7.3.3.21 The first pass was recorded at 22:05, 27 minutes after sunset, at Listening Point 3 at the western extent of the site adjacent to Littlemoor Road.

7.3.3.22 Activity was fairly low and irregular until 22:49 between Listening Points 6 and 7 where activity levels began to increase until 23:14 at Listening Point 9.

7.3.3.23 Species diversity was highest between 23:01 and 23:05 at Listening Point 8 adjacent to the southern watercourse.

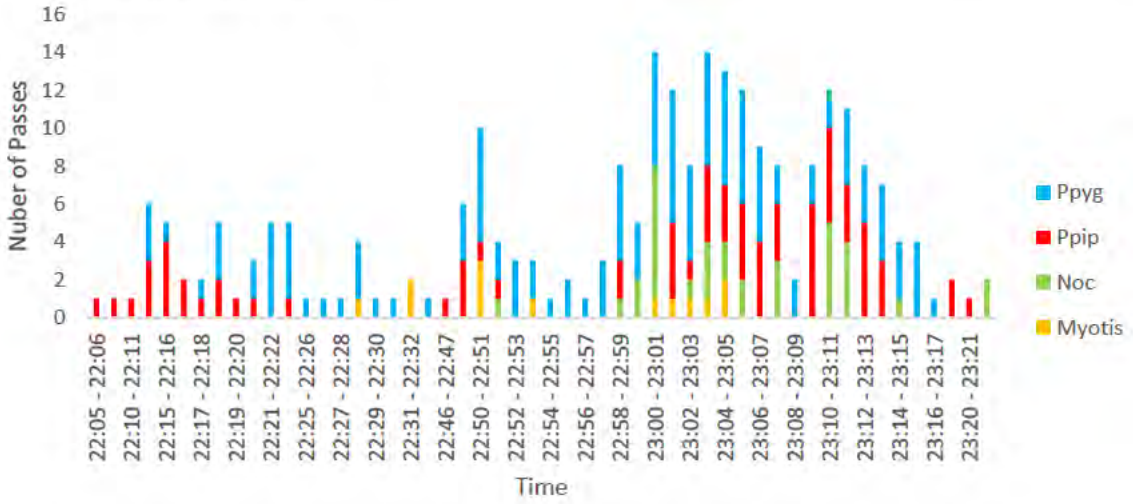


Figure 9. Number of passes per minute by species during Transect 5.

Transect 6 – 24/07/23

7.3.3.24 Activity levels during Transect 6 were the highest so far with a total of 313 calls recorded throughout the survey.

7.3.3.25 Soprano pipistrelle (55.6%) was the most abundant species recorded, with common pipistrelle (26.8%) also frequent. Noctule (11.2%) and *Myotis* (6.4%) comprised the remainder of recordings.

7.3.3.26 The first pass was recorded at 21:23, 3 minutes after sunset, traversing to Listening Point 10.

7.3.3.27 Activity levels spiked early within the transect between 21:47 and 21:57 around Listening Point 8, before a slight reduction in bat passes until another peak of activity between 22:34 and 22:41 at Listening Point 4.

7.3.3.28 Listening Point 4 was associated with a linear block of woodland along the south-western boundary of the site.

7.3.3.29 Bat activity was still present at the end of the survey at Listening Point 1 at 23:15 attributed to common and soprano pipistrelle.

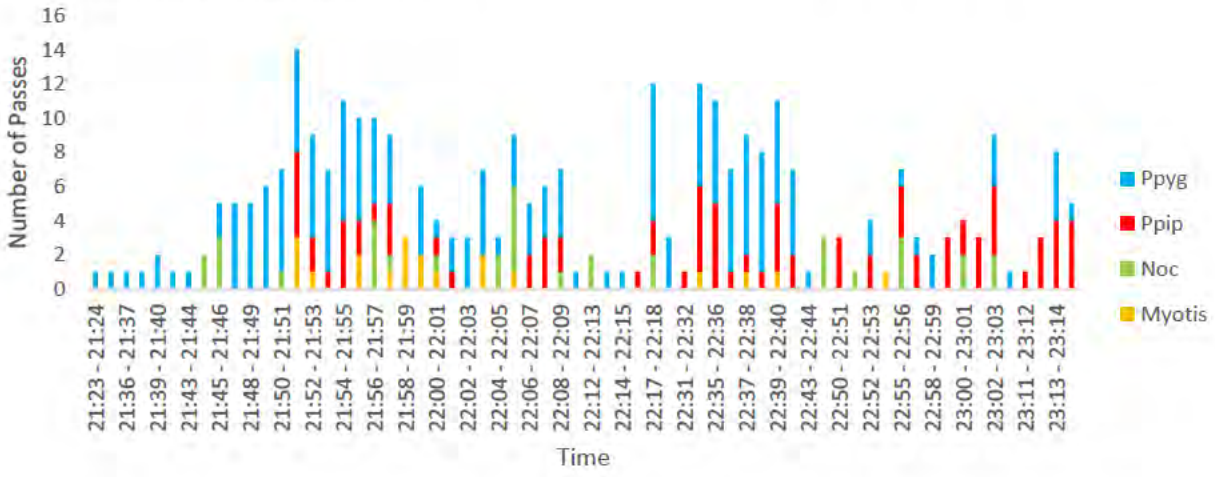


Figure 10. Number of passes per minute by species during Transect 6.

Transect 7 – 09/08/23

7.3.3.30 Activity levels throughout Transect 7 were fairly average with 194 total calls recorded.

7.3.3.31 Soprano pipistrelle were the dominant species comprising 50% of all calls, followed by common pipistrelle (29.9%) *Myotis* (11.9%) and noctule (8.3%).

7.3.3.32 Activity was fairly low until spikes at Listening Points 4 and 8. Which is consistent with the previous surveys corresponding to linear woodland and watercourse features along the southern boundary of the site.

7.3.3.33 *Myotis* activity appeared to be concentrated around Listening Points 7 and 8., particularly associated with the watercourse.

7.3.3.34 The final activity of the night was associated to 4 passes of noctule at the end of the survey.

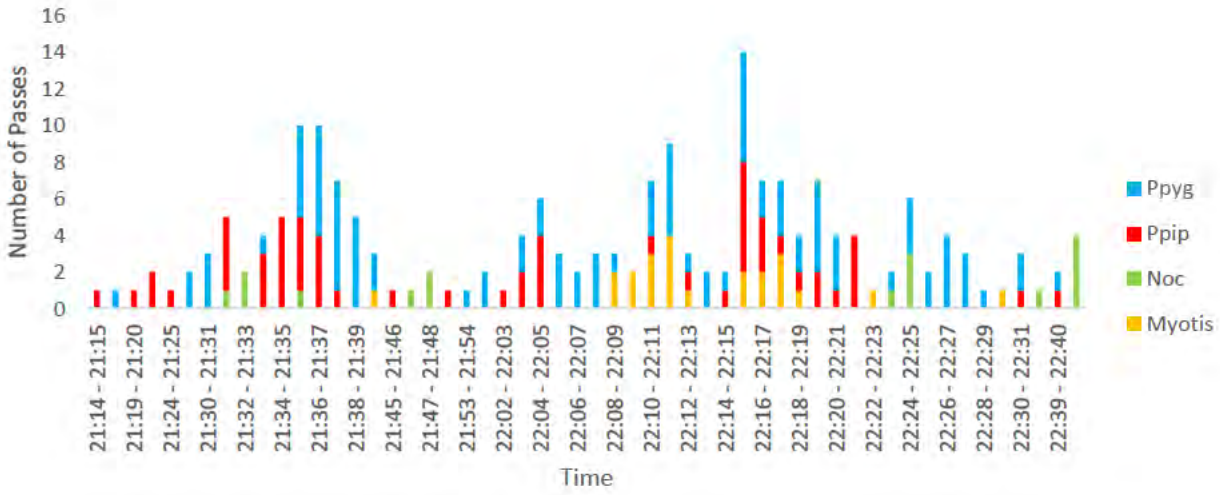


Figure 11. Number of passes per minute by species during Transect 7.

Transect 8 – 24/08/23

7.3.3.35 Activity levels were relatively high during the survey with a total of 309 calls recorded.

7.3.3.36 Species composition followed the patten that has emerged in previous surveys, with a dominance of soprano pipistrelle (61.2%) and the remaining calls split between common pipistrelle (20.4%), myotis (16.8%), and noctule (1.6%).

7.3.3.37 The first call was recorded at 20:24, 5 minutes after sunset, consisting of common pipistrelle. Activity levels were then scarce until 20:43, around Listening Point 8, where levels increased dramatically, with a maximum of 12 passes a minute, split evenly between soprano pipistrelle and *Myotis*.

7.3.3.38 Activity levels remained relatively high into Listening Point 7 before dropping again for the remainder of the survey, Listening Points 4 and 3 which had greater maximum passes at 6 per minute.

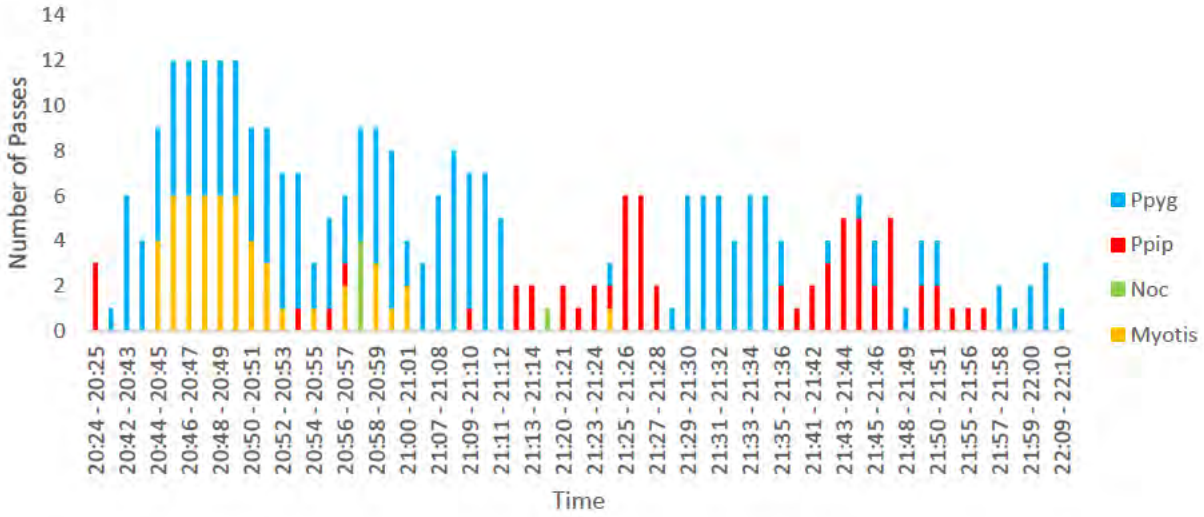


Figure 12. Number of passes per minute by species during Transect 8.

Transect 9 – 07/09/23

7.3.3.39 Activity levels during Transect 9 were the lowest thus far with only total 105 calls recorded.

7.3.3.40 Activity was dominated by common and soprano pipistrelle with their activity levels fairly even, comprising 46.7% and 45.7%, respectively, of all recordings. *Myotis* (5.7%) and noctule (1.9%) were the remaining calls recorded.

7.3.3.41 The first pass was recorded at 20:08, 23 minutes after sunset, attributed to common pipistrelle. Levels increased for a small period of time between 20:14 and 20:19, while traversing between Listening Points 2 and 3.

7.3.3.42 The highest number of passes was recorded at 20:36, with a total of 9 passes, while traversing between Listening Points 4 and 5.

7.3.3.43 Activity levels were low from that point on, apart from a late spike between Listening Points 8 and 9 which also returned passes from all 4 species.

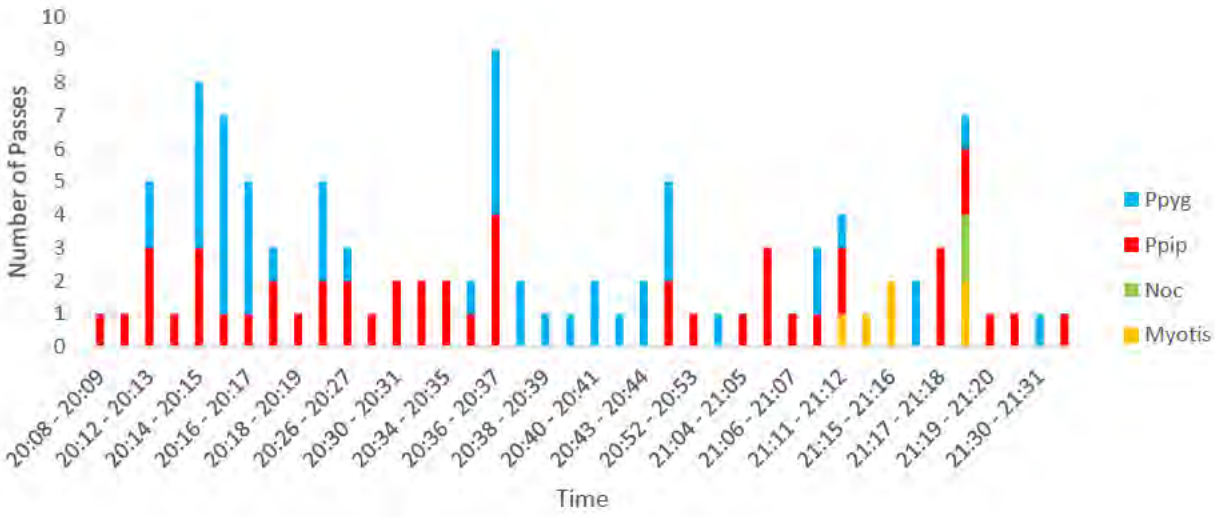


Figure 13. Number of passes per minute by species during Transect 9.

Transect 10 – 21/09/23

7.3.3.44 Activity levels during the final transect survey were fairly average with 252 calls recorded.

7.3.3.45 Following the trend seen in previous surveys soprano pipistrelle were the dominant species (68.3%), followed by common pipistrelle (21.8%), *Myotis* (8.7%), and noctule (1.2%).

7.3.3.46 The first pass was recorded at 19:33, 23 minutes after sunset, traversing between Listening Points 9 and 8, comprising soprano pipistrelle.

7.3.3.47 Listening Points 8 and 7 followed the same trend as previously providing a spike in activity and the highest species diversity of the survey, before activity levels dropped before another spike around 20:27 at Listening Point 4.

7.3.3.48 *Myotis* passes were heavily correlated with Listening Points 8 and 7, with the only noctule pass recorded in relation to Listening Point 2 towards the end of the survey.

7.3.3.49 The final pass was recorded 20:52 at Listening Point 1 comprising soprano pipistrelle.

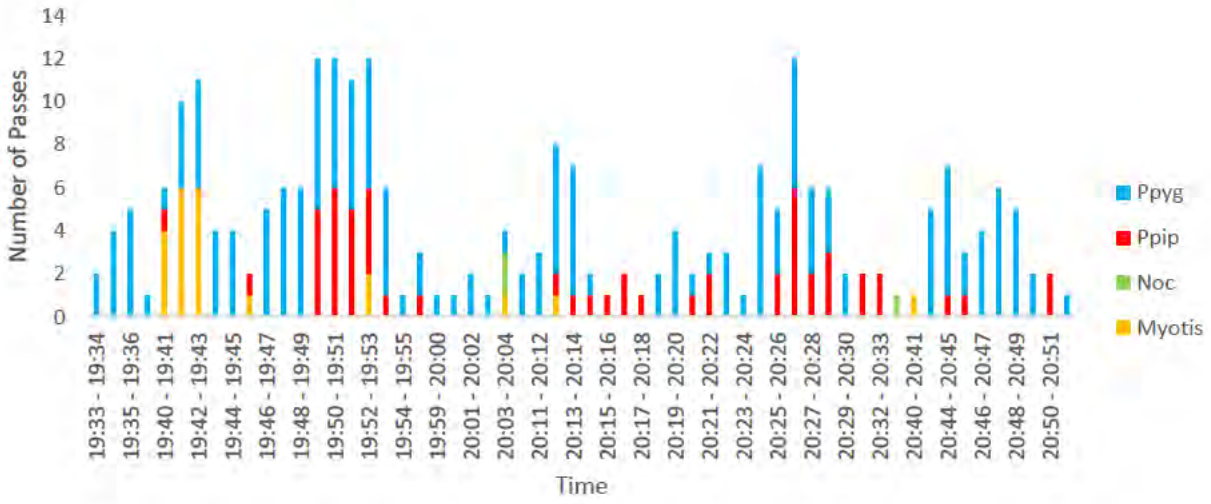


Figure 14. Number of passes per minute by species during Transect 10.

Summary

7.3.3.50 A total of 2252 bat calls were recorded over the suite of transect surveys completed on site.

7.3.3.51 A distinct pattern was evident within the data collected with soprano pipistrelle being the most dominant species on site comprising 50.89% of all records. Common pipistrelle were also abundant (34.13%), with rarer occurrences of *Myotis* (8.95%), noctule (5.94%), and unidentified bat (0.09%).

7.3.3.52 The average number of calls recorded per transect was 225.6, with highest number of calls recorded during Transect 6 where 313 calls were recorded. Transect 9 returned the lowest level of activity with only 105 calls recorded.

7.3.3.53 The highest level of activity seemed to be heavily concentrated around Listening Points 7 and 8 on all surveys, associated with the southern watercourse, which is lined by trees and connected to multiple blocks of woodland.

7.3.3.54 Listening Point 4 also returned higher levels of activity along the south-western boundary of the site, which was associated with a woodland edge feature and appeared to be used as foraging ground as well as commuting route.

7.3.3.55 While the rest of the site did not return as high activity levels as Listening Points 4, 7, and 8, bat activity was recorded at all listening points over the course of the suite of surveys suggesting the that the whole site provides suitable commuting and foraging conditions.

7.3.3.56 Listening Points 7 and 8 were also associated with the highest level of species diversity, with usually at least 3 of the species using the site recorded in correlation with these areas.

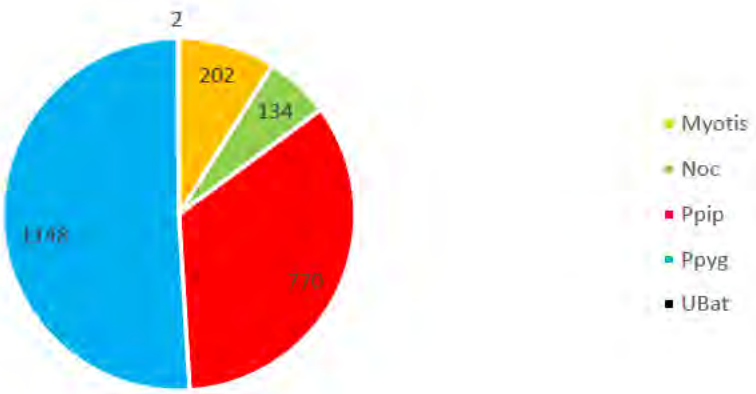


Figure 15. Pie chart showing distribution of passes recorded throughout all transect surveys by species.

7.3.4 Static Deployments

Deployment 1 – May

7.3.4.1 During the May deployment period a total number of 5135 bat calls were recorded across the three different statics, with an average of 1027 bat calls per night.

7.3.4.2 Soprano pipistrelle were the dominant species on site making up 51.37% of all calls recorded, followed by common pipistrelle at 40.56%. Rare instances of *Myotis* (6.41%), *Nyctalus* (1.17%), noctule (0.31%) and brown long-eared (0.18%) were also recorded.

7.3.4.3 Brown long-eared were only recorded at Static 1 and Static 3. While the remaining species were found at all static locations.

7.3.4.4 Static 3 (36.14%) recorded the highest amount of activity, though all three static locations were found to have a similar level of use, with Static 1 and Static 2 comprising 33.65% and 30.20%, respectively.

7.3.4.5 Common and soprano pipistrelle were dominant across all three locations. However, *Myotis* were heavily linked to Static 1 and Static 2, with 159 and 156 calls recorded at each location, respectively, compared with only 14 calls at Static 3.

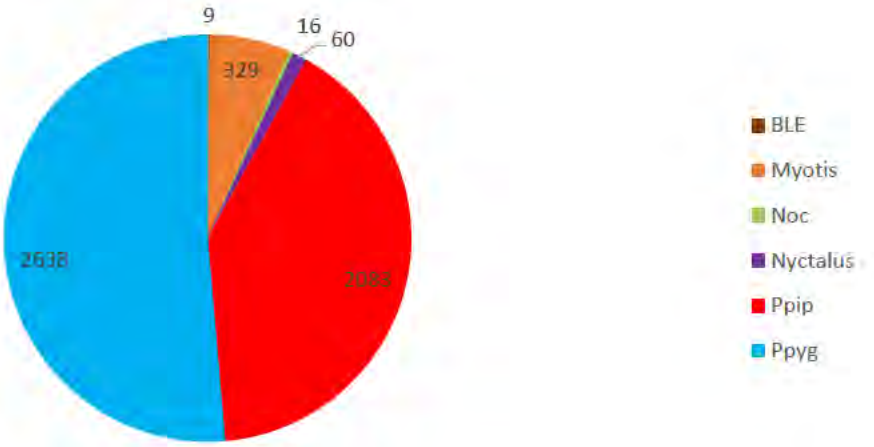


Figure 16. Pie chart showing distribution of calls per species over all 3 static locations.

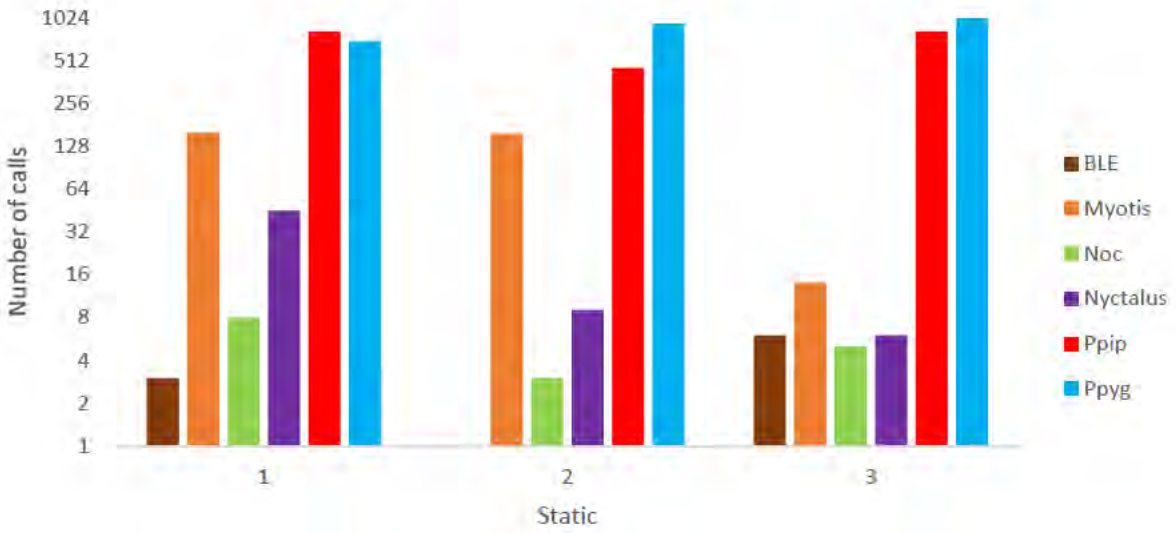


Figure 17. Number of calls per static by species for Deployment Period 1.

Deployment 2 – June

7.3.4.6 The total activity recorded during the June deployment was much lower than that of May, with only 711 total calls collected.

7.3.4.7 However, only Static 1 recorded for 5 consecutive nights, with Statics 2 and 3 only recording on 3 and 2 nights, respectively.

7.3.4.8 As would be expected with the longer recording period, Static 1 collected the largest amount of data attributed to 473 calls.

7.3.4.9 Interestingly however, Static 3 returned a higher number of total calls compared to Static 2, despite recording for a night less (186 calls compared to 52).

7.3.4.10 Furthermore, out of all static locations, Static 2 recorded the highest level of *Myotis* activity with 37 calls recorded, compared with 11 at Static 1 and 8 at Static 3.

7.3.4.11 While there was a technical error with two of the statics during this deployment resulting in a lower number of calls recorded, the trend in the data followed the same pattern as previously reported, with common pipistrelle (56.82%) and soprano pipistrelle (31.79%) being the most abundant species, followed by *Myotis* (7.88%), *Nyctalus* (2.25%), brown long-eared (0.98%) and noctule (0.28%).

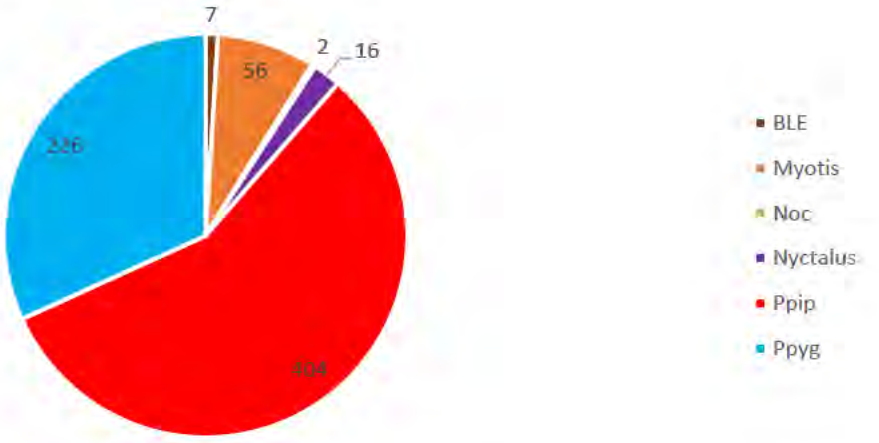


Figure 18. Pie chart showing distribution of calls per species over all 3 static locations in June.

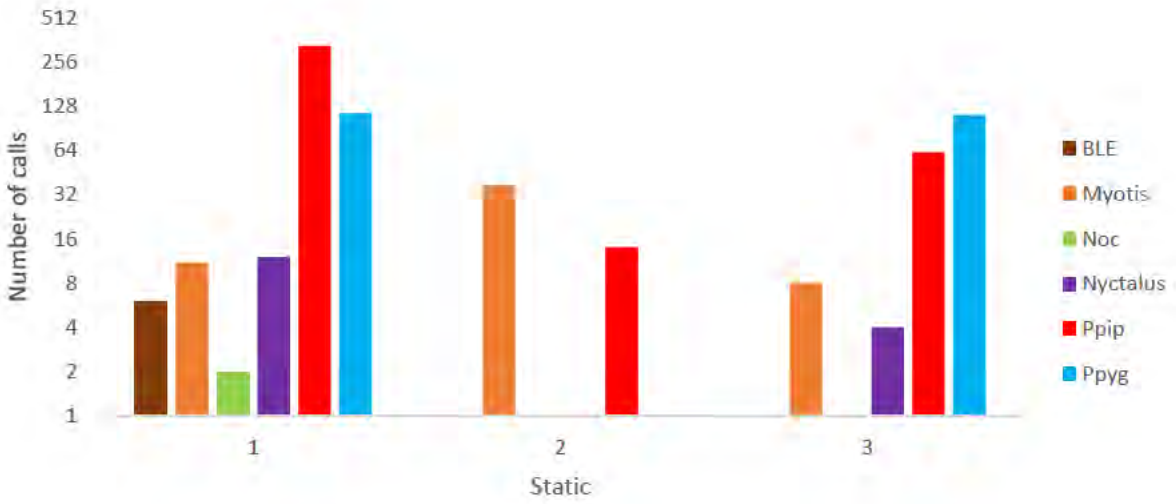


Figure 19. Number of calls per static by species for Deployment Period 2.

Deployment 3 – July

7.3.4.12 Activity levels were reduced compared to May with a total of 4108 calls recorded over all three locations, averaging 822 bat calls per night.

7.3.4.13 Species diversity was highest during this deployment period with the addition of confirmed Leisler's (*Nyctalus leisleri*) calls recorded, although very rarely, with only 3 calls detected at Static 1.

7.3.4.14 Soprano pipistrelle was the most abundant species within the records at 61.03%, with common pipistrelle following at 26.05%. *Nyctalus* (5.01%), *Myotis* (4.31%), noctule (3.31%), brown long-eared (0.22%) and Leisler's (0.07%) made up the remainder of the calls recorded.

7.3.4.15 Static 1 recorded 57% of all calls and had all 7 species present, with high levels of *Nyctalus*/noctule and *Myotis* calls compared to Statics 2 and 3.

7.3.4.16 Static 3 recorded very little activity (395 calls) in relation to Statics 1 (2357 calls) and 2 (1356 calls).

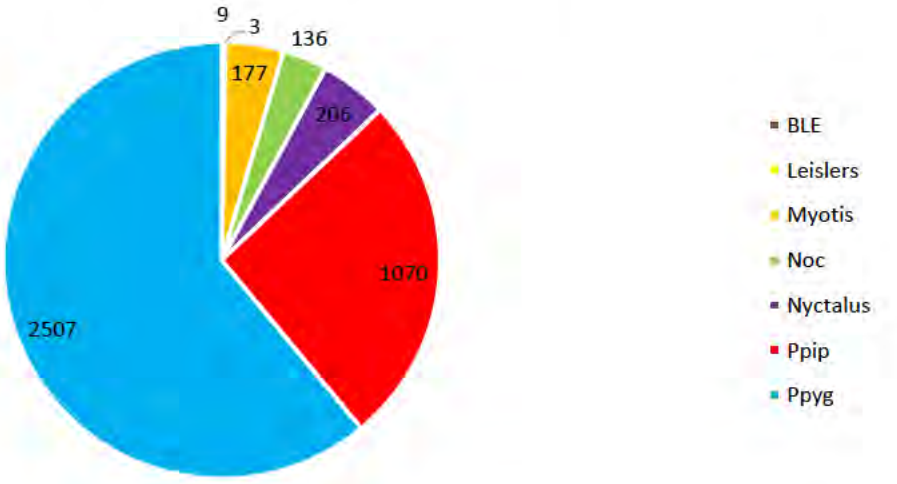


Figure 20. Pie chart showing distribution of calls per species over all 3 static locations in July.

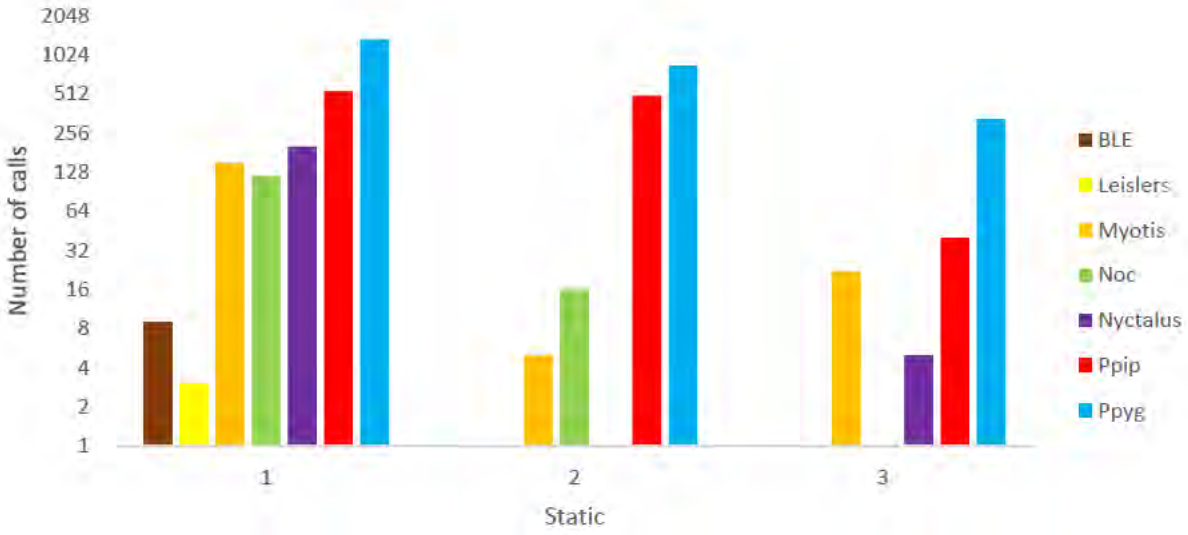


Figure 21. Number of calls per static by species for Deployment Period 3.

Deployment 4 – August

7.3.4.17 Activity levels were much reduced during the august deployment period, with only 2131 calls recorded.

7.3.4.18 Soprano pipistrelle were the dominant species, comprising 57.44% of all calls followed by common pipistrelle at 27.17%. *Nyctalus* and *Myotis* were the next most frequent at 7.46% and 4.69%, respectively. Rarer instances of noctule (2.91%), Leisler's (0.23%), and brown long-eared (0.09%) were also recorded.

7.3.4.19 All species recorded were found at Static 1, with only 5 species recorded at Static 3 and 3 species at Static 2.

7.3.4.20 Static 1 recorded the highest level of activity (49.18% of calls), closely followed by Static 2 (41.2%), with Static 3 recording significantly less activity (9.62%).

7.3.4.21 While soprano pipistrelle were the dominant species across all statics, *Nyctalus* were the second most frequent recorded at static compared to common pipistrelle at Statics 2 and 3.

7.3.4.22 Brown long-eared and Leisler's were only recorded at Static 1 in very low frequencies.

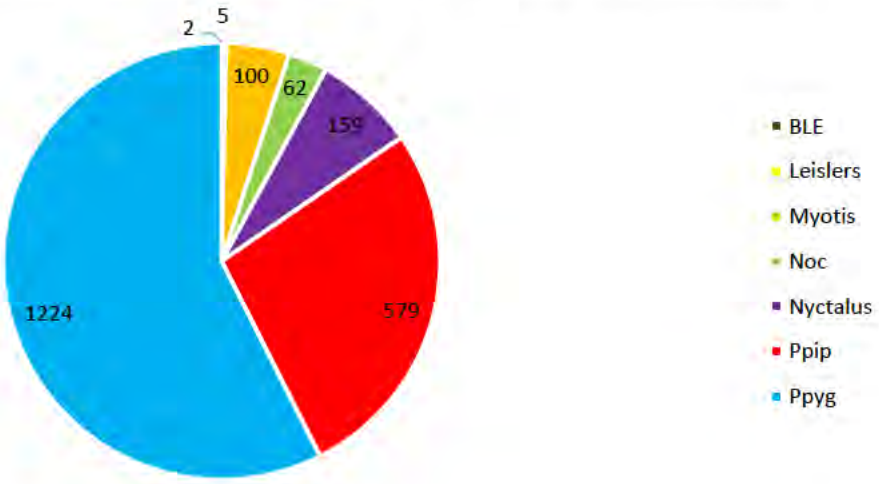


Figure 22. Pie chart showing distribution of calls per species over all 3 static locations in August.

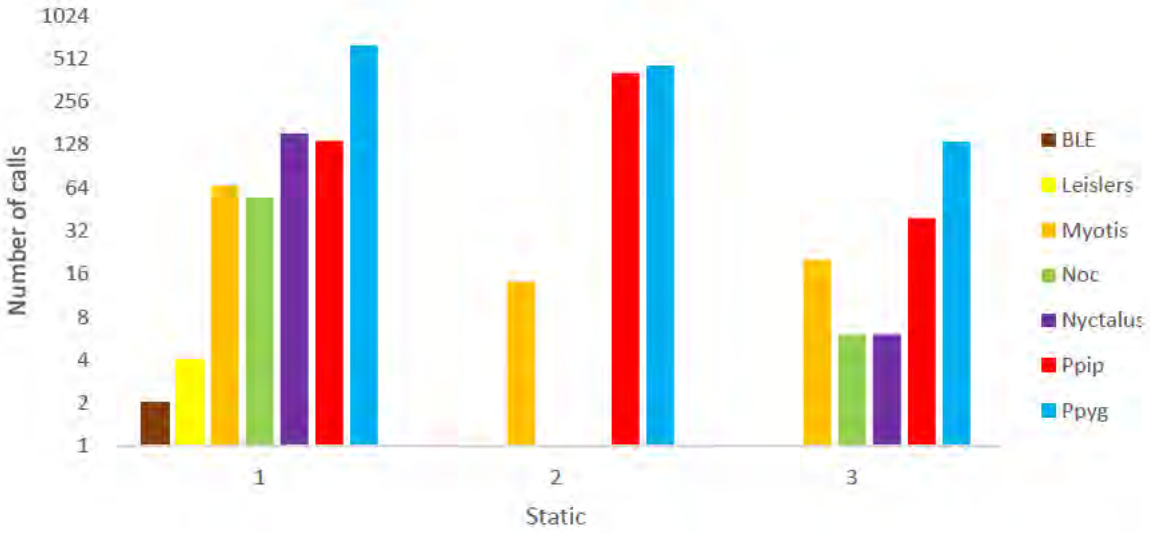


Figure 23. Number of calls per static by species for Deployment Period 4.

Deployment 5 – September

7.3.4.23 During the September deployment, one of the static detectors malfunctioned and did not record any activity, as such, only two static detectors were analysed.

7.3.4.24 However, activity levels increased from August with a total of 2595 calls, averaging 519 calls a night.

7.3.4.25 Following the trend of previous surveys, soprano pipistrelle were the most frequent attributed to 61.62% of all calls. However, *Myotis* were the second most abundant comprising 29.67% of all calls, which was higher than previous deployments.

7.3.4.26 Common pipistrelle activity was much reduced with 8.21% of recordings identified as the species. Rare calls of brown long-eared (0.23%), *Nyctalus* (0.19%), and noctule (0.08%) were also recorded.

7.3.4.27 Both statics returned a similar level of activity (1390 calls at Static 1, 1205 calls at Static 2), though the composition of calls was markedly different.

7.3.4.28 Static 1 was dominated by *Myotis* calls, which were significantly lower at Static 2. While species diversity was higher at Static 2 than Static 1 where brown long-eared were exclusively recorded.

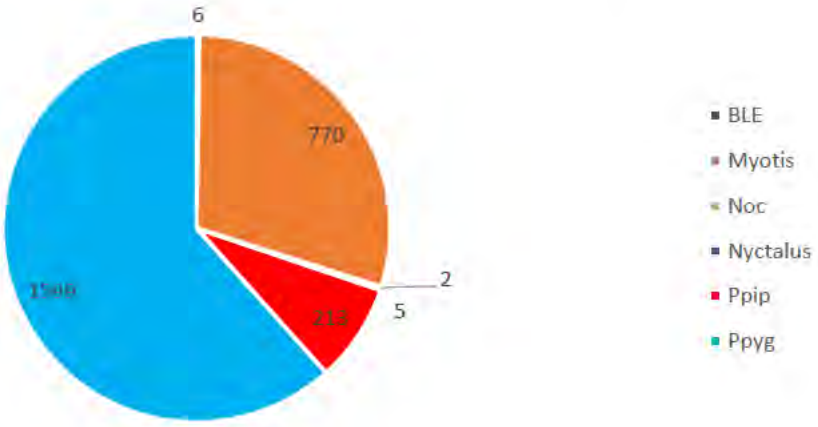


Figure 24. Pie chart showing distribution of calls per species over 2 static locations in September.

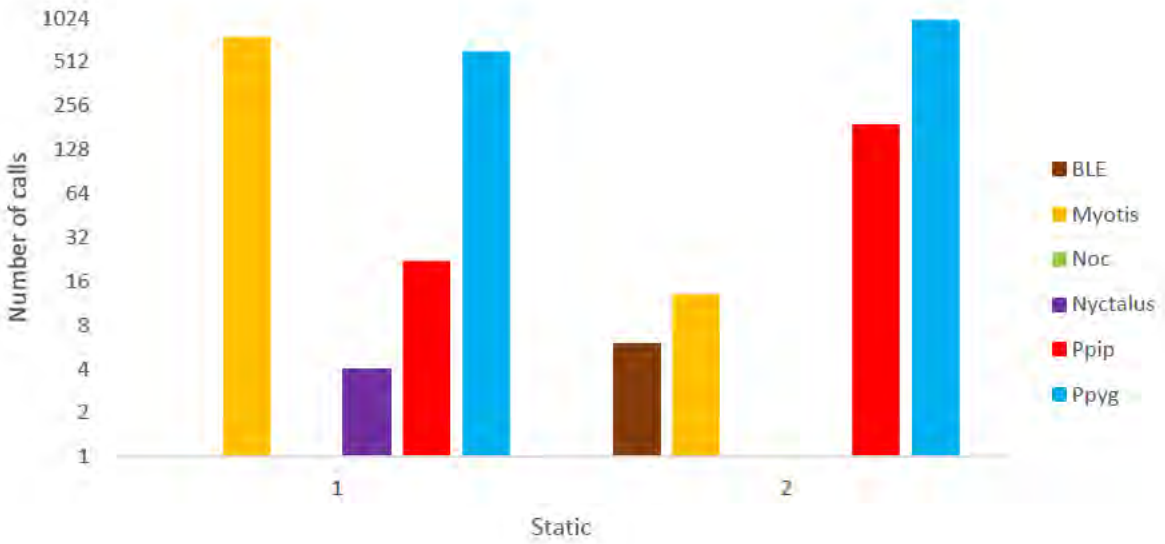


Figure 25. Number of calls per static by species for Deployment Period 5.

Summary

7.3.4.29 Over the 5 different deployment periods a total of 14680 bat calls were recorded on site.

7.3.4.30 A very clear pattern emerged over the course of the surveys showing that soprano pipistrelle were the most abundant species on site and were prominent across the site extent. Soprano pipistrelle comprised 55.91% of all calls recorded.

7.3.4.31 Common pipistrelle were the second most abundant, comprising 29.56% of all calls and were present across all static locations.

7.3.4.32 *Myotis* calls comprised 9.73% of all calls, though were more abundant than common pipistrelle during the September period. *Myotis* activity was heavily correlated to the southern block of woodland and treelined watercourse that forms the southern border of the site.

7.3.4.33 The remaining activity was made up of rare calls from *Nyctalus* (3.03%), noctule (1.48%), brown long-eared (0.22%), and Leisler's (0.05%).

7.3.4.34 Activity levels were highest in the south-east of the site associated with the woodland habitats and adjacent watercourse, which suggests that these areas are of highest value for both commuting and foraging.

7.3.4.35 Though some level of activity was present at all static locations throughout the survey effort, which indicates that all habitats on site experience some level of use by bats.

7.3.4.36 Deployment Period 1 had the highest level of activity, returning 5135 bat calls which makes up 34.98 % of all calls recorded, with Deployment Period 3 returning the second highest level of activity at 4108 calls (27.98%).

7.3.4.37 Deployment Period 2 recorded the lowest activity with only 711 total calls and 4.84% of the entire recordings. However, this coincides with technical errors in Statics 2 and 3 which could explain the drop in activity. Static 1 recorded for the full 5 nights during June however, but only had an average of 95 calls a night, which was much lower than the overall average of 587 calls per night. This suggests the activity levels would still have been lower even with Statics 2 and 3 recording for the full deployment period.

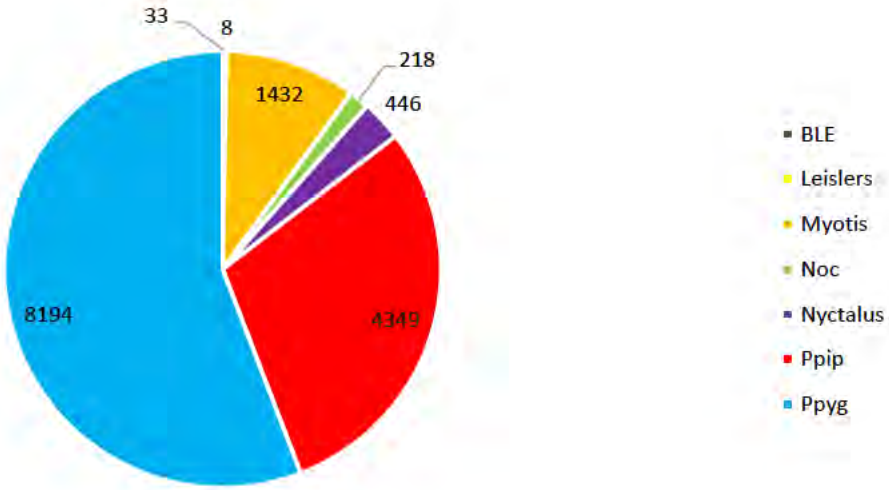


Figure 26. Pie chart showing distribution of total calls per species.

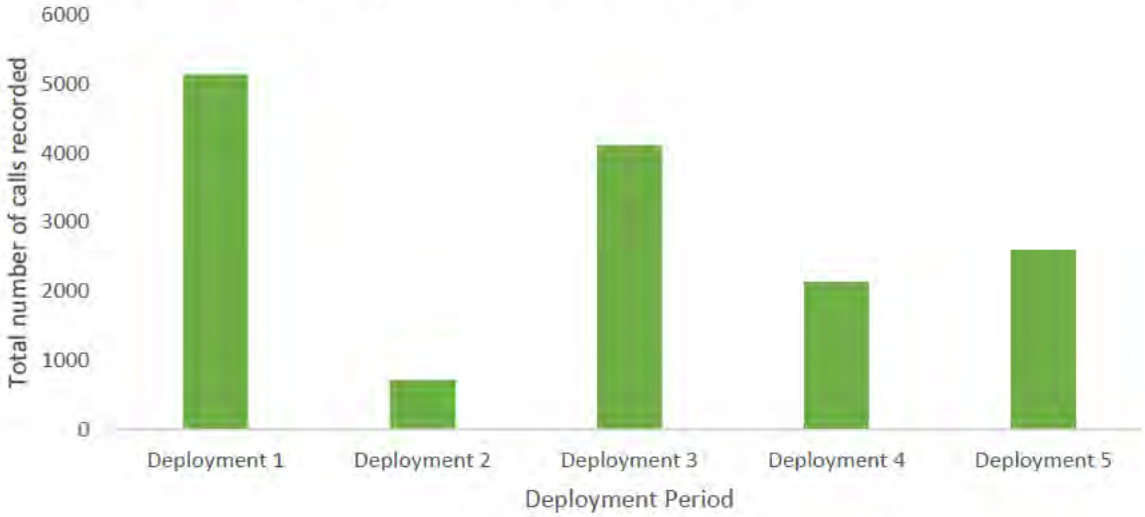


Figure 27. Total number of calls recorded per deployment.

7.4 Mitigation Recommendations

7.4.1 Impact Assessment

7.4.1.1 During the suite of bat surveys undertaken between May and September 2023, the site was found to support an overall high level of bat activity.

7.4.1.2 Building 1 was found not to support a bat roost, though consistent levels of foraging activity was observed surrounding the building and associated scrub and hedgerow habitats.

7.4.1.3 The activity surveys found that the site is an important foraging and commuting resource for local bat populations, particularly correlated with the southern boundary of the site that was associated with woodland and treelined watercourse, as well as the central woodland block.

7.4.1.4 The site is used by a minimum of 6 bat species. The more common and widespread species such as common and soprano pipistrelle were found to use the entirety of the site at some level. Though the more specialist species such as Myotis and brown long-eared were heavily associated with the southern woodland and watercourse.

7.4.1.5 The proposed development works will include the demolition of the building on site and removal of open grassland habitat. As the building does not support a bat roost the demolition works are not anticipated to impact roosting bats. However, the construction and operational phase of the site may impact on commuting and foraging bats should suitable mitigation not be implemented throughout.

7.4.2 Construction Mitigation

7.4.2.1 Based on the most recent landscape proposals (References: P22-0161.001A through to .007a) the majority of open grassland habitat and some lengths of hedgerow are to be lost in order to facilitate the development.

7.4.2.2 However, the central block of woodland is proposed as being retained, as are the treelines and woodland along the southern border of the site adjacent to the watercourse.

7.4.2.3 The retained habitats have been identified as the hotspot for bat activity within the site extent and are important commuting and foraging resources for local bat populations.

7.4.2.4 As such, is recommended that these areas be fenced off with a minimum 5m buffer, using Heras fencing, to protect their integrity during the construction phase.

7.4.2.5 A plan showing the proposed locations of fencing can be found in Appendix 16.

7.4.3 Lighting Mitigation

7.4.3.1 All bats have some degree of sensitivity to artificial, night-time lighting. Introducing artificial lighting to areas that are not currently illuminated may sever important bat flight lines and discourage bats from using roost provisions.

7.4.3.2 It is recommended external lighting is not to be provided on the retained habitats and adjacent watercourse to ensure important flight lines used by bats are not impacted by introduced lighting.

7.4.3.3 It is advised that a light mitigation plan is produced to assess the pre- and post-development changes in lighting and to advise on an appropriately sensitive lighting scheme as part of the development.

7.4.3.4 As such, the following recommendations are to be considered within the scheme during its construction, to minimise impacts of lighting. The recommendations are as follows:

- Keep site lighting to minimum levels.
- Luminaries should lack UV elements and preferably LED lighting with a warm white light should be used over cool white light (ideally <2700Kelvin).
- Lighting should feature peak wavelengths greater than 550nm.
- Internal lighting should be positioned away from windows to minimise light spill, where appropriate.
- Light placement should be downward facing to prevent excess horizontal or vertical light spill.
- The use of integrated fittings such as cowls, shields, louvres, and hoods, that effectively contain light spill from unintended areas, where appropriate.
- The use of hard landscaping features to block light and create dark corridors.
- Avoid illuminating any suitable retained bat habitats, particularly the hedgerows, trees, blocks of woodland and waterbodies that are potential commuting and foraging habitat for bats.

- Use of timed security lights should be set on motion-sensors and using short, 1-minute timers, to minimise light use, where appropriate.
- Column heights of lighting can be considered to minimise light spill.

7.4.3.5 Introduction of artificial light should also be prohibited within the areas highlighted in the Bat Mitigation Map (Appendix 16) to retain dark corridors within the operational phase of the site.

7.4.4 Foraging and Commuting Mitigation

7.4.4.1 The proposed landscape designs detail the creation of a waterbody in the south-western corner of the site, this will provide suitable foraging habitat and provide a diversity of habitats present within the site extent.

7.4.4.2 The waterbody should be planted with the species that will benefit bats such as:

- Bog bean (*Menyanthes trifoliata*)
- Bugle (*Ajuga reptans*)
- Creeping jenny (*Lysimachia nummularia*)
- Flag iris (*Iris pseudacorus*)
- Marsh woundwort (*Stachys palustris*)
- Meadowsweet (*Filipendula ulmaria*)
- Purple loosestrife (*Lythrum salicaria*)
- Water avens (*Geum rivale*)
- Water forget-me-not (*Myosotis scorpioides*)
- Water mint (*Mentha aquatica*)
- Hemp agrimony (*Eupatorium cannabinum*)
- Marsh mallow (*Althaea officinalis*)
- Marsh marigold (*Caltha palustris*)

7.4.4.3 There is also a central area of Public Open Space (POS) proposed within the designs. This area is likely to receive heavy footfall through recreational use by residents.

7.4.4.4 However, a 2-3m buffer field margin should be maintained around the borders of this area and have a reduced management regime, allowing the sward height to grow taller and wilder.

7.4.4.5 These areas should be seeded with native plants such as:

- Corncockle (*Agrostemma githago*)
- Cornflower (*Centaurea cyanus*)
- Corn marigold (*Glebionis segetum*)
- English bluebell (*Hyacinthoides non-scripta*)
- Field poppies (*Papaver rhoeas*)
- Knapweed (*Centaurea* sp.)
- Mallow (*Malva* sp.)
- Ox-eye daisy (*Leucanthemum vulgare*)
- Primrose (*Primula vulgaris*)
- Red campion (*Silene dioica*)
- Field scabious (Knautia arvensis)
- St John's wort (*Hypericum perforatum*),
- Wood forget-me-not (*Myosotis sylvatica*)
- Yarrow (*Achillea millefolium*)

7.4.4.6 The blocks of woodland and watercourse to the south of the site should be enhanced through a suitable planting regime that enhances the foraging benefit to bats.

7.4.4.7 This should include:

- Bramble (*Rubus fruiticosus* agg.)
- Alder (*Alnus glutinosa*)
- Dog rose (*Rosa canina*)
- Elder (*Sambucus nigra*)
- Guelder rose (*Viburnum opulus*)
- Hawthorn (*Crataegus monogyna*)
- Hazel (*Corylus avellana*)
- Honeysuckle (*Lonicera* sp.)

7.4.4.8 Where feasible the designs should seek to increase the number of hedgerows and tree lines, in order to maintain a level of connectivity within the site and to the wider landscape.

7.4.5 Roost Provision

7.4.5.1 Although the building on site was deemed not to support a bat roost, the level of activity recorded during the surveys suggests that there is a number of roosts either within on site in retained trees or within the surrounding area.

7.4.5.2 It is recommended that that the proposed development includes artificial roosting opportunities aimed at the species identified on site.

7.4.5.3 Properties adjacent the southern boundary of the site and the central POS should be built with integrated bat bricks.

7.4.5.4 Specifications of types of boxes to be implemented can be found in Table 19.

7.4.5.5 A plan detailing the location and quantity of bat boxes should be produced by a suitably qualified ecologist.

7.4.5.6 The roof spaces of properties should be lined with type 1F bituminous felt. Breathable or Modern Roofing Membranes (BRM/MRM) must not be used. Recent research suggests that these are detrimental to bat populations in the long-term with entanglement being a major issue along with affects upon microclimates of roof voids (BCT, 2019).

Table 19. Examples of bat boxes and their specifications.

Bat Box Type	Image	Target Species
Ibstock Enclosed Bat Box 'C' NHBS.com Height: 29cm Width: 21.5cm Depth: 10.5cm Weight 6.7kg		*Pipistrellus* species.
2FTH Schwegler Universal Bat Summer Roost NHBS.com Height: 70cm Width: 50cm Depth: 19.5cm Weight: 25.4kg Material: Schwegler Woodcrete		All species
2FN Schwegler Bat Box NHBS.com Dimensions: 36cm x 16cm (H x D) Weight: 4.3kg Material: Schwegler Woodcrete		*Nyctalus* species

Bat Box Type	Image	Target Species
Large Multi Chamber WoodStone Bat Box NHBS.com External dimensions: 15cm x 27.5cm x 16cm Internal dimensions: 11cm x 19cm x 11cm Materials: Woodstone® and wood Weight: 4kg		Common pipistrelle, Nathusius's pipistrelle, Soprano pipistrelle, noctule, Brown long-eared bat, and Natterer's bat
1FW Schwegler Bat Hibernation Box NHBS.com External dimensions: 38cm diameter, 50cm height Internal dimensions: 20cm diameter, 38cm height Weight: 28kg Material: Schwegler wood-concrete with galvanised steel hanger		All species

7.4.6 Other Considerations

7.4.6.1 During the emergence/re-entry surveys conducted on site a large number of feral pigeon (*Columba livia domestica*) were observed nesting within B1.

7.4.6.2 Therefore, it is recommended that the demolition of B1 be completed outside of the bird nesting season (March – September, inclusive).

7.4.6.3 It is recommended that a control specialist be contracted to keep the building free of pigeon prior to demolition.

7.4.7 Further Surveys

7.4.7.1 As detailed in Section 7.2, Trees 4 and 5 could not be climbed and other arrangements could not be made to survey the trees for potential bat roosts.

7.4.7.2 As both trees were assessed as having high bat roosting potential and both trees are scheduled for removal, further survey works are required prior to any felling works.

7.4.7.3 It is recommended that the trees be assessed aerially by facilitation of a MEWP in order to further investigate potential roosting features identified in the PEA (Urban Green, 2022a).

7.4.7.4 Should this not be possible, a minimum of three nocturnal emergence surveys should be conducted following guidance set out by the Bat Conservation Trust (Collins, 2023).

8 Reptile Surveys

8.1 Methodology

8.1.1 Desk Study

8.1.1.1 Sources of information used in the desk study are presented in Table 20.

Table 20. Desk Study Sources of Information

Source	Date Consulted	Information Sought
Online aerial imagery	21/11/2023	Review of satellite imagery.
Lancashire Environment Record Network (LERN)	21/11/2023	Records of reptiles within 1km of the site boundary.

8.1.2 Presence/Likely Absence Surveys

8.1.2.1 On the 13/03/2023, 79 refugia (comprising a mixture of 59 mats 18 tins) were placed within habitats that were considered to be potentially suitable for use by reptiles within the site. In addition, the varied vegetation structure within the broadleaved woodland, hedgerows and associated watercourses were identified as potentially suitable for use by reptiles and these were inspected during the survey.

8.1.2.2 Refugia were left to settle for a period of 18 days prior to surveys commencement. Seven presence/likely absence surveys were undertaken between 31/03/2023 and 15/09/2023 following standard guidance detailed within the Herpetofauna Workers' Manual (Gent & Gibson, 2003) and relevant reptile survey guidance (Froglife, 1999; Sewell *et al.*, 2013).

8.1.2.3 During each survey visit, a visual survey of the area and artificial refugia was carried out prior to any sheltering reptiles observed underneath.

8.1.2.4 Surveys were conducted by Jake Healy, Ecologist at Urban Green and Max Grindle, Assistant ecologist.

Table 21. Summary of weather conditions and results

Visit number	Date	Surveyor names	Temperature at start	Weather conditions
V1	31/03/2023	Jake Healy	9˚C	Cloudy, Dry, Overcast (8/8 Oktas).
V2	17/04/2023	Jake Healy and Max Grindle	12˚C	Cloudy, Dry, Overcast (8/8 Oktas).
V3	28/04/2023	Max Grindle	12 ˚C	Sunny, Dry, (3/8 Oktas).
V4	11/05/2023	Jake Healy	11˚C	Dry, Broken sky cover (5/8 Oktas).

Visit number	Date	Surveyor names	Temperature at start	Weather conditions
V5	01/09/2023	Jake Healy	15°C	Sunny, Dry, Broken sky cover (5/8 Oktas)
V6	01/09/2023	Jake Healy	19°C	Dry, Broken sky cover (5/8 Oktas)
V7	15/09/2023	Jake Healy	16°C	Dry, Broken sky cover (5/8 Oktas)

8.2 Constraints to Survey

8.2.1.1 It is not possible to provide accurate population size without undertaking detailed capture, mark and release surveys which require a substantial effort. However, it is possible to provide an indication of the relative population sizes by using peak counts of observed reptiles (if applicable).

8.2.1.2 One survey was conducted at the end of March, which is considered to be out of the optimal survey time, however the weather conditions were optimal for the survey to be carried out (9°C).

8.3 Results

8.3.1 Desk Study

8.3.1.1 A desk study was undertaken in February 2022 associated with the PEA (Urban Green, 2022a).

8.3.1.2 One historical record of common lizard (*Zootoca vivipara*) was received within 2km of the site from 1833.

8.3.1.3 The site provides suitable habitat for reptiles with areas of south facing scrub and woodland providing basking and shelter opportunities and suitable ecotones including grassland and two watercourses that may provide suitable commuting and foraging resources.

8.3.2 Presence/Likely Absence

8.3.2.1 No reptiles were identified during any of the survey visits. As such, reptiles are considered likely to be absent from the site, however, reptiles have a patchy distribution across England and tend to occur at low population densities.

8.3.2.2 Otherwise, four records of common toad (*Bufo bufo*), three field mouse (*Mus musculus*) and two field vole (*Microtus arvalis*) were recorded. The common toad is listed on Section 41 of the NERC Act (2006).

8.3.2.3 During survey 1, a common toad was seen under mat 17 (Refer to appendix 18) between some scattered trees, which may indicate suitable habitat for toads near this point. One field vole was found under mat 13 at the base of a group of trees. Another field vole sighting on mat 13 occurred during visit 2. Three field mice were found during visit 4 under mats 13, 30 and 37. Three common toad were sighted under mats 8 and 53 during visit 5.

8.4 Evaluation and Enhancement

8.4.1 Summary

8.4.1.1 The majority of the site comprised of improved grassland, broadleaved woodland, scattered trees, hedgerows and watercourse habitats which could provide some terrestrial cover for reptile species, with one historical record of common lizard in the local area (see Section 8.3.1).

8.4.1.2 No reptiles were identified during the survey visits, however one common toad, three field mouse and two field vole were recorded on-site.

8.4.1.3 No further surveys are deemed necessary, however small populations of reptiles can be difficult to detect due to their ecological nature. The site provides sufficient habitats for reptiles, and therefore it is considered that Precautionary Working Methods are followed during site clearance to avoid killing or injuring any reptiles.

8.4.1.4 The following Precautionary Working Methods will be adhered to during construction phase to ensure that no reptiles are impacted by the proposed development:

1. All site operatives will be inducted to the potential presence of the species and the species legal protection.
2. Should any protected species be discovered during construction or other works on site, which are likely to be affected by the development, works will cease immediately. The owner/ site manager will then seek the advice of a suitably qualified and experienced ecologist and works will only proceed in accordance with the advice they provide.
3. All clearance works (i.e. clearance of log piles, debris, rough grass etc.) will be undertaken when common reptiles and amphibians are likely to be fully active i.e. during the April to September period.
4. Clearance of dry-stone walls, logs, brash, stones, rocks or piles of similar debris will be undertaken carefully and by hand.
5. Clearance of tall vegetation will be undertaken using a strimmer or brush cutter with all cuttings raked and removed the same day. Cutting will only be undertaken in a phased way which may either include:
    a. Cutting vegetation to a height of no less than 30mm, clearing no more than one third of the site in any one day or;
    b. Cutting vegetation over three consecutive days to a height of no less than 150mm at the first cut, 75mm at the second cut and 30mm at the third cut.
6. Following removal of tall vegetation, using the methods outlined in point 5, remaining vegetation will be maintained at a height of 30mm through regular mowing or strimming to discourage common reptiles and amphibians from returning.
7. Ground clearance of any remaining low vegetation (if required) and any ground works will only be undertaken following the works in point 5) above.
8. Any trenches left overnight will be covered or provided with ramps to prevent animals falling into the trenches and being trapped. Excavations left overnight should be checked prior to filling. Any open pipes left overnight will be covered.

9. Any building materials such as bricks, stone etc. will be stored on pallets to discourage reptiles from using them as shelter. Any demolition materials will be stored in skips or similar containers rather than in piles on ground.

8.4.2 Enhancements

8.4.2.1 The site could be enhanced to provide more value to local reptiles within the post-development plans. Areas of grassland and scrub could be created with lengths of native hedgerow that connect to the borders of the site area.

8.4.2.2 Hibernacula and log piles can be placed in newly created habitats to provide suitable resting and hibernating value within the site.

9 Water Vole Survey

9.1 Introduction

9.1.1 Survey Site Context

9.1.1.1 The area of ecological study, hereafter referred to as the "Survey Area", consists of a 480m stretch of Pendleton Brook (Refer to figure 28).

Figure 28 – Survey Site Extent

9.1.1.2 The Survey Area is situated between Lower and Higher Standen and is located c. 1 km to the south of Clitheroe, Lancashire. The Survey Area consists of the main channel of Pendleton Brook and its adjoining banks. Mature trees, scrub, ruderal and both improved and semi-improved grassland border the brook to the north and south. Agriculture dominates the landscape immediately surrounding the Survey Area, with an on-going residential development under construction to the north.

9.1.2 Legislation and Policy

9.1.2.1 Full legal protection is afforded to water voles under Section 9 of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This protection makes it an offence to:

1. Intentionally kill, injure or take a water vole;
2. Possess or control any live or dead animal;
3. Intentionally or recklessly:
    a. damage or destroy any structure or place that a water vole uses for shelter or protection;

b. disturb a water vole whilst it is occupying a structure or place which it uses for shelter or protection; or

c. obstruct access to any structure or place which a water vole uses for shelter or protection.

9.1.2.2 Water voles are listed as a Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 41 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

9.1.3 Quality Assurance & Environmental Management

9.1.3.1 The author of this Section is Michael Bryant ACIEEM, Principal Ecologist at Ecology Elements Ltd., produced on behalf of Urban Green.

9.1.3.2 Ecologists for Ecology Elements are members of the Chartered Institute of Ecology and Environmental Management (CIEEM) and are therefore bound by a code of professional conduct.

9.1.3.3 The survey and report have been completed by a Principal Ecologist who is competent and has over 10 years' experience relating specifically to water vole habitat assessments and surveys.

9.1.3.4 All surveys and assessments have been undertaken with reference to the recommendations given in British Standards: 42020:2013 Biodiversity: Code of Practice for Planning and Development and current guidance pertaining to water voles (Dean et al., 2016).

9.2 Methodology

9.2.1 Desk Study

9.2.1.1 A desk study was carried out prior to the surveys to identify waterbodies and contextual information within and adjacent to the Survey Area. This included a review of OS maps, aerial photographs and the Multi-Agency Geographical Information for the Countryside (MAGiC) website. The Lancashire Environment Records Network (LERN) was also contacted to ascertain whether any records of water vole within a 2km radius of the Survey Area had been submitted.

9.2.2 Habitat Assessment

9.2.2.1 The habitat assessment was undertaken by an experienced Ecologist on the 16th May 2023. The weather conditions leading up to the site visit and on the day were suitable. The habitat assessment is based on descriptions provided by Dean (2021) in Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water Vole Surveys. This assessment values habitats using five key variables: bank profile, bank substrate, variation in water level, herbaceous vegetation and water and categorises habitats as 'optimal', 'good', 'suitable but poor' and 'negligible' value. A summary for each category is provided in Table 22.

Table 22. Habitat Assessment Criteria (based on Table 2.1 in Dean (2021)).

Habitat Category	Dry areas for burrows and nests			Herbaceous Vegetation	Water
	Bank Profile	Bank Substrate	Variation in water level		
Optimal (all criteria met)	Steep (approaching 1:1) on at least one side of the water course. Steep or shallow banks on static waterbodies or fen-type habitat.	Earth or peat	No noticeable variation during the summer months; banks are not overtopped regularly	Continuous swathe of tall and luxurious riparian vegetation providing 90-100% cover on the banks and marginal/in-channel vegetation is present	Permanent water
Good (all criteria need to be met)		Earth or peat banks, stony/reinforced bank with gaps allowing access to earth behind		Continuous swathe of bankside or in-channel vegetation providing at least 60% ground cover. May be dominated by grasses/weeds rather than luxurious riparian vegetation. Vegetation is generally tall*	Permanent water or routinely wet for at least 2-3 months during the summer, and where other 'good' habitat is present in immediately adjacent areas with permanent water
Suitable but poor	Any habitat that falls short of the criteria to quality as 'good' but does not meet the criteria of 'negligible vale' could reasonably be 'suitable but poor'				
Negligible Value (meets the criteria for vegetation and at least one other)	Shallow profile on both banks	Rock or gravel, unsuitable for burrowing	Considerable variation in water level	No or limited bankside and marginal vegetation**	N/A
	Vertical bank face with no burrowing opportunities behind it	Reinforced banks with no gaps	N/A		N/A

* Except urban/sub-urban areas where shorter bankside vegetation may qualify

**due to shading or other 'permanent' factors (management can change and is often a 'temporary' factor)

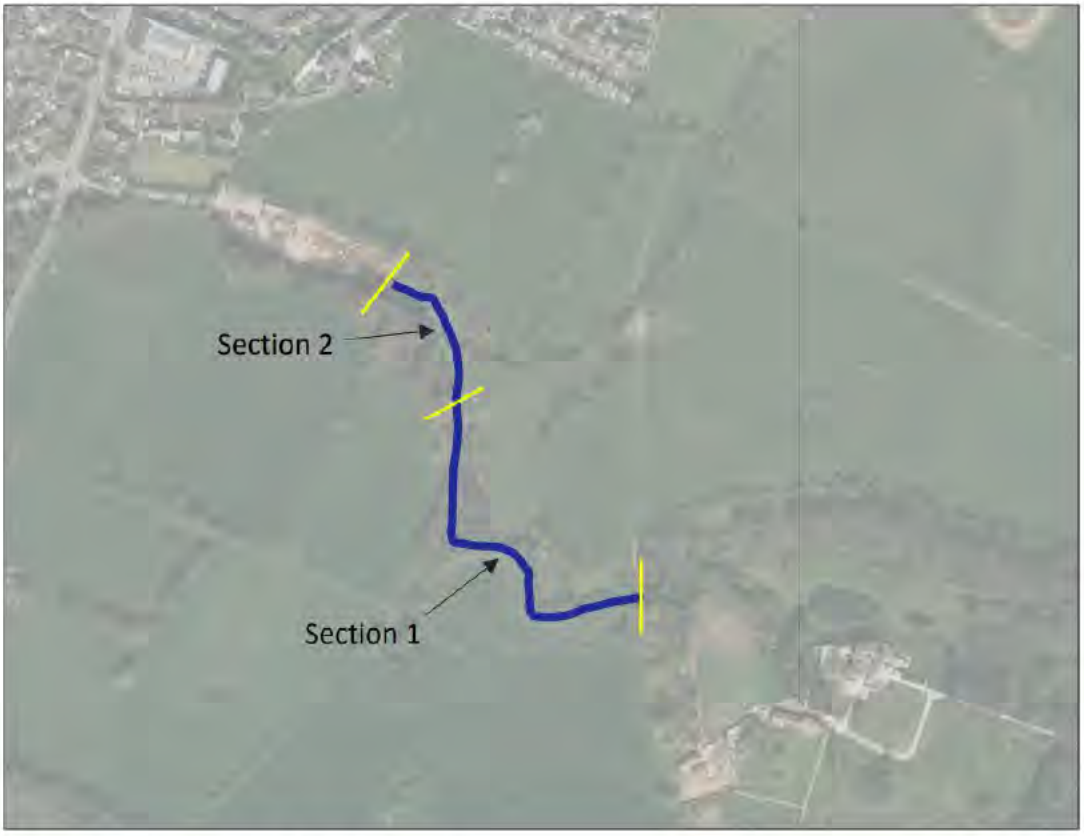
9.2.3 Field Survey

9.2.3.1 The water vole surveys were undertaken by two experienced ecologists on the 16th of May 2023 and the 8th of August 2023. The weather conditions leading up to the site visit and on the day were suitable, although following an extended period of dry weather with some recent rainfall.

9.2.3.2 Survey techniques were undertaken in accordance with the Water Vole Conservation Handbook (Strachan, Moorhouse & Gelling, 2011). The following characteristics for determining the presence of water vole were assessed: sightings, droppings and latrines, burrows, above-ground nests, feeding stations and lawns, prints and runs.

9.2.3.3 For the purpose of the survey, the survey area was divided into two sections. Section 1 was the upper two thirds of Pendleton Brook, whereas Section 2 was the lower third of the brook. Refer to Figure 29 below.

Figure 29 – Survey Sections



9.3 Constraints to the Survey

9.3.1.1 It is not possible to provide accurate population size without undertaking detailed capture, mark and release surveys which require a substantial effort. However, it is possible to provide an indication of the relative population sizes by using peak counts of observed Water Voles (if applicable).

9.3.1.2 Ecological surveys are limited by factors that affect species presence such as time of year, weather, migration patterns and behaviour. Water vole surveys can be carried out at any time of year; however, the optimum time for surveying is between mid-April and September. As the survey and assessment were undertaken at an optimal time of year, there are no restraints to the survey results.

9.3.1.3 Access restrictions to the adjacent stretches of Pendleton Brook both up and down stream of the Survey Area meant that the survey was confined to the Survey Area only. However, visual assessment of the brook upstream of the Survey Area confirmed much of the brook shared similar characteristics to that recorded within the Survey Area.

9.3.1.4 Owing to the identification of a breeding pair of kingfishers and their active nest site, Section 2 of the survey area was not accessed during the first survey on the 16th of May 2023.

9.4 Results

9.4.1 Desk Study

9.4.1.1 There are no records held by LERN of water voles within 2 km of the Site.

9.4.1.2 Habitats within and immediately adjacent to the Site were assessed for their suitability to support water vole. Pendleton Brook was assessed to be of 'negligible value' owing to the fast flow rate of the water, limited refuge and food availability and insufficient burrowing potential. The detailed results are provided in Appendix 21.

9.4.1.3 Access to adjoining stretches of Pendleton Brook to the north and south of the Survey Area was not possible at the time of the survey. The character of the brook to the north of the Survey Area appeared to replicate that of Section 1 (refer to Appendix 21 below). However, woodland dominated the adjacent land on both sides of the brook. Visibility, as well as access to the brook south of the Survey Area was restricted by a large sluice gate.

9.4.1.4 Pendleton Brook flows east to west across the wider landscape, as shown in the Habitat Connectivity Plan, located in Appendix 22. Prior to passing along the southern boundary of the Site, the brook is met by two ditches and a small stream, the closest of which is c. 600m east of the Survey Area. Two ponds located to the north of Pendleton Brook are c. 200m east of the Survey Area.

9.4.1.5 A third ditch is located to the north of Pendleton Brook. Flowing north to south, the un-named ditch adjoins Pendleton Brook in Section 2 of the Survey Area. Barrow Clough and Mearley Brook are located to the east of the Survey Area but are disconnected from it.

9.4.1.6 The Habitat Connectivity Plan shows that water features within the local landscape (up to 1 km distant from the Site boundary) are limited, with the main feature being Pendleton Brook itself.

9.4.2 Field Survey

9.4.2.1 No evidence of water voles was recorded during either survey of the Survey Area of Pendleton Brook.

9.4.2.2 Evidence of bank vole was recorded within one area of the banking, although the burrows appeared historic and not in current use.

9.5 Evaluation and Enhancement

9.5.1 Summary

9.5.1.1 No records of water vole were returned from the data search. The Survey Area, comprised of Pendleton Brook, is the main linear water feature within the wider landscape. Several ditches adjoin the brook upstream of the Survey Area; however, the Survey Area is largely disconnected from other waterbodies in a fragmented waterscape. The Survey Area itself was assessed as 'negligible value' for water voles, owing to the fast flow rate within much of the channel, the limited abundance of marginal and bankside vegetation to provide refuge and foraging opportunities, and the presence of bedrock along much of the Survey Area limiting potential burrowing habitat.

9.5.1.2 No evidence of water vole was recorded during either survey in 2023.

9.5.1.3 Overall, water features within the landscape are fragmented and the Survey Area is disconnected from suitable water vole habitat. In addition, Pendleton Brook is suboptimal to support a viable population of water voles. No evidence of water voles was recorded; therefore, **water voles are considered absent from the Site and no further survey effort or mitigation is recommended in relation to this species.**

9.5.1.4 Owing to the sub-optimal nature of the brook to support water vole within the Survey Area, access restrictions to Section 2 during the first survey (as a result of a breeding kingfisher) and limited access to adjoining stretches both up and down stream were not considered detrimental to the survey effort and subsequent findings.

9.5.2 Enhancements

9.5.2.1 Although water voles are considered to be absent from the Survey Area, habitat enhancement of Pendleton Brook is recommended to increase its suitability to support water vole in the future. Enhancement measures could include the following and should be considered in accordance with mitigation recommendations for other protected species, such as kingfisher and otter:

- Creation of a 2 m - 5 m vegetated buffer along the northern bank of Pendleton Brook to provide a good quality refuge and foraging habitat, as well as burrowing potential. In addition, a buffer will aid in reducing potential pollution of Pendleton Brook, as well as noise and light disturbance from adjacent land uses.
- Establishing suitable bankside and marginal vegetation using a range of native herbaceous species to provide both cover and food all year round. Ideally, c. 20% of the wet channel should have cover from marginal vegetation.
- Consider the use of seeding, translocation of turves, plug planting and/or pre-planted coir fibre rolls to create marginal and bankside vegetation.
- Thinning of bankside trees along the northern bank of the Survey Area to open the canopy layer and allow ground flora species to regenerate and create refuge and potential food for water voles.
- Sustainable Urban Drainage basins, in proximity to Pendleton Brook should be designed, where possible, with habitat created to support for water vole.

10 Otter Survey

10.1 Methodology

10.1.1 Otter Survey

10.1.1.1 An otter survey was conducted on 17th April 2023 by Jake Healy, Ecologist and Max Grindle, Assistant Ecologist. The weather conditions were 14°c, with some cloud cover (3/8 oktas) but no precipitation. No heavy rainfall had been encountered within 36 hours of the survey being completed.

10.1.1.2 The survey involved surveying approximately 500m up and down Pendleton Brook, where access permitted, for signs of otter presence such as spraints, holts, footprints, feeding remains, slides (into water) and couches (above-ground resting areas) according to best practice guidance (Chanin, 2003). Please refer to Appendix 24 for the survey area.

10.2 Constraints to the Survey

10.2.1.1 Two sections of Pendleton Brook (shown in Appendix 24) were not accessible during the field survey due to land access requests being denied by various landowners. Much of the brook that runs immediately parallel the south of the site was surveyed and the survey was picked up approximately 250m further downstream.

10.2.1.2 The conclusions and recommendations detailed in this report are based upon the site redline boundary and the development proposals as outlined by the client at the time of writing. Should there be any changes to the site redline boundary or development proposals at a later stage, this assessment should be reviewed to determine whether any amendments or additional survey work is required.

10.2.1.3 The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited within this document.

10.3 Results

10.3.1 Habitat Descriptions

10.3.1.1 The eastern boundary of Pendleton Brook (in relation to the site), where access was permitted, was defined by a small footbridge. The embankments comprised a mixture of steep and sloping vegetated banks and ran through an area of woodland. This section of the brook was present under a closed canopy and was accessible to the public via a well-worn desire line from the adjacent footpath. Its width varied between 4-5m, and it was approximately <0.5m deep. The riverbed consisted of predominantly loose rock substrate of various sizes with a moderate flow rate suggesting that the water quality is good and highly oxygenated.

Photograph 1 – Eastern extent of the river

Photograph 2 - Eastern extent of the river

10.3.1.2 Scattered mature broadleaved trees were present adjacent the river, along its extent. The surrounding habitats mainly consisted of grassland and tall ruderal habitats, with limited emergent vegetation. Scattered marginal vegetation includes marigolds (*Caltha palustris*), forget-me-not (*Myosotis* sp.) and rushes (*Juncaceae* sp).

10.3.1.3 Approximately 100m downstream the brook meanders slightly becoming much deeper (maximum depth of ~1.5m) and wider (maximum width of ~7-8m). The substrate was still predominantly comprised of rocks and boulders, however the flow rate slowed slightly. The banks varied around this area from large, steeply sided, unvegetated banks, to shallow, vertical, vegetated banks. Scattered mature broadleaved trees were still present in this area.

Photograph 3 – Meander in eastern extent facing west

Photograph 4 – Meander in eastern extent facing east

10.3.1.4 Approximately 100m further downstream the characteristics of the water course begin to slightly change once again. The banks become more gradually sloped remaining predominantly vegetated, while the width of the watercourse begins to widen, reaching approximately >10m in width and the flow rate slows down. The riverbed remains consistent being comprised predominantly of stones and boulders.

Photograph 5 – Central band facing east

Photograph 6 – Central band facing west

10.3.1.5 The watercourse remains relatively similar for the next 200m, at which point it begins to flow offsite at its western extent. Just beyond the boundary of the site the water course begins to change again with the banks becoming vertical sided and the watercourse becoming much narrower, approximately 3m in width. The bed of the brook was comprised of silt sediment and small stones and rocks.

Photograph 7 – Western extent of site facing west

Photograph 8 – Western extent of site facing south

10.3.1.6 The watercourse continues to flow for approximately 400m through an area of land that could not be accessed as part of the survey and as such, the characteristics of the brook in this area are relatively unknown. A weir is present within this stretch of the watercourse. The end of this section of the brook was defined by a large brick car bridge, and the survey was continued from this point for approximately 100m. This stretch of the water course differed from that previously surveyed and began with a small weir under the bridge. The northern embankment was a manmade concrete vertical structure while the southern embankment was gradually sloping natural, vegetated embankment. The width of the river was approximately 4m and the depth was relatively shallow, approximately <0.5m (other than a small area immediately adjacent the weir which was approximately 1.2m deep.

Photograph 9 – Car bridge and weir facing east

Photograph 10 – Western extent of surveyed area facing west

10.3.1.7 Pendleton Brook is hydrologically connected to the River Ribble via Mearley Brook.

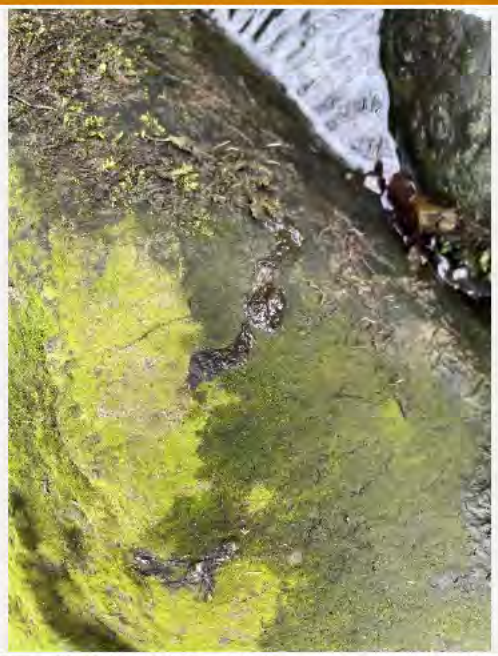
10.3.2 Otter Field Survey

10.3.2.1 Otter field signs and potential otter holts/couches were recorded with a summary provided in Table 23.

Table 23 – Summary table

Target Note (Appendix 24)	Feature	Description	Photograph
TN1	Spraint	A small spraint was present on a large, exposed boulder within the watercourse. The spraint was dried but still had the distinct sweet odour.	

Target Note (Appendix 24)	Feature	Description	Photograph
TN2	Potential holt with spraint	A large, sheltered cavity was present within the root structure underneath a mature tree on the southern embankment of the watercourse. The cavity had multiple spraints present on small rocks.	 

Target Note (Appendix 24)	Feature	Description	Photograph
TN3	Spraint	A small otter spraint was present on a large, exposed boulder. The spraint appeared to be fresher than previously found and had a strong sweet odour.	
TN4	Potential holt	Another potential holt was present further downstream within the site extent. A large cavity was present within the root structure of a mature tree extending from the northern embankment of the watercourse. The cavity was sheltered by the overhanging substrate and tree roots. However, a hole was present within the roof of the cavity which exposes the internal void from above and may limit use.	 

Target Note (Appendix 24)	Feature	Description	Photograph
TN5	Spraint	A large, exposed boulder was present within the watercourse adjacent to TN4 with multiple spraints present. These spraints were dry and crumbly; however, fish bones were identified within, and the sweet odour was evident.	
TN6	Spraint	TN6 was an old spraint present much further downstream and wasn't present on site. This spraint was located on a reinforced embankment. Sweet odour was still evident.	
TN7	Spraint	A group of spraints present on a large flat boulder with a variety of freshness.	

Target Note (Appendix 24)	Feature	Description	Photograph
TN8	Spraint	A final spraint was present at the end of the surveyed area on a small boulder.	

10.4 Mitigation and Recommendations

10.4.1 Impact Assessment

10.4.1.1 Otters are known to be present within Pendleton Brook, with field signs observed during the survey confirming recent presence. Due to the close proximity of the proposed development, there is a potential risk of killing/injuring individual otters during the construction phase, without appropriate mitigation. This will cause a breach of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2017.

10.4.1.2 Two potential otter holts/resting places were identified within the watercourse (further monitoring surveys are to be completed, see Section 10.6). If they are identified as being actively used then there is a risk of damaging, destroying and/or obstructing an otter resting place. This will cause a breach of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2017.

10.4.2 Construction Phase Mitigation

10.4.2.1 The following Reasonable Avoidance Measures should be followed throughout the construction phase:

- All site personnel are to be inducted through use of a toolbox talk, on the presence of otters, their legal protection and working limits.

- Any man-made excavations, trenches or pits relating to the development that must remain open overnight, will either be securely fenced off or covered up overnight to avoid entrapment of otters, if left open, access ramps (e.g. mammal ladders, a roughened plank or even a ramp of earth) will be placed within the excavation each night near to crossing points to allow any animals that accidently fall into the excavation a means of climbing out.
- No works within 30m of Pendleton Brook will be undertaken after dusk or before dawn.
- Any temporarily exposed open pipe system will be capped in such a way as to prevent otters gaining access, as this may happen when contractors are off-site.
- Commuting otters may lie-up in stacked pipes or beneath pallets. These features, where they are within 30m of the Pow Maughan are to be inspected daily before the start of works.

10.4.2.2 If in the unlikely chance an otter is discovered on site, any works within the vicinity are to cease on site and the project ecologist is to be contact immediately and Natural England are to be informed.

10.4.2.3 Lighting is to follow the protocols outlined in the Institute for Lighting Engineers document "Guidance for the Reduction of Obtrusive Lighting" (2005) and BCT's "Bats and Artificial Lighting in the UK" (2018). The construction lighting may impact species on site and within the local area which are sensitive to light. Directional lighting will be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these.

10.4.2.4 Construction lighting is not to be directed towards retained habitats and surrounding habitats including Pendleton Brook.

10.5 Further Surveys

Further monitoring surveys of the potential otter holt/resting places are to be completed and include the installation of trail cameras for six weeks then the collection and analysis of results. When the cameras are installed, an updated otter survey will be undertaken upstream and downstream of the waterbody looking for otter signs. This will give us the required knowledge and data to apply for an EPS Licence if required.

11 Conclusion

11.1.1.1 This report has provided a detailed account of the ecological survey work undertaken on site throughout 2023.

11.1.1.2 The site has been assessed as supporting the following species:

- Breeding Birds,
- Kingfishers,
- Barn Owl,
- Invertebrates,
- Bats, and
- Otter

11.1.1.3 Suitable species-specific mitigation and enhancements have been recommended and detailed within the associated section of the report.

11.1.1.4 Through the surveys undertaken, the site has been found not to support:

- Reptiles, and
- Water vole

11.1.1.5 Further survey work has been recommended in relation to Trees 4 and 5 and their bat roosting potential, as well as otter monitoring surveys along Pendleton Brook to assess potential holt locations identified.

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Appendix 2 - Breeding Bird Survey Data Tables

Breeding Bird Survey (BBS) Weather and Times				
BBS Visit	**Date**	**Weather**	**Time of Survey**	**Sunrise / Sunset Time**
BBS 1	24/03/2023	A grey, dry, cool morning, (8°C) 7/8 cloud cover, with a south westerly breeze (12-13 mph).	06:30 - 10:00	Local Sunrise: 06:03
BBS 2	20/04/2023	Sunny, dry and bright spring morning. 0/8 cloud cover, wind direction north easterly (8-11mph). Cold morning (5°C) but bright and warm in the sun becoming mild (10°C).	06:20 - 09:50	Local Sunrise: 05:58
BBS 3	10/05/2023	Grey, dry morning. 8/8 cloud cover, wind direction south-west (3-7 mph). Mild 7-9°C.	05:45 - 08:45	Local Sunrise: 05:17
BBS 4	24/05/2023	Bright and sunny evening. 1/8 cloud cover, wind direction north-west (7-10mph). Warm 12-17°C.	19:15 - 22:25	Local Sunset: 21:19
BBS 5	08/06/2023	Bright, dry and sunny morning. 4/8 cloud cover, wind direction east (8-9mph). Mild 9-13°C.	05:04 - 07:40	Local Sunrise: 04:40
BBS 6	04/07/2023	Dry and overcast morning with sunny, bright spells. 3/8 cloud cover, wind direction west (7-9mph). Mild 12-13°C.	05:10 - 07:45	Local Sunrise: 04:45

Appendix 3 - Breeding Bird Survey Transect Route and Survey Area

Aerial Imagery accessed from Google Earth Pro 2023

Appendix 5 - BTO Breeding Status Codes

Non – Breeding	
F	Flying over
M	Species observed but suspected to be still on Migration
U	Species observed but suspected to be summering non-breeder
Possible Breeder	
H	Species observed in breeding season in suitable nesting Habitat
S	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Probable Breeder	
P	Pair observed in suitable nesting habitat in breeding season
T	Permanent Territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more part at the same place or many individuals on one day
D	Courtship and Display (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable Nest Site
A	Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting Incubation
B	Nest Building or excavating nest-hole
Confirmed Breeder	
DD	Distraction-Display or injury feigning
UN	Used Nest or eggshells found (occupied or laid within period of survey)
FL	Recently fledged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating Occupied Nest (including high nests or nest holes, the contents of which cannot be seen) or adults seen incubating
FF	Adult carrying Faecal sac or Food for young
NE	Nest containing Eggs
NY	Nest with Young seen or heard

Appendix 6 – Birds Legislation and Policy[12]

International Legislation

Birds Directive

European Council Directive 2009/147/EC on the conservation of wild birds (Birds Directive). The Birds Directive provides cross border protection for wild bird species in Europe, and the protection of important habitats for these species, through the creation of Special Protection Areas (SPAs).

Annex 1 of the Birds Directive details those bird species which are protected due to being:

- in danger of extinction,
- vulnerable to specific changes in their habitats,
- considered rare due to small populations or restricted local distribution, and
- those requiring particular attention for reasons of the specific nature of their habitat requirements.

Member States are required to ensure the conservation of the most suitable habitats for these species through the designation, management and monitoring of SPAs.

Annex 2 of the Birds Directive details those bird species which may be hunted, but for which hunting periods are limited and protection is provided for the most vulnerable periods (i.e. during return migrations to nesting areas, during reproduction and the raising of young). Annex 3 relates to the banning of activities which directly threaten the specified bird species listed within this Annex. Annex 4 provides for sustainable management of hunting while requiring Member States to ban any methods that result in non-selective or large scale killing of birds. Annex 5 relates to research to underpin the protection of bird species covered by the Directive.

Convention on Wetlands (Ramsar Convention)

The Ramsar Convention provides an international framework for the conservation and 'wise use' of wetlands and their resources. In particular it enables the designation of wetlands of international importance (Ramsar Sites) in accordance with the criteria defined within the legislation.

These criteria consist of two groups: Group A which requires a Site to contain representative, rare or unique wetland types and Group B which requires a Site to be of international importance for conserving biological diversity.

Specific criteria within Group B which relate to water birds state:

- Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more water birds.
- Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water bird.

12 The relevant Policies and Acts should be consulted for definitive information. This resource is intended as a guide only and is informed by review of the Bird Survey Guidelines for assessing ecological impacts, v.1.1.0.https://birdsurveyguidelines.org [July 2023].

Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention)

The Bern Convention provides for the conservation and protection of wild plant and animal species and their natural habitats (Appendices I and II) and regulates the exploitation of migratory species (Appendix III)

National Legislation and Policies – England

Conservation of Habitats and Species Regulations 2017 (as amended) (The Habitats Regulations)

The Habitat Regulations bring into English law the EC Habitats Directive and elements of the EU Wild Birds Directive, and provides for the designation and protection of 'European Sites' (Special Areas of Conservation (SACs), Special Protection Areas (SPAs)), the protection of 'European species' and the adaptation of planning and other control measures associated with the protection of European Sites.

The Habitat Regulations additionally requires that the Habitat Regulations Assessment process be implemented where a project may impact a European Site.

Wildlife and Countryside Act 1981 (as amended)

- The Wildlife and Countryside Act 1981 (as amended), under subsection 1(1), protects all wild birds, their nests and eggs. Under this legislation a person shall be guilty of an offence if they intentionally:
- kill, injure or take any wild bird,
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; and
- take or destroy an egg of any wild bird.

It is an offence to intentionally disturb a species, listed under Schedule 1 of the Act, which is at, on, or near an active nest site. Those who intend to visit the nest of a species listed under Schedule 1 must first obtain a licence from the relevant statutory nature conservation organisation. Certain species are afforded special protection under Schedule 1 only during the close season (1 February – 31 August) but may be killed or taken outside this period. In England and Wales these are goldeneye (Bucephala clangula) and pintail (Anas acuta).

In addition, the nests of certain species are afforded special protection at any time regardless of breeding status, these are: golden eagle (Aquila chrysaetos), white-tailed eagle (Haliaeetus albicilla) and osprey (Pandion haliaetus).

Natural Environment and Rural Communities Act (2006) (NERC Act)

The Natural Environment and Rural Communities (NERC) Act 2006 requires local and governmental authorities and departments to have regard to the conservation of biodiversity and a range of measures associated with public rights of way and other rural affairs.

Specific duties relating to the conservation of biodiversity are detailed in Section 40 while Section 41 details priority habitats and species for England.

National Planning Policy Framework 2023

The National Planning Policy Framework sets out the government's planning policies for England and how these are expected to be applied. This includes requirements for the contribution to and enhancement of the natural environment, including habitats and biodiversity.

The National Planning Policy Framework should be followed when developing local plans for housing and other development and it is against these plans that planning permission must be determined.

Town and Country Planning (Environmental Impact Assessment) Regulations (2017)

The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 governs the process of EIAs where granted planning permission under the Town and Country Planning Act. This legislation implements into English law the EU Environmental Impact Assessment Directive.

Conservation Priorities

Although afforded no additional legal protection, the Birds of Conservation Concern (BoCC) identifies species which are declining, or which appear to be in need of conservation action.

The UK's leading bird conservation organisations (i.e. Royal Society for the Protection of Birds (RSPB), British Trust for Ornithology (BTO) and BirdLife) undertake a five-yearly review of the status of birds that occur regularly in the UK. Species are divided between red, amber and green categories, according to their status over the previous five years as Birds of Conservation Concern (BoCC). The criteria used for assessment ensure that the BoCC listings reflect each species' global and European status as well as that within the UK.

Specific criteria are used to place birds on a Red-, Amber- or Green- list, as outlined below:

Red

- species that are globally threatened according to the International Union for the Conservation of Nature (IUCN) criteria;
- species with an historical decline in breeding population which have not shown a substantial recent recovery;
- species that have shown a severe breeding decline over the last 25 years or longer term;
- species that have shown a severe breeding range decline over the last 25 years or longer term;
- species whose non-breeding population has declined over the last 25 years or longer term.

Amber

- species of European Conservation Concern;
- species whose population has declined historically but which have made a substantial recent recovery;
- species whose breeding population has declined moderately over the last 25 years or longer term;
- species that have shown a moderate breeding range decline over the last 25 years or longer term;
- species whose non-breeding population has declined moderately over the last 25 years or longer term;
- rare breeders or non-breeding rarity species with internationally important or localised populations.

Green

- species that fulfil none of the criteria detailed above at the publication of the most recent edition of BoCC.

Red-listed species have been subject to the greatest population loss, rate of decline and/or range contraction. Amber-listed species have been subject to moderate declines, followed by green listed species, which are not considered to be declining or do not qualify under any of the red or amber criteria. Red and Amber List species are not necessarily the same as those given special legal protection on Schedule 1 of the WCA or those listed as Priority Species in S41. For a detailed breakdown of the BoCC criteria, see the most recent edition of BoCC.

Appendix 11 - Red Data Book Definitions

Red Data Book category 1 (RDB 1) – Endangered

Species that are known or believed to occur as only a single population within one 10-km square of the National Grid.

Red Data Book category 2 (RDB 2) – Vulnerable

Species declining throughout their range or in vulnerable habitats.

Red Data Book category 3 (RDB 3) – Rare

Species that are estimated to exist in only 15 or fewer post-1970 10-km squares. This criterion may be relaxed where populations are likely to exist in over 15 10-km squares but occupy small areas of especially vulnerable habitat.

Nationally Notable (Scarce) category A (NS A) – Notable A

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 30 or fewer 10-km squares of the National Grid or, for less well-recorded groups, between eight and 20 vice counties.

Nationally Notable (Scarce) category B (NS B) – Notable B

Taxa that do not fall within the RDB category but that are nonetheless uncommon in Great Britain and thought to occur in 31–100 10-km squares of the National Grid or, for less well- recorded groups, between eight and 20 vice counties.

Nationally Notable (Scarce) (N) – Notable

Species that are estimated to occur within the range of 16–100 10-km squares. The subdividing of this category into Notable A and Notable B has not been attempted for many species in this part of the review.

<u>IUCN categories</u>

EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range, have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

NEAR THREATENED (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT

A taxon is Data Deficient (DD) when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. DD is therefore not a category of threat.

GB Rarity Status categories and criteria

Broadly speaking, the Nationally Rare category is equivalent to the Red Data Book, namely: Endangered (RDB1), Vulnerable (RDB2), Rare (RDB3), Insufficiently Known (RDBK), and Extinct, which will not be used in this report.

The Nationally Scarce category is directly equivalent to the combined Nationally Notable A (Na) and Nationally Notable B (Nb) categories used in the assessment of various taxonomic groups, e.g. by Hyman and Parsons (1992) in assessing the status of beetles, but never used in a published format to assess these three families.

Nationally Rare Native species recorded from 15 or fewer hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species that are probably extinct.

Nationally Scarce Native species that are not regarded as Nationally Rare AND have not been recorded from more than 100 hectads of the Ordnance Survey National Grid in Great Britain since 31 December 1989 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

England NERC S.41 Biodiversity Lists – England England NERC S.41 Species 'of principal importance for the purpose of conserving biodiversity' covered under section 41 (England) of the NERC Act (2006) and therefore need to be taken into consideration by a public body when performing any of its functions with a view to conserving biodiversity. 2008 Natural Environment and Rural Communities Act 2006 – Species of Principal Importance in England (section 41) and Wales (section 42).

Appendix 12 - Invertebrate Survey Results

Only species with a national status have been annotated. All others are common or local species.

Scientific name	Family	Order	National status
Abax parallelepipedus	Carabidae	Coleoptera	
Acanthosoma haemorrhoidale	Acanthosomatidae	Hemiptera	
Agriotes obscurus	Elateridae	Coleoptera	
Agriotes pallidulus	Elateridae	Coleoptera	
Anaspis frontalis	Scraptiidae	Coleoptera	
Anaspis maculata	Scraptiidae	Coleoptera	
Andrena chrysosceles	Andrenidae	Hymenoptera	
Anotylus rugosus	Staphylinidae	Coleoptera	
Anthocharis cardamines	Pieridae	Lepidoptera	
Anthocoris confusus	Anthocoridae	Hemiptera	
Anthocoris nemorum	Anthocoridae	Hemiptera	
Aphantopus hyperantus	Nymphalidae	Lepidoptera	
Apion frumentarium	Apionidae	Coleoptera	
Archarius pyrrhoceras	Curculionidae	Coleoptera	
Asaphidion curtum	Carabidae	Coleoptera	
Athous haemorrhoidalis	Elateridae	Coleoptera	
Austrolimnophila ochracea	Limoniidae	Diptera	
Baccha elongata	Syrphidae	Diptera	
Beris fuscipes	Stratiomyidae	Diptera	
Beris vallata	Stratiomyidae	Diptera	
Bibio marci	Bibionidae	Diptera	
Bicellaria vana	Hybotidae	Diptera	
Blepharidopterus angulatus	Miridae	Hemiptera	
Bombus hortorum	Apidae	Hymenoptera	
Bombus lapidarius	Apidae	Hymenoptera	
Bombus lucorum	Apidae	Hymenoptera	
Bombus terrestris	Apidae	Hymenoptera	
Brachypterus glaber	Kateretidae	Coleoptera	
Calocoris (Calocoris) alpestris	Miridae	Hemiptera	
Calodromius spilotus	Carabidae	Coleoptera	
Campsicnemus curvipes	Dolichopodidae	Diptera	
Campsicnemus scambus	Dolichopodidae	Diptera	
Campyloneura virgula	Miridae	Hemiptera	
Cantharis decipiens	Cantharidae	Coleoptera	
Cantharis flavilabris (=nigra auctt.) black scutellum	Cantharidae	Coleoptera	
Cantharis nigricans	Cantharidae	Coleoptera	
Celastrina argiolus	Lycaenidae	Lepidoptera	
Cheilosia illustrata	Syrphidae	Diptera	
Chelifera precatoria	Empididae	Diptera	
Chilocorus renipustulatus	Coccinellidae	Coleoptera	
Chirosia albitarsis	Anthomyiidae	Diptera	
Chorisops tibialis	Stratiomyidae	Diptera	
Chrysopilus cristatus	Rhagionidae	Diptera	
Cionus tuberculosus	Curculionidae	Coleoptera	

Closterotomus norwegicus	Miridae	Hemiptera	
Conops quadrifasciatus	Conopidae	Diptera	
Crossocerus capitosus	Crabronidae	Hymenoptera	
Cyllecoris histrionius	Miridae	Hemiptera	
Denticollis linearis	Elateridae	Coleoptera	
Deraeocoris (Deraeocoris) flavilinea	Miridae	Hemiptera	
Deraeocoris (Knightocapsus) lutescens	Miridae	Hemiptera	
Dicranomyia didyma	Limoniidae	Diptera	
Dicranota subtilis	Pediciidae	Diptera	
Dilophus febrilis	Bibionidae	Diptera	
Dolichopus plumipes	Dolichopodidae	Diptera	
Dolichopus rupestris	Dolichopodidae	Diptera	
Dolichopus ungulatus	Dolichopodidae	Diptera	
Dromius quadrimaculatus	Carabidae	Coleoptera	
Dryomyza anilis	Dryomyzidae	Diptera	
Dryophilocoris (Dryophilocoris) flavoquadrimaculatus	Miridae	Hemiptera	
Ectemnius continuus	Crabronidae	Hymenoptera	
Elodes minutus	Scirtidae	Coleoptera	Nationally Scarce
Elodes pseudominutus	Scirtidae	Coleoptera	Nationally Scarce
Empis albohirta	Empididae	Diptera	
Empis livida	Empididae	Diptera	
Empis nuntia	Empididae	Diptera	
Empis trigramma	Empididae	Diptera	
Epistrophe grossulariae	Syrphidae	Diptera	
Eristalis pertinax	Syrphidae	Diptera	
Eristalis tenax	Syrphidae	Diptera	
Eupeodes corollae	Syrphidae	Diptera	
Exomias pellucidus	Curculionidae	Coleoptera	
Gastrophysa viridula	Chrysomelidae	Coleoptera	
Grammoptera ruficornis	Cerambycidae	Coleoptera	
Grypocoris (Lophyromiris) stysi	Miridae	Hemiptera	
Haematopota pluvialis	Tabanidae	Diptera	
Harpocera thoracica	Miridae	Hemiptera	
Helophilus pendulus	Syrphidae	Diptera	
Heterotoma planicornis	Miridae	Hemiptera	
Hybos culiciformis	Hybotidae	Diptera	
Hybos femoratus	Hybotidae	Diptera	
Lasioglossum fratellum	Halictidae	Hymenoptera	
Leiosoma deflexum	Curculionidae	Coleoptera	
Leptopterna dolabrata	Miridae	Hemiptera	
Leucozona glaucia	Syrphidae	Diptera	
Limonia macrostigma	Limoniidae	Diptera	
Limonia nubeculosa	Limoniidae	Diptera	
Liocoris tripustulatus	Miridae	Hemiptera	
Lipsothrix remota	Limoniidae	Diptera	
Lochmaea caprea	Chrysomelidae	Coleoptera	
Lochmaea suturalis	Chrysomelidae	Coleoptera	

Malthodes marginatus	Cantharidae	Coleoptera	
Maniola jurtina	Nymphalidae	Lepidoptera	
Mecomma (Mecomma) ambulans	Miridae	Hemiptera	
Melanostoma scalare	Syrphidae	Diptera	
Meligethes atratus	Nitidulidae	Coleoptera	
Mesembrina meridiana	Muscidae	Diptera	
Microchrysa cyaneiventris	Stratiomyidae	Diptera	
Microchrysa polita	Stratiomyidae	Diptera	
Minettia longipennis	Lauxaniidae	Diptera	
Musca autumnalis	Muscidae	Diptera	
Nebria brevicollis	Carabidae	Coleoptera	
Neolygus contaminatus	Miridae	Hemiptera	
Neolygus viridis	Miridae	Hemiptera	
Nephrotoma appendiculata	Tipulidae	Diptera	
Neria cibaria	Micropezidae	Diptera	
Nicrophorus vespilloides	Silphidae	Coleoptera	
Nomada flava	Apidae	Hymenoptera	
Notiophilus biguttatus	Carabidae	Coleoptera	
Odeles marginata	Scirtidae	Coleoptera	
Olibrus affinis	Phalacridae	Coleoptera	
Orthotylus (Orthotylus) marginalis	Miridae	Hemiptera	
Oulema obscura	Chrysomelidae	Coleoptera	
Palomena prasina	Pentatomidae	Hemiptera	
Panorpa communis	Panorpidae	Mecoptera	
Pararge aegeria	Nymphalidae	Lepidoptera	
Pararge aegeria insula	Nymphalidae	Lepidoptera	
Parydra coarctata	Ephydridae	Diptera	
Pentatoma rufipes	Pentatomidae	Hemiptera	
Phaonia subventa	Muscidae	Diptera	
Philonthus decorus	Staphylinidae	Coleoptera	
Phyllobius glaucus	Curculionidae	Coleoptera	
Phyllobius roboretanus	Curculionidae	Coleoptera	
Phylus (Phylus) melanocephalus	Miridae	Hemiptera	
Plagiognathus (Plagiognathus) arbustorum	Miridae	Hemiptera	
Platycheirus albimanus	Syrphidae	Diptera	
Platycheirus granditarsus	Syrphidae	Diptera	
Platycheirus rosarum	Syrphidae	Diptera	
Platypalpus cothurnatus	Hybotidae	Diptera	
Poecilobothrus nobilitatus	Dolichopodidae	Diptera	
Propylea quattuordecimpunctata	Coccinellidae	Coleoptera	
Psallus (Hylopsallus) perrisi	Miridae	Hemiptera	
Psallus (Hylopsallus) wagneri	Miridae	Hemiptera	
Pterostichus madidus	Carabidae	Coleoptera	
Pterostichus melanarius	Carabidae	Coleoptera	
Pterostichus strenuus	Carabidae	Coleoptera	
Rhabdomiris striatellus	Miridae	Hemiptera	

Rhagio scolopaceus	Rhagionidae	Diptera	
Rhagio tringarius	Rhagionidae	Diptera	
Rhagonycha fulva	Cantharidae	Coleoptera	
Rhagonycha nigriventris	Cantharidae	Coleoptera	
Rhamphomyia crassirostris	Empididae	Diptera	
Rhamphomyia variabilis	Empididae	Diptera	
Rhaphium appendiculatum	Dolichopodidae	Diptera	
Rhaphium caliginosum	Dolichopodidae	Diptera	
Rhaphium riparium	Dolichopodidae	Diptera	
Rhingia campestris	Syrphidae	Diptera	
Rhipidia maculata	Limoniidae	Diptera	
Salpingus planirostris	Salpingidae	Coleoptera	
Sargus iridatus	Stratiomyidae	Diptera	
Scaeva pyrastri	Syrphidae	Diptera	
Scathophaga stercoraria	Scathophagidae	Diptera	
Sciapus platypterus	Dolichopodidae	Diptera	
Sphegina clunipes	Syrphidae	Diptera	
Sphegina verecunda	Syrphidae	Diptera	
Stenocorus meridianus	Cerambycidae	Coleoptera	
Stenodema (Brachystira) calcarata	Miridae	Hemiptera	
Stenus clavicornis	Staphylinidae	Coleoptera	
Symmorphus bifasciatus	Vespidae	Hymenoptera	
Sympetrum striolatum	Libellulidae	Odonata	
Syntormon denticulatum	Dolichopodidae	Diptera	
Synuchus vivalis	Carabidae	Coleoptera	
Syrphus torvus	Syrphidae	Diptera	
Tachina fera	Tachinidae	Diptera	
Tachinus laticollis	Staphylinidae	Coleoptera	
Tachinus rufipes	Staphylinidae	Coleoptera	
Tephritis vespertina	Tephritidae	Diptera	
Terellia serratulae	Tephritidae	Diptera	
Tetanocera elata	Sciomyzidae	Diptera	
Tetanocera ferruginea	Sciomyzidae	Diptera	
Thymelicus sylvestris	Hesperiidae	Lepidoptera	
Tipula fascipennis	Tipulidae	Diptera	
Tipula lunata	Tipulidae	Diptera	
Tipula maxima	Tipulidae	Diptera	
Tipula paludosa	Tipulidae	Diptera	
Tipula varipennis	Tipulidae	Diptera	
Tipula vittata	Tipulidae	Diptera	
Tricyphona immaculata	Pediciidae	Diptera	
Vanessa atalanta	Nymphalidae	Lepidoptera	
Vespula vulgaris	Vespidae	Hymenoptera	
Volucella bombylans	Syrphidae	Diptera	
Xylota sylvarum	Syrphidae	Diptera	

Appendix 13 – Legislation relating to European Protected Species (e.g. bats)

European Protected Species and their resting places (e.g. bat roosts) are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CRoW) Act 2000, and the Conservation of Habitats and Species Regulations 2017.

The Conservation of Habitats and Species Regulations 2017 transpose the European Union's 'Habitats Directive' (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017.

Appendix 14 - Bat Survey Surveyor Details

Jake Healy – Ecologist with four year's bat survey experience

Max Grindle – Ecologist with two year's bat survey experience

Toby Mills – Assistant Ecologist with two year's bat survey experience

Jennifer Furby – Seasonal Ecologist with two year's bat survey experience

Katy Ellen – Seasonal Ecologist with three year's bat survey experience

Adam Ousby – Seasonal Ecologist with one year's bat survey experience

Siobhan Smyth – Seasonal Ecologist with one year's bat survey experience

Jenny Darby – Seasonal Ecologist with one year's bat survey experience

Nathan Morton – Seasonal Ecologist with one year's bat survey experience

Megan Taylor – Seasonal Ecologist with one year's bat survey experience

Appendix 15 - Monthly Bat Transect Heat Maps

Legend

- Red Line Boundary
- Sparse
- Dense

N

0 30 60 120 Meters

U R B A N G R E E N

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

T: +44 (0) 161 312 3131

weareurbangreen.co.uk

Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Bat Activity Transect May**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH
Project:	**Scale @ A3:**	**Date:**
UG1451	1:2000	16/01/2024
Dwg No:		**Revision:**
UG_1451_ECO_BAT_01_MAY		01

Legend

- Red Line Boundary
- Sparse
- Dense

N

0 30 60 120 Meters

U R B A N G R E E N

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

T: +44 (0) 161 312 3131

weareurbangreen.co.uk

Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Bat Activity Transect June**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH

Project:	Scale @ A3:	Date:
UG1451	1:2000	16/01/2024

Dwg No:	Revision:
UG_1451_ECO_BAT_01_JUNE	01

Legend

- Red Line Boundary
- Sparse
- Dense

N

0 30 60 120 Meters

U R B A N G R E E N

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

T: +44 (0) 161 312 3131

weareurbangreen.co.uk

Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Bat Activity Transect July**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH
Project:	**Scale @ A3:**	**Date:**
UG1451	1:2000	16/01/2024
Dwg No:		**Revision:**
UG_1451_ECO_BAT_01_JULY		01

Legend

- Red Line Boundary
- Sparse
- Dense

N

0 30 60 120 Meters

U R B A N G R E E N

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

T: +44 (0) 161 312 3131

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Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Bat Activity Transect August**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH

Project:	Scale @ A3:	Date:
UG1451	1:2000	16/01/2024

Dwg No:	Revision:
UG_1451_ECO_BAT_01_AUG	01

Legend

- Red Line Boundary
- Sparse
- Dense

N

0 30 60 120 Meters

U R B A N G R E E N

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

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weareurbangreen.co.uk

Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Bat Activity Transect September**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH
Project:	**Scale @ A3:**	**Date:**
UG1451	1:2000	16/01/2024
Dwg No:		**Revision:**
UG_1451_ECO_BAT_01_SEP		01

Legend

N

Red Line Boundary

Bat Static Data

BLE
Myotis
Noc
Nyctalus
Lei
Cpip
Spip

Total

5,200
2,900
710

URBAN GREEN

A: Ground Floor, The Tower,
Deva City Office Park, Trinity Way,
Manchester M3 7BF

T: +44 (0) 161 312 3131

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Client: **Taylor Wimpey**

Project: **Standen Phase 5 & 6**

Title: **Static Bat Activity Map**

Issue: **01**

Drawn:	Checked:	Approved:
CL	BG	JH

Project:	Scale @ A3:	Date:
UG1451	1:2000	16/01/2024

Dwg No:	Revision:
UG_1451_ECO_SBM_01	01

Appendix 16- Bat Mitigation Map

Legend

N

Protective Fencing for Bats

Red Line Boundary

0 20 40 80 Meters

URBAN GREEN

A: Ground Floor, The Tower,
Deva City Office Park, Trinity Way,
Manchester M3 7BF

T: +44 (0) 161 312 3131

weareurbangreen.co.uk

Client: **Taylor Whimpey**

Project: **Standen Phase 5 & 6**

Title: **Protective Fencing for Bat Location Map**

Issue: **01**

Drawn:	Checked:	Approved:
CL	JH	JH
Project:	**Scale @ A3:**	**Date:**
UG1451	1:2000	12/02/2024
Dwg No:		**Revision:**
UG_1451_ECO_BPF_01		01

Appendix 17 – Legislation Relating to Reptiles

All native reptile species have some degree of protection in the UK, through section 9(1) and (5) (specified in Schedule 5) of the Wildlife and Countryside Act 1981 (as amended). There are two different levels of protection afforded to reptiles through this legislation according to species and this is described in more detail below.

Full Protection

Sand lizard (Lacerta agilis) and smooth snake (Coronella austriaca) are afforded protection under The Conservation of Habitats and Species Regulations 2010 (are species of European importance) and are fully protected under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act (2000). The Conservation of Habitats and Species Regulations 2010 implements the European Union's 'Habitats Directive' (Council Directive 92/43/EEC (a) on the Conservation of Natural Habitats and of Wild Fauna and Flora) in Great Britain. The relevant sections of this legislation make it an offence to:

- Intentionally kill, injure or capture or take a reptile;
- Possess or control (live or dead animal, part or derivative);
- Deliberately (intentionally) or recklessly damage, destroy or obstruct access to a breeding site or any structure or place used for shelter or protection by a reptile;
- Disturb whilst the reptile is occupying such a structure or place; and
- Sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative).

Sand lizard and smooth snake are listed as a SoPI under Section 41 of the NERC Act 2006.

Protection against killing, injuring and trade

This level of protection under section 9 (parts 1 and 5) applies to the four widespread species of reptile, namely the common lizard (Zootoca vivipara), slow-worm (Anguis fragilis), grass snake (Natrix natrix) and adder (Viper berus). Only part of sub-section 9(1) applies, which make it an offence to:

- Intentionally kill or injure, and
- Sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative).

Grass snake, slow-worm and adder are all listed as SoPI under Section 41 of the NERC Act 2006.

Legislation for amphibians (other than great crested newt)

Under the Wildlife and Countryside Act 1981 (as amended) the four widespread amphibian species, smooth newt (Triturus vulgaris), palmate newt (Triturus helveticus), common toad (Bufo bufo) and common frog (Rana temporaria) receive limited protection through section 9(5) only which makes selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative) an offence.

Common toad is listed as a SoPI under Section 41 of the NERC Act 2006.

Appendix 18 - Reptile Refugia Locations

Legend

- Red Line Boundary
- Reptile Mat

N

0 0.02 0.04 0.07 Kilometers

URBAN GREEN

A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF

T: +44 (0) 161 312 3131

weareurbangreen.co.uk

Client: **Taylor Whimpey**

Project: **Standen Phase 5 & 6**

Title: **Reptile Refuge Map**

Issue: **01**

Drawn:	Checked:	Approved:
CL	JH	JH
Project: UG1451	**Scale @ A3:** 1:2000	**Date:** 16/03/2023
Dwg No: UG_1451_ECO_RRM_01		**Revision:** 01

Appendix 19 - Water Vole Legislation

Full legal protection is afforded to water voles under Section 9 of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This protection makes it an offence to:

- Intentionally kill, injure or take a water vole;
- Possess or control any live or dead animal;
- Intentionally or recklessly
  (a) damage or destroy any structure or place that a water vole uses for shelter or protection;
  (b) disturb a water vole whilst it is occupying a structure or place which it uses for shelter or protection; or
  (c) obstruct access to any structure or place which a water vole uses for shelter or protection.

Water voles are listed as a Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 41 of the NERC Act (2006) public bodies (including local planning authorities) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

Appendix 20- Pendleton Brook site photographs

Photograph 1 – Pendleton Brook with bedrock substrate

Photograph 2 – Pendleton Brook with bedrock substrate in wooded area (Section 1)

Photograph 3 – Pendleton Brook with bedrock substrate in wooded area (Section 1)

Photograph 4 – Pendleton Brook with bedrock substrate in wooded area (Section 1)

Photograph 5 – Rocky substrate in Section 1

Photograph 6 – Gravel substrate and vegetated banking in Section 2

Photograph 7 – Section of steep grass banking in Section 2

Photograph 8 – Fast flow of Section 2 with vegetated banking

Photograph 9 – Fast flow of Section 2 with vegetated banking

Photograph 10 – Area of bare earth on bank in Section 2 of Pendleton Brook

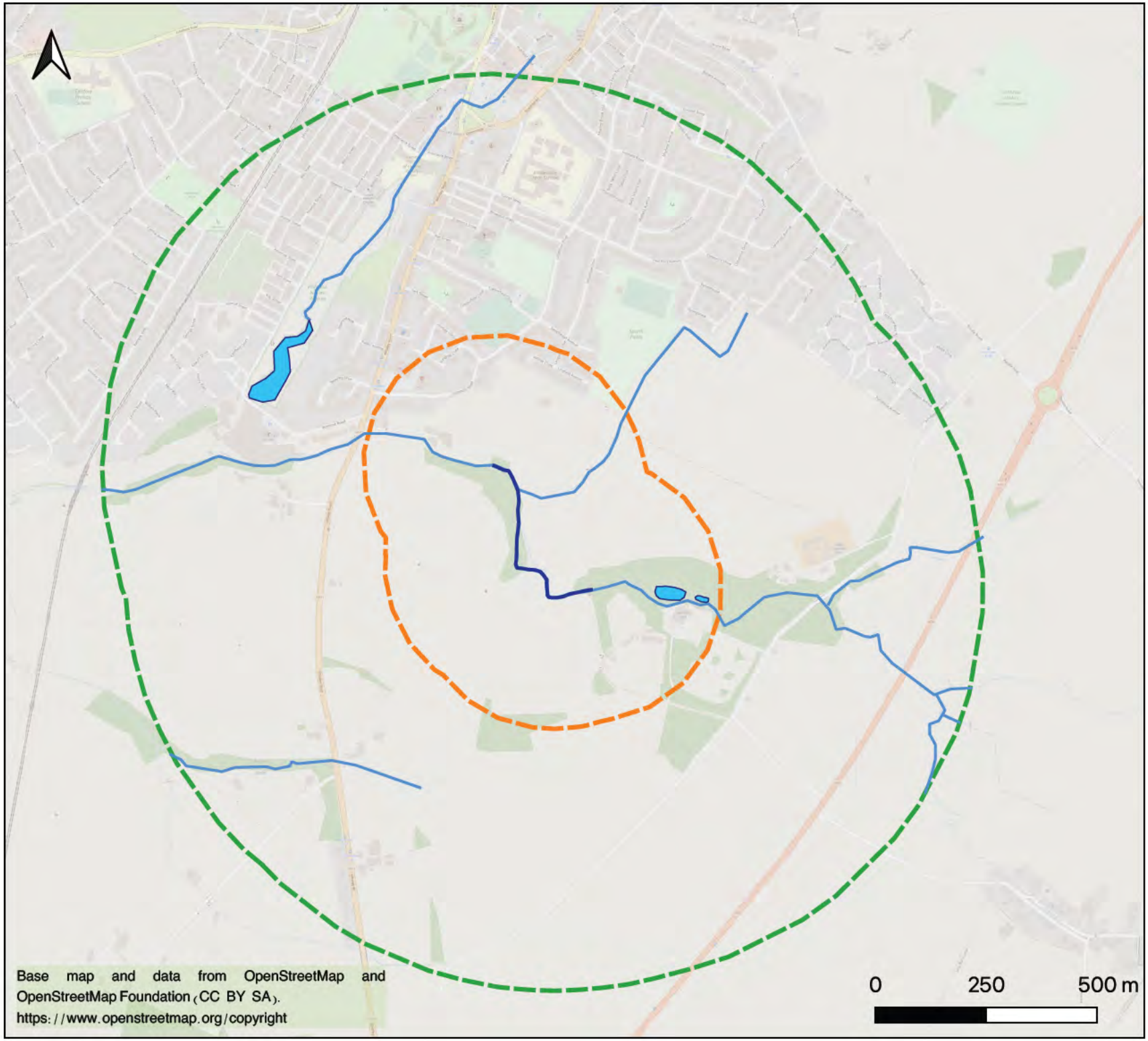
Photograph 11 – Bedrock in bank frquently observed in both Section 1 and 2

Photograph 12 – Bedrock visible on banking, adjacent to pool and tree lined bank in Section 1

Appendix 21 - Habitat Assessment

Feature Reference	Dry areas for burrows and nests			Herbaceous Vegetation	Water	Habitat Category
	Bank Profile	Bank Substrate	Variation in Water Level			
Pendleton Brook-Stretch 1 (See Appendix 19 for site photographs)	Steep, with occasional flat sections associated with cattle poaching and anthropogenic.	Much of the bank is comprised of bedrock.	Water Level likely varies due to catchment rainfall, but riffle-pool sequences likely to remain. Evidence suggests a minimum increase in depth of c. 1m during flood events.	No submerged vegetation within the channel due to fast flow rate and bedrock/stone substrate. Limited marginal vegetation along length of survey area, owing to grazing pressure on southern bank and shading caused by semi and mature trees and woodland bordering the channel. Vegetation was largely grasses with occasional soft rush Juncus effusus and rosebay willowherb Chamerion angustifolium	Water present during both survey visits. Frequent riffle-pool sequences along survey stretch with little variation in water level between surveys. Flooding of adjacent fields likely during high water levels.	Negligible
Pendleton Brook-Stretch 2 (See Appendix 19 for site photographs)	Shallow profile banks is frequent with occasional steep and vertical banking present	Bedrock underlines the banking with parts of the flatter sections covered with earth. Steep and vertical sections comprised of clay and earth.	Water Level likely varies due to catchment rainfall, but riffle-pool sequences likely to remain. Evidence suggests a minimum increase in depth of c. 1m during flood events	No submerged vegetation within the channel due to fast flow rate and bedrock/stone substrate. Less disturbance along either bank has resulted in Himalayan Balsam (*Impatiens glandulifera*) dominating the more open areas. Parts of bank shaded by woodland/tree lines and banks largely bare as a result. Pockets of nettle, rosebay willowherb, broadleaved dock and Himalayan balsam present in some areas, with sedge and grasses also recorded in low densities.	Water present during both survey visits. Frequent riffle-pool sequences along survey stretch with little variation in water level between surveys. Flooding of adjacent fields likely during high water levels.	Negligible

Appendix 22 – Habitat Connectivity Plan



Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC BY SA).
https://www.openstreetmap.org/copyright

Key

- Open Water
- Pendleton Brook
- Linear Feature
- 500m Buffer
- 1000m Buffer

Notes:
Coordinates have been produced to British National Grid
EPSG: 27700
Boundaries are indicative
Scale is 1:25,000 @A4

Client: Urban Green

Project: Higher Standen Farm Phase 5 and 6, Clitheroe

Title: Habitat Connectivity Plan

Drawing No: 2307-001-DWG-01

Drawn By: MB
Date: 03.10.2023
Version: V1

Appendix 23 – Legislation relating to European Protected Species (e.g. otters)

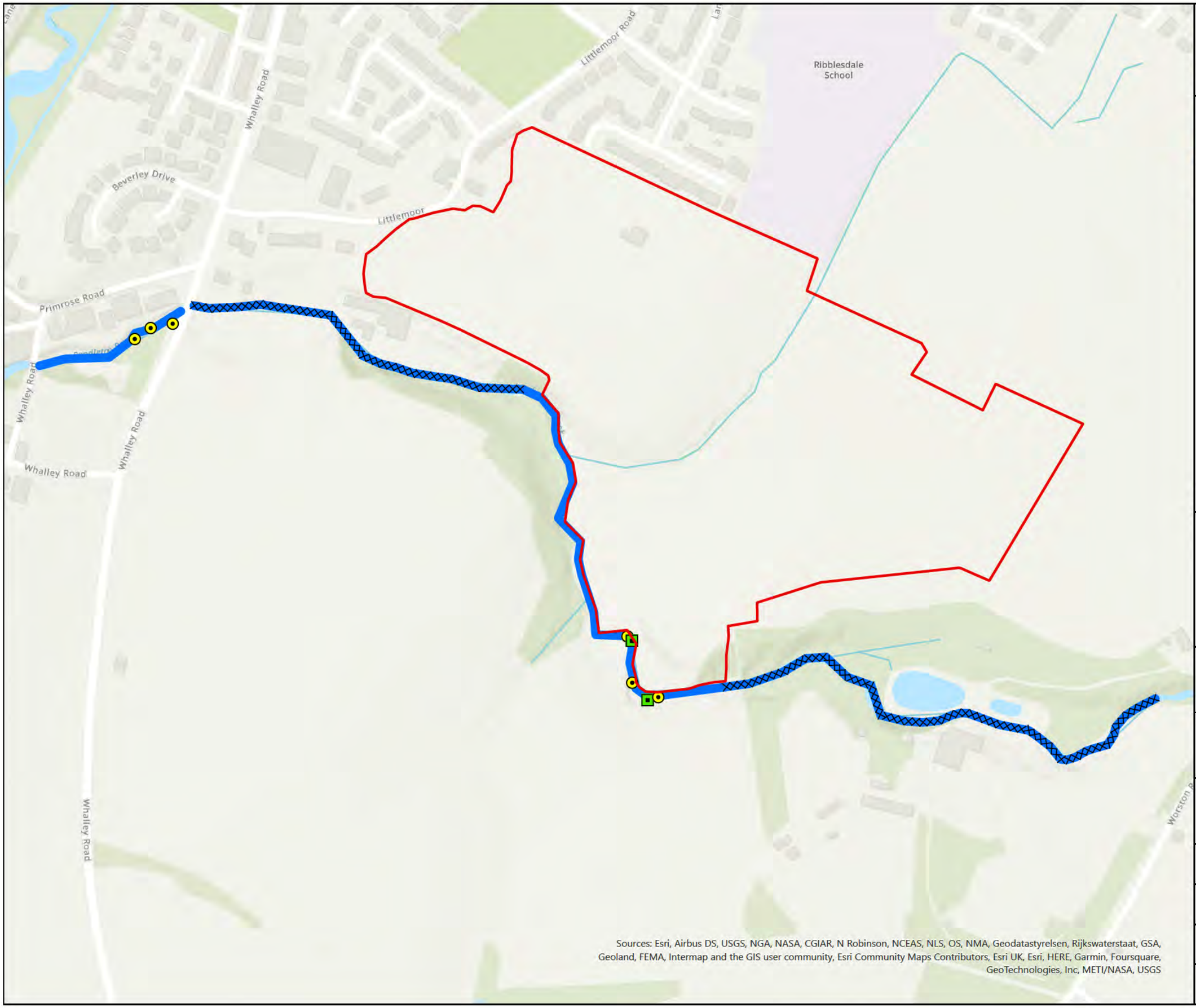
European Protected Species and their resting places (e.g. otters) are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CRoW) Act 2000, and the Conservation of Habitats and Species Regulations 2017.

Otters are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of The Conservation of Habitats and Species Regulations 2017, making them European Protected Species. They are afforded full protection under Section 9(4) of the Act and Regulation 41 of the Regulations. These make it an offence to:

- deliberately capture, injure or kill any such animal;
- deliberately disturb any such animal, including in particular any disturbance which is likely to:
  - impair its ability to survive, breed, or rear or nurture their young;
  - impair its ability to hibernate or migrate.
  - affect significantly the local distribution or abundance of that species; or
- damage or destroy a breeding site or resting place of any such animal; or
- intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

The Conservation of Habitats and Species Regulations 2017 transpose the European Union's 'Habitats Directive' (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. EPS are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017.

Appendix 24 - Otter Field Survey Map



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, Esri UK, Esri, HERE, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

Legend

- Red Line Boundary
- Pendleton Brook
- Accesss Denied

Otter Signs

- Otter Holt/ Resting place
- Otter Spraint

N

0 0.03 0.07 0.13 Kilometers

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Client: **Taylor Whimpey**

Project: **Standen Phase 5 & 6**

Title: **Otter Activity Map**

Issue: **02**

Drawn:	Checked:	Approved:
CL	JH	MG

Project:	Scale @ A3:	Date:
UG1451	1:3250	04/05/2023

Dwg No:	Revision:
UG_1451_ECO_OAM_02	01