



Larkby, Bursledon, SO31 8DD

Ecological Appraisal

Prepared on behalf of

James and Rachel Youngman

Final Report

30 September 2022

Larkby, Bursledon, SO31 8DD

Ecological Appraisal

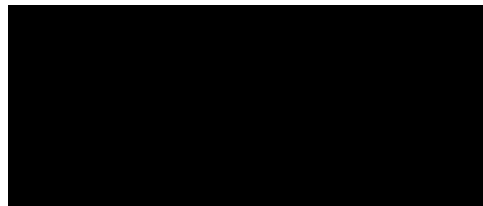
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Client: James and Rachel Youngman

Report Prepared for Issue by:



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As part of membership to our professional body (CIEEM) we are required to provide our biological results to applicable biological record centres. As such, it is our intention to supply biological data collected as part of this assessment to the relevant centre unless directly instructed in writing not to do so by the client.

Larkby, Bursledon, SO31 8DD

Ecological Appraisal

SUMMARY

- Cherry Tree Ecology Ltd. was commissioned by James and Rachel Youngman to conduct a Preliminary Ecological Appraisal and Preliminary Roost Appraisal of Larkby, Kew Lane, Bursledon, Southampton, SO31 8DD. This survey is to support a planning application for the demolition of the existing buildings and construction of a new house and garage, with associated landscaping and access.
- The site comprised a semi-improved grassland, scattered trees, mixed woodland, hedgerows, ornamental planting, log piles, hard standing and three buildings.
- Piland's Wood (Upper) SINCD designated site and associated Priority lowland deciduous woodland within the zone of influence. Construction mitigation is discussed in Section 4.
- All the buildings were assessed as holding potential for roosting bats. There were trees with bat roost potential and mitigation has also been given regards light spill and disturbance to foraging and commuting bats is given in Section 4.
- The emergence/re-entry surveys identified that the garage building has no roosting bats. However, the house supports summer day roosts for an individual common pipistrelle and an individual serotine. The outbuilding supports a summer day roost for an individual soprano pipistrelle bats.
- As a maximum of three individual bat roosts from the house and outbuilding a Bat Low Impact Class Licence (BLICL) will be required and must be followed to avoid any potential harm to roosting bats.
- There is extensive habitat suitable for common reptile species. A reptile survey was undertaken during July - September 2022. A medium breeding population of slow worms and a low breeding population of grass snakes were recorded across the site. A mitigation strategy is given in Section 4 to maintain legal compliance.
- There is bird foraging on site and nesting habitat within the hedgerows and trees. Mitigation has been recommended for the vegetation clearance to maintain legal compliance regards nesting birds.
- In line with the National Planning Policy Framework and Local Plan Policy, recommendations have been given to minimise impacts and provide net gains for biodiversity such as the installation of bat, bird and bee boxes and grassland management.

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Ecological Appraisal

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Ecological Appraisal

1. INTRODUCTION

Background to the study

- 1.1 Cherry Tree Ecology Ltd. was commissioned by James and Rachel Youngman to conduct a Preliminary Ecological Appraisal and Preliminary Roost Appraisal of Larkby, Kew Lane, Bursledon, Southampton, SO31 8DD (Grid reference SU 4822 0965).
- 1.2 This survey is to support a planning application for the demolition of the existing buildings and construction of a new house and garage, with associated landscaping and access.

Site description

- 1.3 The site is located within a residential but fairly rural area of Bursledon and contains semi-improved grassland, scattered trees, hedgerows, ornamental planting and three buildings.
- 1.4 The site is surrounded by areas of woodland, with farmland to the east. There are houses with their associated gardens to the north and south of the property.

Scope

- 1.5 The purpose of the Preliminary Ecological Appraisal (PEA) was to identify the habitats currently present within and around the site (to Phase 1 standard) in order to obtain baseline ecological information for the site. The Appraisal also assessed the potential for the site and adjoining habitats to be used by species that receive legal protection (at a UK level) and species that are otherwise notable including Species of Principal Importance and Birds of Conservation Concern.
- 1.6 The PEA comprises two main elements: 1) A desktop review of the ecological and policy context; and 2) a field survey of the development site and where possible any other areas likely to be affected.
- 1.7 Where relevant, legislative and policy considerations are highlighted, including:
 - The Conservation of Habitats and Species Regulations 2017 (as amended);
 - The Wildlife and Countryside Act (WCA) 1981 (as amended);
 - The Countryside and Rights of Way (CROW) Act 2000;
 - The Natural Environment and Rural Communities (NERC) Act 2006;
 - The Protection of Badgers Act 1992;
 - Hedgerow Regulations 1997;
 - Wild Mammals (Protection) Act 1996;
 - The National Planning Policy Framework (NPPF) (2021);
 - Eastleigh Borough Council Local Plan Review (2001-2011); and

- Eastleigh Borough Council Draft Local Plan (2016-2036).

1.8 In addition to the above, biodiversity objectives detailed in the following documents have been considered:

- Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services; and
- Biodiversity Action Plan for Hampshire.

2. METHODOLOGY

- 2.1 This Ecological Appraisal was undertaken in line with guidance in the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (2017) and Guidelines for Ecological Impact Assessment in the UK (2018, Version 1.1).

Zone of Influence

- 2.2 The study area encompassed the Zone of Influence of the Project. The Zone of Influence is defined as "... the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities" (CIEEM, 2018).
- 2.3 The Zone of Influence of the Project encompasses different areas in respect of each important ecological feature depending on its location and sensitivity, and the spatial extent of the relevant biophysical change (e.g. light, noise, habitat loss).
- 2.4 However, the majority of the activities and resultant biophysical changes listed in Table 1 are unlikely to have an effect beyond the site and the immediate surrounding area. The exceptions to this include birds and bats due to their highly mobile nature, potentially 5-7km for birds and up to 6km for bats (based on barbastelle bats, Bat Conservation Trust Core Sustenance Zones, 2016), and activities such as uncontrolled discharges of pollutants, changes to ground and surface water drainage, air pollution and the increased demand for recreational activities when the site is occupied, which might extend beyond the immediate surroundings of the site in some instances; for the majority of designated sites in the area this is up to 5.6km.
- 2.5 Therefore, the Zone of Influence, and the study area, is broadly considered to extend across the site or just beyond the site boundary in most cases and potentially up to or exceeding 5.6km with regards to designated sites.

Table 1: Summary of predicted changes and Zone of Influence

Predicted Change	Zone of Influence
Vegetation/habitat clearance	Site
Demolition of structures	Site
Generation of dust during site clearance and construction	Site and immediate surrounds (200m)
Acoustic disturbance and vibration from construction activities	Site and immediate surrounds (Typically up to 300m)
Increased traffic-related air pollution and potential to impact upon sensitive habitats during both construction and operational phase	Habitats within 200m or so of affected roads
Lighting (during construction and in long term)	Site and immediate surrounds
Changes to local hydrology, including surface water runoff and groundwater	Likely to include watercourses that receive surface water

	discharges, and downstream habitats
Increased recreational demand and associated effects including disturbance, trampling and eutrophication from dog fouling	Typically up to around 5.6km from Site, but further for particularly attractive 'destination' sites
Landscape planting and habitat creation / Green Infrastructure creation	Site

Desk Study

- 2.6 The Multi-Agency Geographical Information for the Countryside (MAGIC) website was used to assess the presence of statutory designated sites within a 5km radius of the site. A request for data was made to Hampshire Biological Information Centre (HBIC) for information they hold on protected and notable species records within a 1km radius of the site.

Field Study

Vegetation

- 2.7 The standard Phase 1 habitat survey methodology (JNCC, 2010) was adopted whereby habitats are mapped using colour codes (see Appendix 1). A detailed walkover survey was undertaken on 27th June 2022 by Sophie Smith, directly searching for legally protected and invasive species of plant, and categorising any habitats of ecological value that were encountered. A general description of the vegetation was also noted, listing species encountered and scoring their abundance using the DAFOR scale:

- Dominant (D)
- Abundant (A)
- Frequent (F)
- Occasional (O)
- Rare (R)
- Local (L, used as a prefix to any of the above)

Protected Species Assessment

- 2.8 Habitats and features were assessed for their potential to support protected species. In many cases determining the presence, distribution and population size of protected species will require additional, specialist surveys.

Amphibians

- 2.9 Consideration was given to the presence of habitat potentially suitable for supporting amphibians including water bodies (ponds, ditches), woodland, scrub, rough grassland and features such as log piles that might provide hibernation areas. Where appropriate, effort to

gather direct evidence of amphibians was undertaken using a preliminary search for eggs by examining vegetation within reach of the margins of water bodies, and for resting animals on land by looking under potential refuges such as stones, wood and rubbish near to water bodies.

- 2.10 Great crested newts are known to forage up to at least 500m from their breeding water bodies and suitable habitats that fall within 250m must be considered even in situations where the breeding site itself will not be affected.

Reptiles

- 2.11 Habitat considered potentially suitable for supporting reptiles was recorded. This includes areas providing basking and foraging areas, hibernation and breeding sites such as rough grassland and scrub, banks, burrows, rubble piles, compost heaps, hedge banks and water bodies.
- 2.12 Roofing felt was used with 65 refugia (0.25m² pieces) being laid out around the suitable habitat. The reptile mats were distributed on the site on the 5th July 2022 and left to 'settle' for a period of one week before the survey visits commenced. The 'reptile mats' were checked between 0900 and 1100 hours or between 1600 and 1900 hours and/or during suitable weather conditions, cloudy and/or with sunny breaks with temperatures between 10 and 20 degrees centigrade, when the refuges provide greater heat than the open ground. A total of seven checks were conducted between the 14th July 2022 and 3rd September 2022 to determine presence or absence.

Birds

- 2.13 Any birds seen whilst carrying out the survey were recorded and the type and quality of habitats available for birds was considered, including vegetation suitable for nesting and habitat with the potential to support valued species including breeding and wintering birds.

Bats

Buildings

- 2.14 Bats roost in a wide variety of sites within buildings with many species roosting in cracks and crevices, within rubble stone or cavity walls, under slates and within timber beam joints where they are difficult to see. Bats often access buildings at key areas such as the gable end, soffits, barge-boards, ridge tiles, between double lintels or around window frames.
- 2.15 The presence of roosting bats can be spotted through signs such as accumulations of moth or butterfly wings or bat droppings and staining around potential entrance and exit points. The absence of these cannot however be treated as conclusive evidence that bats are not using the buildings. An assessment was therefore also made of the potential of the building to support bats based on the following scale (Table 2):

Table 2: Criteria for assessing bat roosting potential of buildings

Confirmed Roost	Evidence of bat occupation found
High Roosting Potential	With significant roosting potential, either because they contain a large number of suitable features or those features present appear optimal
Moderate Roosting Potential	Features with moderate roosting potential, with roosting features appearing less suitable

Low or Negligible Roosting Potential	Buildings with few, if any, features suitable for roosting
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Trees

- 2.16 Bats often roost in trees. Features such as old woodpecker holes, splits, cavities and rot holes, loose or flaking bark and ivy creepers will be exploited by bats to roost. Any trees present on site were therefore assessed for their potential to support roosting bats by searching for such features. The presence of roosting bats can be spotted through signs such as accumulations of moth or butterfly wings, staining, bat droppings, or bats themselves. The absence of these cannot, however, be treated as conclusive evidence that bats are not present, and therefore an assessment was made of the potential of the trees to support bats based on the scale presented in Table 3 below, adapted from the *Good Practice Guidelines* (Collins, 2016):

Table 3: Criteria for assessing bat roosting potential of trees

Confirmed Roost	Evidence of bat occupation found
High Roosting Potential	Trees with multiple, highly suitable features capable of supporting larger roosts or with evidence of bat occupation found
Moderate Roosting Potential	Trees with definite bat potential, supporting fewer suitable features than high roosting potential trees or with potential for use by single bats
Low or Negligible Roosting Potential	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features which may have limited potential to support bats or trees with no potential to support bats

- 2.17 A direct search for evidence of bats was therefore conducted on 27th June 2022 by Jennie Chambler (licensed bat worker).
- 2.18 A preliminary evaluation was also undertaken of the habitat on the site for the quality of potential commuting and foraging habitat for the local bat populations. Bats navigate using linear features in the landscape such as hedgerows and these can be important features for local roosts. The site itself may also provide important foraging habitat and support local bat roosts.

Emergence/re-entry surveys

- 2.19 The buildings had potential to support roosting bats. The following surveys were undertaken:
- Larkby House had moderate potential for roosting bats. Two dusk emergence surveys were undertaken on 2nd August 2022 and 23rd August 2020. As a bat was seen emerging from the house on the first dusk survey a further dawn survey was undertaken on 13th September 2022. Three surveyors were used on each survey.
 - Outbuilding had moderate potential for roosting bats. Two dusk emergence surveys were undertaken on 11th August 2022 and 25th August 2022. As a bat was seen emerging from the outbuilding on the second dusk survey a further dawn survey was undertaken on 9th September 2022. Two surveyors were used on each survey.
 - Garage building had low potential for roosting bats. A single dusk emergence survey was undertaken on 23rd August 2022. One surveyor was used for the survey.

- 2.20 The evening emergence survey commenced 15 minutes before sunset and continued for up to 2 hours after sunset. The dawn re-entry survey commenced 1.5 hours before sunrise and continued up to 15 minutes after sunrise. Surveyors were situated at key points around the building. Echo meter touch, Anabat Scout and Bat Logger M bat detectors were used to record any bats that were seen leaving or re-entering the building. Visual observations were also used to record flight patterns and feeding behaviour to aid identification to species level. General bat activity within the vicinity of the buildings was also recorded. Notes were recorded on times, species and behaviour.
- 2.21 An infrared light (RayTEC VAR2-i8-1 Long range infrared 24 LEDs) and a Sony FDR-AX700 Compact 4K HDR camcorder with a night shot mode was used once during the dusk survey the house on 23rd August 2022.
- 2.22 All recorded bat calls were subsequently analysed using the software Analook and Kaleidoscope.

Badgers

- 2.23 Consideration was given to the presence of habitat potentially suitable for supporting badgers including woodland, scrub and grassland. Potential evidence of the presence of badgers was noted including earthworks that might be badger setts, signs such as dung pits, mammal pathways through ground vegetation and under fences and hairs on fences.

Dormouse

- 2.24 The habitat on the site was assessed for the potential to support dormice which are found in habitats such as woodlands, scrub and hedgerows with good connectivity and suitable food plants. Satellite images were used to assess the connectivity of any suitable habitat present on the site to other areas of woodland and hedgerow networks.

Constraints

- 2.25 There was limited access to the roof void on the house and no access inside the garage or outbuilding.

3. RESULTS

Designated sites

Statutory sites

- 3.1 There are three internationally important designated sites within the search area:
- Solent Maritime Special Area of Conservations (SAC), 710m south;
 - Solent and Southampton Water Ramsar, 710m south; and
 - Solent and Southampton Water Special Protection Area (SPA), 710m south.
- 3.2 The Solent Maritime SAC primary habitats for selection are estuary, salt meadow, coastal lagoons, and mudflats. SAC citation species includes Desmoulin's whorl snail. Solent and Southampton Water SPA and Ramsar is designated for its internationally important assemblage of overwintering waterfowl including dark-bellied brent goose, Eurasian teal, and black-tailed godwit. The site also supports migratory ringed plover, and breeding populations of common tern, little tern, Mediterranean gull, roseate tern, and sandwich tern.
- 3.3 There are six Sites of Special Scientific Interest (SSSIs) within 5km of the site: Moorgreen meadows SSSI, Botley Wood and Everett's and Mushes Copses SSSI, Lincegrove and Hackett's Marshes SSSI, Lee-on-The Solent to Itchen Estuary SSSI, Hythe to Calshot Marshes SSSI and Upper Hamble Estuary and Woods SSSI.
- 3.4 The nearest SSSI to the site is the Lincegrove and Hackett's Marshes SSSI, 725m to the south east at the closest point. Lincegrove and Hackett's Marshes SSSI is a mature saltmarsh on the west bank of the River Hamble estuary.
- 3.5 Given the distance between the development site and the designated sites, there will be no anticipated construction impacts.
- 3.6 The project will not cause an increase in residential units and will not cause waste water impacts and recreational impacts on the Solent Protected sites.
- 3.7 There are 14 Local Nature Reserves (LNRs) within 5km of the site:
- Chessel Bay LNR, a long stretch of undeveloped, natural shoreline in the lower Itchen River, 4.3km north west of the site;
 - Gull Coppice LNR, an area of secondary oak woodland and a felled conifer area which now supports a variety of pioneering flora, 4.31km south east of the site;
 - Hackett's Marsh LNR, a site of species rich meadow and saltmarsh, the site is particularly noted for range of insects and forms and important feeding area and high water roost for wading birds, 1.55km south east of the site.
 - Hook with Warsash LNR, a mosaic of habitats including scrapes, reedbed, coastal grazing marsh, scrub, saltmarsh, inter-tidal mud, stable shingle ridge and woodland, the site supports a variety of flora and fauna.
 - Holly Hill Woodland Park LNR, the site has two distinctive areas known as Winnards Copse with its more formal landscape, lakes and ornamental exotic species in contrast to

the area known as Cawtes Copse with its mix of native woodland species, some of which is ancient semi-natural woodland.

- Manor Farm LNR, river with surrounding fields supporting a variety of flora and fauna.
- Round Coppice LNR, a 16 acre ancient woodland, enclosed for at least 200 years, and containing a scattering of hazel coppice stools.
- Wildern LNR, a Wetland habitat featuring a mosaic of ponds, two flooded meadows, woodlands and a valley mire all linked by the streams which flow through the site, supporting a wide range of bird and butterfly species.
- Westwood Woodland Park LNR, blend of ancient woodlands and rolling grasslands covering 150 acres next to the Netley Abbey.
- Peartree Green LNR, an area of diverse habitats run by the Friends of Peartree Green.
- Millers Pond LNR, area of acid grassland, woodland and pond providing an important local open space.
- Netley Common LNR, the city's last remaining piece of open heathland including grassland with islands of scrub and gorse, surrounded by a mixed woodland fringe.
- Mercury Marshes LNR, the site consists of some woodland species, reed bed and inter tidal mud, creeks and islands. The reserve is of particular importance for some invertebrates, and forms an important feeding area for waders.
- Warsash Common LNR, a mix of rough grassland and heathland, and comprising a variety of habitats including dry woodland, open meadows, wet woodland and seasonal ponds, the Common supports a rich array of flora and fauna.

- 3.8 The Local Nature Reserves are of county level importance. The closest is Hackett's Marsh LNR 720m south east. Considering the size of the development and the distance from the LNRs no impacts are anticipated.

Non-Statutory sites

- 3.9 There are nine Sites of Importance for Nature Conservation (SINCs) within 1km of the site:
- Priors Hill Brickworks: Other woodland where there is a significant element of ancient semi-natural woodland surviving or supporting some characteristics of ancient woodland, grasslands which have become impoverished through inappropriate management, areas of heathland which are afforested or have succeeded to woodland, 800m west;
 - Mallards Moor: Ancient semi-natural woodlands, wet woodlands such as alder or willow woods and birch bog woods which support a good diversity of woodland and/or marsh/swamp/mire species, 540m south west;
 - Badnum Copse: Ancient semi-natural woodlands, wet woodlands such as alder or willow woods and birch bog woods which support a good diversity of woodland and/or marsh/swamp/mire species, Semi-natural coastal and estuarine habitats (including saltmarsh, intertidal mudflats, sand dunes, brackish ponds, saline lagoons, inundation grasslands of the coastal plain, maritime cliffs and maritime grasslands, 915m south;
 - Bursledon Meadow: Agriculturally unimproved grasslands which are not of recent origin, 710m south east;

- Brixedone Saltmarsh & Mudflat; Semi-natural coastal and estuarine habitats (including saltmarsh, intertidal mudflats, sand dunes, brackish ponds, saline lagoons, inundation grasslands of the coastal plain, maritime cliffs and maritime grasslands and supports purple glasswort, English scurvygrass, marsh mallow, 920m east;
- Piland's Wood (Lower): Ancient Semi-natural Woodlands, 295m south west;
- Piland's Wood (Upper): Ancient semi-natural woodlands. wet woodlands such as alder or willow woods and birch bog woods which support a good diversity of woodland and/or marsh/swamp/mire species, 0m west;
- Windmill Fields Wood: Other woodland where there is a significant element of ancient semi-natural woodland surviving or supporting some characteristics of ancient woodland, 980m north; and
- Land North of Bridge Road: Semi-improved grasslands which retain a significant element of unimproved grassland, 890m north east.

3.10 Piland's Wood (Upper)SINC is located on the western boundary and therefore considered to be within the zone of influence for construction impacts, this is discussed in Section 4.

3.11 Given the distance and type of proposal, the other SINC's are not considered to be within the zone of influence.

Habitats

3.12 Descriptions of the habitats recorded on site are given below, a map of the habitats is given as Appendix 1, with photographs in Appendix 2. There are several areas of NERC Act Section 41 Priority lowland deciduous woodland shown on MAGIC around the site, the closest on the western site boundary within the zone of influence.

Buildings

3.13 There is the house, garage and outbuilding within the site boundary. These are discussed in more detail within the bats section below.

Semi-improved grassland

3.14 The majority of the site was semi-improved grassland of moderate length sward. Species noted were abundant sheep fescue, Yorkshire fog, ribwort plantain, smooth meadow-grass, frequent red and white clover, sweet vernal, dandelion, common birds-foot-trefoil, violet species, grey sedge, horsetail species, occasional perennial rye-grass, primrose, cat's-ear, meadow buttercup, brome species, selfheal, germander speedwell, common mouse-ear, perforate st-John's wort, black medick, creeping buttercup, common bent, dock species, with rare occurrences of vetch species, creeping thistle, ivy, ragwort, yellow loosestrife, yarrow, giant fescue, and jointed rush.

3.15 This grassland appears to be species-rich and of local level significance, as well as provide support for fauna such as reptiles and foraging birds.

Ornamental planting

- 3.16 Areas of ornamental planting are present across the site. Species include camelia, heather, gladioli, cypress, selfheal, holly, elephant ears, hydrangea, buddleia, bramble, fern, rhododendron, and small-leaved cotoneaster.
- 3.17 The ornamental planting mainly consists of non-native plant species and is considered to hold only site level significance. The areas do however provide habitat for invertebrates, nesting birds and reptiles. Rhododendron and the cotoneaster are listed under as invasive species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), further recommendations have been made in Section 4.

Scattered trees

- 3.18 There were multiple scattered trees on the boundaries. Species noted included cherry, pine, magnolia, holly, and pear.

Hedgerows

- 3.19 Hedgerow 1- located along the lane on the eastern boundary, hedgerow 1 is a tall unmanaged hedge/tree line 3-5m high. Species noted comprised dominant holly, occasional bramble and ivy, rare occurrences of cherry laurel and forsythia.
- 3.20 Hedgerow 2 – located on the southern boundary at the east end of the plot, was 1metre wide and not managed. Ground flora comprised nettles, bramble and ivy or bare with dead leaves and gappy at the base. The hedgerow comprised rhododendron, hornbeam, brambles, cherry laurel, blackthorn, beech, hawthorn, and magnolia.

Hedgerow 3- this is located along the northern boundary on the eastern end. It is an unmanaged 1 m wide line of cypress (*leylandii*) with shrubs in front. Additional species noted comprised occasional bramble, ivy, hornbeam, holly, rare occurrences of bay laurel, hazel, turkey oak, holm oak, ash and holly saplings, and strawberry tree.

- 3.21 Hedgerow 4- was located on the southern boundary on the western side. This had been heavily pruned with arising left adjacent to the hedgerow. This section comprised dominant cherry laurel, occasional beech, bay laurel and bramble.
- 3.22 The hedgerows did not contain more than five woody species within a 30m stretch and are considered species-poor. Given they contain non-native species and the condition they are not considered NERC Priority habitat. The hedgerows may provide nesting and foraging habitat for birds and habitat for reptiles at the bases.
- 3.23 As above the rhododendron is a Schedule 9 invasive non -native.

Woodland

- 3.24 An area of deciduous woodland was noted on the western boundary of the site. This comprised frequent holly, abundant eared willow and birch, bramble, rare occurrences of cherry laurel.
- 3.25 This woodland is part of the SINC and is Priority habitat, and therefore of at least local level importance even with the non-native species noted.

Scrub-

- 3.26 Small patches of dominant bramble scrub were noted. One in the centre of the grassland at the western end of the site contained a brash pile also.
- 3.27 These scrub patches may provide nesting and foraging habitat for birds and habitat for reptiles at the bases.

Colonized gravel- ephemeral /short perennial

- 3.28 The eastern section of the site comprised an old gravel drive colonised with ephemeral/short perennial plants. Species noted included greater plantain, ivy, primrose, bramble, daisy, Yorkshire fog, annual meadow-grass, ribwort plantain, germander speedwell, dandelion, selfheal, red clover, fleabane, common mouse-ear, and black medick.
- 3.29 Whilst this habitat would support foraging invertebrates no rare or protected plants were noted and this is not considered to be more than site level ecological value.

Protected species

Plants

- 3.30 NERC S41 Priority plants in the search area include pillwort, Deptford pink, tubular water-dropwort and triangular club-rush. None of these species were recorded on site during the walkover.
- 3.31 Non-native invasive plants that are listed under Schedule 9 of the Wildlife and Countryside Act 1981(as amended) recorded on or close to the site include three cornered garlic, New Zealand pygmyweed, Himalayan cotoneaster, montbretia, Japanese knotweed, variegated yellow archangel, rhododendron and false acacia.
- 3.32 Cotoneaster and rhododendron were recorded on site. Recommendations to remove these species have been made in Section 4.

Invertebrates

- 3.33 There are 40 records of stag beetle (NERC S41) for the area. There is dead wood on site both a large log pile in the south east corner and a standing dead tree in the north east corner. Dead wood is essential for stag beetle larvae, therefore it is highly likely that stag beetles are present on site.
- 3.34 There are records for small heath, small blue, dingy and grizzled skipper, wall, white admiral, white letter-hairstreak, brown hairstreak butterflies and a large number of moths (NERC Priority species).
- 3.35 There is some habitat on site suitable for wall, small heath and potentially dingy skipper on site.
- 3.36 The grassland on site would support common invertebrates, and the ornamental planting would provide a suitable food sources. Given the size of the available habitat any assemblage is likely to be of no more than local level importance.

Amphibians

- 3.37 The site was assessed for its suitability to support great crested newts and other amphibians - in its current state the gravel is considered unsuitable for newts due to a lack of vegetative complexity and adequate protective cover and foraging opportunities.
- 3.38 The ornamental planting, semi-improved grassland, scrub and hedgerow bases would provide suitable terrestrial habitat for amphibians. The log and brash piles would offer refugia opportunities.
- 3.39 There are three records of great crested newts in the HBIC records for this search area. These are from 2007 to 2013, 640m and 680m south east from Bursledon Nature Haven. There is also a single record for common toad (NERC Priority species) from the same reserve.
- 3.40 MAGIC shows no great crested newt mitigation licenses, class licence returns or eDNA results for the area.
- 3.41 There are no ponds within 250m of the site and the covered swimming pool on site is not considered suitable.
- 3.42 It is considered highly unlikely that great crested newts are present on site and no further survey or mitigation is recommended.

Reptiles

- 3.43 There are six records of slow worm from the search area, one record of grass snake and for the search area the most recent in 2017.
- 3.44 As with amphibians above, the gravel offers no cover and is poor quality habitat, the semi-improved grassland, ornamental planting, scrub, woodland edge and hedgerow bases provide suitable habitat for common reptiles. The log and brash piles offer refugia/ hibernacula opportunities.
- 3.45 A targeted reptile survey was therefore conducted. The full results are presented in Table 4 below. To summarise, a population of slow worm was recorded with a peak count of 20 adults during any one survey indicating a good population based on the number of adults in any one visit (Froglife, 1999).
- 3.46 One juvenile grass snake was also recorded on the site indicating a breeding population of grass snake in the wider area. The population assessment can only be based on adult grass snake therefore an assessment has not been made.

Table 4: Reptile survey results

Date	Time	Weather	Temp (°C)	Reptiles					
				Common lizard	Slow worm	Grass snake	Adder	Smooth snake	Sand lizard
14.07.22	06:45	0/8 cc, 2/12 wind	16	0	0	0	0	0	0
27.07.22	10:50	8/8 cc, 2/12 wind	20	0	12 F, 4 M, 14 Juv	0	0	0	0
04.08.22	10:00	4/8 cc, 0/12 wind	20	0	19 F, 1 M, 4 Juv	1 Juv	0	0	0
18.08.22	12:00	7/8cc, 1/12 wind	20	0	7 F, 2 M, 1 Juv	0	0	0	0
23/08/22	09:30	8/8 cc Wind: 1	19	0	17 F, 1 M, 5 Juv	1 Juv	0	0	0
31/08/22	10:40	0/8 cc 2/12 wind	18	0	9 F, 2 Juv	0	0	0	0
03/09/22	09:15	8/8 cc Wind: 1	16	0	17 F, 1 M, 9 Juv	0	0	0	0

3.47 Slow worms were recorded across the entire garden area both front and rear.

3.48 As juvenile slow worm and grass snake were recorded in the garden it suggests that there are breeding populations present on site.

Birds

3.49 There were a number of bird records for the 1km search area mostly associated with the estuary. Of those, the birds relevant to the site included the RSPB's Birds of Conservation Concern (BOCC) red listed house sparrow, starling, mistle and song thrush.

3.50 There were also four records of swift within the search area. Swifts are a BoCC red list species. There were three records of the Wildlife and Countryside Act Schedule 1 barn owl for the search area. No evidence of use by barn owl was noted although the longer grassland would provide some limited foraging habitat.

3.51 The scattered trees, scrub, ornamental planting and hedgerow offer potential nesting opportunities, whilst the grassland offers good foraging opportunities.

3.52 There are four sites within Solent and Southampton Water SPA which are positive sites for the Solent Waders & Brent Goose Strategy 2020. This includes two SPA sites and a secondary

support site and a low use site. None of these are within the zone of influence and the site is not suitable for brent geese or wader usage.

- 3.53 Given the size of the site, amount of foraging habitat available and the proposals, it is considered unnecessary to undertake further breeding bird surveys. Further recommendations for mitigation and enhancements have been made in Section 4 below.

Bats

- 3.54 There are seven Natural England roost mitigation licenses present within 2 km shown by MAGIC, the closest for common pipistrelle bats. There were records for seven species of bats within 1km, including soprano pipistrelle, common pipistrelle, Nathusius's pipistrelle, serotine, noctule, brown long-eared, and whiskered bats.
- 3.55 The site contains suitable habitat for foraging and commuting bats, due to the presence of woodland edge, species rich grassland, hedgerows and scattered trees on site. The emergence/re-entry surveys recorded six species on site, with low to moderate foraging activity. Further recommendations regarding lighting are given in Section 4.
- 3.56 Several buildings are present on site, all of which will be affected by the development and therefore were inspected in more detail.

Buildings

House

- 3.57 The house is a 'T' shaped bungalow with a cross gable roof. It has shingle roof tiles, ridge tiles. There are shingle hanging tiles on the walls.
- 3.58 A missing tile was noted on the gable end on the eastern elevation and a few warped tiles on the eastern elevation roof gap too small for bats. Warped roof tiles and ridge tiles on the rear west elevation gaps big enough for pipistrelle species bats noted.
- 3.59 There were metal window frames, with a potential gap at top corner of window frame and the wooden shelf above on the two windows on the long eastern side.
- 3.60 Wooden panelled soffits with a mesh lining are present. Along eastern soffit was a hole in mesh giving bats access and again several holes in mesh on rear west elevation.
- 3.61 There was a missing hanging shingle on the southern elevation under the window. This gap has bat roost potential but no evidence was seen.
- 3.62 Internally safe access was restricted to the area around the loft hatch. The void is 'T' shaped, un-boarded and unlined. There was thick fibreglass insulation and polystyrene batts. The void measured 4.6m wide x 11m long and 1.4m H in the accessible section. A queen post wooden beam design was noted. There is a covered water tank in the void. Multiple light gaps could be seen at the eaves. There were scattered mouse droppings but no bat droppings found in the area around the hatch.

Garage

- 3.63 The garage is a single storey detached building on the eastern end of the plot. It has a pitched felt roof, wooden shingle clad elevations. There were several missing shingles noted. A metal

window and a metal garage door on the eastern side, there was a large gap above this giving access internally. There were wooden soffits with several gaps noted.

Outbuilding

- 3.64 The single storey detached outbuilding had a flat bitumen roof with wooden panelling underneath and no lining. The wooden panelling along top of the wall had a small gap at bottom. The walls were shingle hanging tiles on north side and wooden cladding on west side with a missing panel, and breeze block on south and west sides.
- 3.65 A crack was noted in the breeze block wall on the east side. There were wooden windows with a crack present on the east side. The northern elevation window was open. A gap of light from eaves could be seen on the west side.
- 3.66 The garage was considered to have low potential for roosting bats, the outbuilding and house were assessed as having moderate potential for roosting bats. Further surveys were recommended.

Emergence/ re-entry surveys

- 3.67 The full results and weather conditions of emergence surveys on the buildings are given in Appendix 3.

House (A)

- 3.68 A dusk emergence survey was conducted on the 2nd August 2022. A serotine bat was recorded emerging from the soffit on the northern elevation at 21:25.
- 3.69 General activity was moderate with soprano pipistrelle, common pipistrelle, noctule, long-eared species and serotine activity. A tawny owl was recorded flying over the house at 21:45.
- 3.70 A dusk emergence survey was conducted on 23rd August 2022. No bats were recorded emerging from the house.
- 3.71 General activity was moderate with noctule, soprano pipistrelle, common pipistrelle, long-eared species and serotine.
- 3.72 A dawn re-entry survey was conducted on 13th September 2022. One common pipistrelle was recorded re-entering under the eaves of the house on the south elevation at 06:29.
- 3.73 General activity was low with long-eared species, soprano pipistrelle and common pipistrelle bat species.

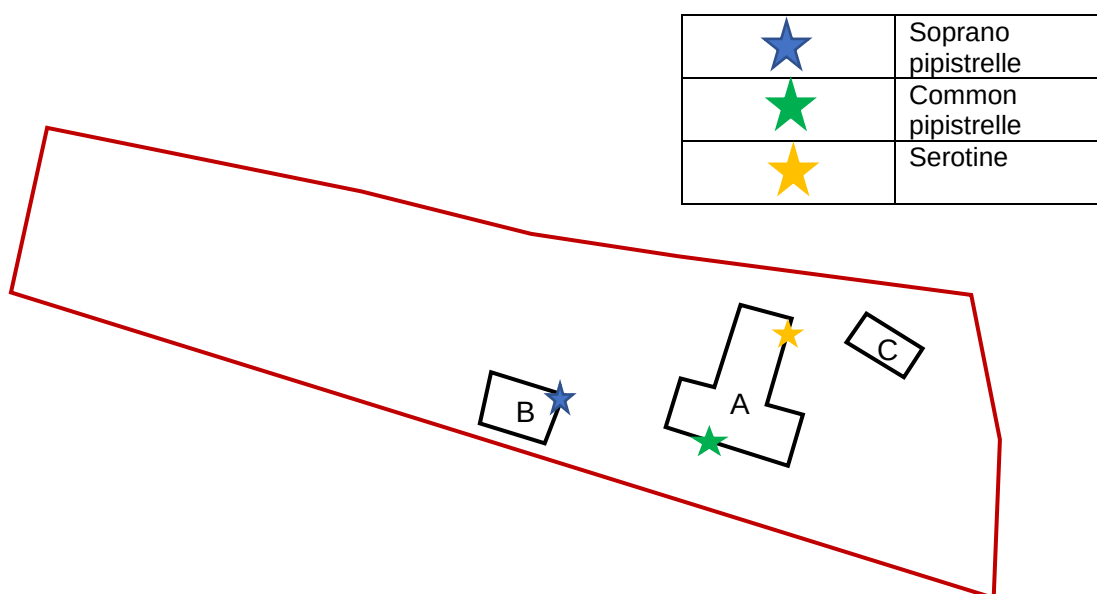
Outbuilding (B)

- 3.74 A dusk survey was undertaken on the 11th August 2022. No bats were recorded emerging from the outbuilding.
- 3.75 General activity was low with soprano pipistrelle, common pipistrelle, serotine, long-eared species, myotis species and noctule bats recorded.

- 3.76 A dusk survey was undertaken on the 25th August 2022. One soprano pipistrelle was seen emerging from the outbuilding at 20:06 under the shingle tiles on the east elevation.
- 3.77 General activity was low with serotine, soprano pipistrelle, noctule and long-eared species bats recorded.
- 3.78 A dawn survey was undertaken on the 9th September 2022. One soprano pipistrelle bat was recorded re-entering the outbuilding at 06.29 under the shingle tiles on the north east corner.
- 3.79 General activity was moderate, with soprano pipistrelle, noctule, common pipistrelle, long-eared species bats recorded.
- 3.80 During the dawn re-entry survey on the house on the 13th September 2022 a single soprano pipistrelle was recorded re-entering the outbuilding on the eastern elevation at 06:31.

Garage (C)

- 3.81 A dusk survey was undertaken on the 23rd August 2022. No bats were recorded emerging from the garage.
- 3.82 General activity was low, with common pipistrelle and soprano pipistrelle bats.



Trees

- 3.83 There was a mature tree stump covered in ivy about 3m tall on the north east corner and an mature oak tree on the south east corner, with one split branch, areas of loose bark and lots of Ivy on main trunk. Both have potential bat roosting features. The current plans appear to retain both trees, if this is not the case then further survey and mitigation will be required.

Badger

- 3.84 There are no records of badgers within the search area.
- 3.85 The semi-improved grassland, scrub and hedges would offer suitable foraging habitat. The scattered fruit trees would provide a suitable food source for badgers. No signs of badgers were noted on site at the time of the survey.
- 3.86 Badger is a species that is abundant and widespread in most areas and it is very unlikely that any population present would be of more than site level ecological importance. Further low level mitigation is detailed below in Section 4 below.

Dormice

- 3.87 There are no records of dormice within the search area.
- 3.88 The habitat available within the connected ornamental planting/ hedgerows and woodland is suitable for nesting and foraging dormice. However, given the dominance of species like rhododendron and cherry laurel the amount of food plants is considered limited. The aerials suggest there is good connectivity to the woodland in the surrounding area.
- 3.89 It is considered possible that dormice are present on site. However, the current designs would not affect the boundary habitat and therefore no additional dormice survey or mitigation is considered necessary.

Other mammals

- 3.90 There was a single record for water vole and one for water shrew returned, however there is no suitable habitat for these species on site.
- 3.91 The data return included 20 records of West European hedgehog for the 1km search area. The site provides suitable foraging and cover for hedgehog. This species is listed as vulnerable on the IUCN red list and is a species of Principal Importance under Section 41 of the NERC Act.

4. CONCLUSIONS

Designated sites

Piland's Wood (Upper)SINC

- 4.1 Piland's Wood (Upper)SINC is within the zone of influence for construction impacts (immediately adjacent to the western boundary). The production and implementation of a Construction Method Statement (CMS) shall be put into place prior to the beginning of the construction phase. This will set out detailed methods of construction to avoid impacts such as spread of dust and chemicals causing pollution to the nearby SINC:

- Details of how materials / chemicals will be stored and controlled on-site to avoid pollution (for example - all plant will be fitted with drip trays in order to avoid potential pollution incidents and no re-fuelling will take place on the site).
- Details on the proposed construction methodology including factors such as construction access, methods of construction, timing of work and working hours (particularly after dark when bats may be affected).
- Construction lighting, if required, will be targeted and focused inwards away from retained vegetation.
- Dust suppression to protect the nearby habitats.
- A fenced buffer zone (using high visibility fencing) from the woodland habitat to prevent physical impacts during the construction phase and prevent disturbance to protected species, if present.

Priority Habitat

- 4.2 There is Priority deciduous woodland habitat within the zone of influence of the site. This priority habitat could be impacted by the construction phase. As above a CMS will be implemented. This will also seek to protect the retained on site habitats such as the remaining grassland and woodland during construction.

Schedule 9 plants

- 4.3 Species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded on site, Schedule 9 makes it illegal to allow or cause these plants to grow 'in the wild' and they should be removed from site to prevent their spread.
- 4.4 Control of the cotoneaster and rhododendron on site should be dealt with prior to or during the construction process. The plants should be completely removed as part of the re-development to prevent their further spread throughout the site and into surrounding areas. This requires careful excavation of the plants or clearance to stump level with herbicide application.

Reptiles

Impacts

- 4.5 A medium population of breeding slow worms and a low breeding population of grass snakes have been recorded on site. The clearance of vegetation and groundworks during site preparation has the potential to kill and/or injure individual reptiles that may be occupying the areas of suitable habitat at the time of works. The risk of harming reptiles is highest during the hibernation period of November to March inclusive.
- 4.6 Slow worms are more sedentary and therefore more likely to not move away from the clearance or to recolonise after works are complete, this would be a permanent negative impact at a site level. The clearance could result in an offence under the provisions of the Wildlife and Countryside Act 1981 (as amended) and consequently will need to be avoided and mitigated.

Mitigation

- 4.7 As areas of suitable habitat for reptiles are due to be lost as part of the development then mitigation will need to be put in place, to prevent injury or killing of animals during the works in accordance with their legal protection.
- 4.8 An area at the west of the site which contains a small area of bramble scrub, semi improved grassland with moderate length swards with a woodland boundary will be retained and enhanced for the reptiles. This area will be used as a receptor area within the site. A hibernacula will be created to provide replacement refuge opportunities for reptiles. A rockery has also been suggested in the owners garden with low growing vegetation to provide a refugia and basking area for reptiles.
- 4.9 The non-natives will be removed, existing grassland will have a hay meadow type management regime so that the tussocky grassland can be retained and native shrub planting undertaken to provide cover.
- 4.10 The mitigation strategy will include an exclusion and translocation exercise to a receptor area at the west of the site that will be fenced off and protected during the development and an ecological watching brief will be required for the destructive search of the rest of the site.

Exclusion and translocation of reptiles

- 4.11 The exclusion and translocation exercise undertaken in the reptile active period (March to October) will entail:
- The receptor area at the west of the site will be separated from the rest of the site using exclusion fencing. This will be undertaken under a watching brief by a suitable qualified ecologist to ensure no reptiles are harmed or injured during this process.
 - Once a clear route has been created specialist drift fencing will be installed. Drift fencing essentially forms a barrier that prevents the movement of reptiles. The fence will be installed under the supervision of an experienced reptile handler, who will search through the vegetation to ensure no reptiles are present.
 - Once the fence is erected, artificial refuges (a mixture of 0.5 x 0.5m roofing felt sheets), will be placed within the area from which the reptiles are to be caught. Artificial refugia will be distributed at a minimum density of 100/ha.

- The mats will be visited by an experienced reptile handler, during suitable weather conditions between late March and mid-October and any reptiles encountered will be caught.
 - Once caught any reptiles will be swiftly transferred into a suitable lidded container and move to the receptor site within the site.
 - A minimum number of translocation visits will be 30 visits made in suitable weather (given the number of slow worms on site this actual number of visits may be more like 60 days). If reptiles are still being encountered after this, visits will continue until there are five consecutive visits where no individuals are caught before works can begin.
 - The destructive search will be undertaken during suitable weather conditions: dry and above 10°C. An experienced reptile handler will work alongside an excavator, stripping any tussocky grassland, ornamental planting and scrub habitat favoured by the reptiles, searching each bucket for any individuals and safely relocating any animals encountered. In addition, an ecological watching brief will be maintained during the removal of any tree roots, rubble, compost and log piles which might act as a refugia. Where reptiles are encountered these will be safely removed and placed within the receptor site. Once the destructive search is complete works can commence.
 - During the construction period the fencing will be checked regularly for damage and repaired as necessary to maintain the barrier and prevent reptiles from re-colonising the works area. Where appropriate high visibility flexinet type fencing will be erected between the reptile fencing and working area to form a visual barrier and prevent damage to it. The fence will be removed once construction is complete, under supervision by an ecological clerk of works.
- 4.12 Applying appropriate mitigation to move reptiles to a safe place out of the working area, and preventing killing or injury will ensure that there will be no legal consequences.
- 4.13 The native shrubs will be planted to form a 1:4 ratio of scrub to grassland. This will be managed on a rotational basis to allow areas of long grass to grow which will provide a foraging habitat for reptiles. Areas of shorter grass will provide potential basking areas. The grassland should be mown during the day when the weather is over 10°C during the reptile active period (March to October) to allow animals to move naturally out of the way.
- 4.14 Care will be taken during the management of the site to avoid the hibernacula and other features which reptiles may be resting under during the day (such as logs, compost piles and large tussocks of grass).

Breeding birds

- 4.15 All vegetation clearance should be conducted outside of the bird nesting season which is considered to run from March to September. Where this is not possible a suitably qualified ecologist should check potential nesting habitat immediately prior to clearance. Where nesting birds are encountered works must be postponed until the nestlings have fledged.

Badgers

- 4.16 There is potential for badgers to be foraging within the site and during construction any trenches will be backfilled nightly, boarded over, or will have a ramp installed in order to prevent any wildlife becoming trapped overnight.

Bats

Buildings

- 4.17 The house and the outbuilding on site were identified as holding moderate potential to support roosting bats due to several external roosting opportunities. The garage building was identified as holding low potential to support roosting bats.
- 4.18 The emergence/re-entry surveys identified that the garage building has no roosting bats. However, the house supports summer day roosts for an individual common pipistrelle and an individual serotine. The outbuilding supports a summer day roost for an individual soprano pipistrelle.
- 4.19 The demolition of the existing house and outbuilding will cause the loss of the common pipistrelle, serotine and soprano pipistrelle roost. Therefore, a Bat Low Impact Class Licence will be sought, the mitigation strategy is outlined below.

Mitigation strategy

Permanent and temporary roosting provision

- 4.20 The common pipistrelle, serotine and soprano pipistrelle roosts will be destroyed during the demolition of the house and outbuilding. Therefore, a replacement roosting feature will be installed in the new house.
- 4.21 Two crevice cavity features suitable for pipistrelle species will be built into the wall of the new dwelling to replace the roosting opportunities for common pipistrelle and soprano pipistrelle bat species lost during the demolition of the house and outbuilding. These will involve the cutting of a 2 x 4 cm slot into the wooden cladding and then leaving 4cm gaps between several battens to allow bats to crawl between the cladding and liner and move up between several of the battens.
- 4.22 Any liner will be Type 1F bituminous felt (most breathable roofing membranes are not suitable as they can entangle/trap bats leading to injury and/or death). If a breathable membrane must be used then this must have a certificate providing that the membrane has passed a 'snagging propensity test'. *TLX BATSAFE has passed snagging propensity test developed by university academics, Statutory Nature Conservation Organisations and The Bat Conservation Trust.*
- 4.23 Two bat soffit boxes will be installed in the soffit of the new garage building to provide roosting opportunities for serotines. The soffit boxes are of an inconspicuous design with only a small cut of soffit flush with the wall visible from the outside.
- 4.24 To provide temporary roosting provisions for the works, two woodstone bat boxes (suitable for pipistrelle species) and one Multi Chamber woodstone bat box (suitable for serotine bats) will

be erected on at least two mature trees with the garden on the south or west elevation prior to works commencing.

Timing of works

- 4.25 Given the low numbers of common bats no timing constraints are required, although undertaking works over the winter (November to March) will restrict the likelihood of disturbing bats. Should the works be undertaken in December, January and February, this will only commence when night time lows are consecutively above 8°C for four nights prior to the tile/ cladding removal.

Pre-works survey and ecological watching brief

- 4.26 A toolbox talk will be given to all contractors who will be working on the demolition of the house and outbuilding by the licensed bat worker. The pre-works survey of the void, inside of the outbuilding and an endoscope inspection of any loose shingle tiles and timber cladding will be undertaken by a licensed bat worker to check for presence of bats. If bats are found during the survey, a licensed bat worker wearing gloves will capture the bat(s) by hand or using a hand net and a cloth bag and relocate the bat(s) to the temporary bat box. Once the area is clear of bats then 'soft' dismantling works will proceed. The removal of the shingle tiles, soffits and timber cladding for the demolition of the house and outbuilding will be done by hand, whilst checking for roosting bats, under the supervision of a licensed bat worker.
- 4.27 These features will be removed by hand gently in a vertical rather than horizontal sliding motion. If any bats are encountered during the dismantling, works will be halted until the bat(s) vacate the area or a licensed bat handler removes the bat(s) using gloves and a cloth bag. Once the area is clear of bats then works will proceed. The bats will be relocated to the temporary bat box. Injured bats will be taken immediately into care (as directed by the Batworker's Manual, s.7.3, pp. 64-66; 3rd ed.2004).
- 4.28 Once the features suitable to support roosting bats have been dismantled and any bats found are no longer present, then works can continue unsupervised. Should a bat be discovered at any other time then works will cease and the licensed bat ecologist contacted for advice. All contractors are forbidden to handle bats.

Bat Low Impact Class Licence application

- 4.29 A BLICL licence can only be sought from Natural England after Planning Permission has been granted. The licence must be approved by Natural England before any works start on site which would otherwise constitute an offence.
- 4.30 Licenses will only be issued where the application has considered the following and met the following requirements:
- If you cannot avoid affecting the bats on site;
 - Will only disturb and capture up to three 'common or widespread' bat species;
 - Will only damage or destroy up to three 'low conservation status roost';
 - If the actions have a low or temporary impact on bats or their roosts; and

- If the site is registered before the works start.
- 4.31 The above must be explored at the planning stage. The statements have been considered below:
- 4.32 The species identified (common pipistrelle, soprano pipistrelle and serotine) are widespread species and locally common species. Only individuals were noted during the surveys and this therefore would be considered these roosts as a low conservation status non-breeding day roosts. New roosting provision will be made prior to the works commencing.
- 4.33 The licence must be approved by Natural England before any works start on site which would otherwise constitute an offence.
- 4.34 The three following tests must also be considered:
- The development is in the interests of public health and safety or is required for other imperative reasons of overriding public interest.
 - There is no satisfactory alternative to the development.
 - The development will not be detrimental to the maintenance of the bat populations concerned at a favourable conservation status in their natural range.
- 4.35 The three tests above must be explored at the planning stage (as noted in the R (Vivienne Morge) v Hampshire County Council 2011 case). The tests have been considered below:

Imperative reasons of overriding public interest

- 4.36 The proposed works have been judged as the most satisfactory method for improving the living accommodations on site to meet the needs of the clients.

No satisfactory alternative

- 4.37 The mitigation has been proposed to ensure the long-term maintenance of the bats allowing as similar as possible replacement roosting for the individual common pipistrelle, soprano pipistrelle and serotine roost. The proposed works have been judged as the most satisfactory method for improving the living accommodations on site, whilst preserving the bat population on site.

Favourable conservation status of the bat population

- 4.38 The above mitigation strategy has been presented with a view to ensure the bat population is retained and enhanced within the site.

Lighting

- 4.39 The lighting scheme must be in line with Guidance Note 08/18 Bats and Artificial Lighting in the UK, the following will be required:
- LED lighting will be used and light levels should be kept as low as possible. Metal halide, fluorescent sources should not be used.

- Lighting will be directed to where it is needed and away from the boundary features.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used, luminaires should always be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting should be set on motion-sensors and short (1 min) timers.
- Internal lighting within the new rooms should be recessed where installed in proximity to windows to reduce glare and light spill.
- Light sources should emit minimal ultra-violet light, peak higher than 550nm and be of a warm white spectrum (ideally <2700 Kelvin).

Trees

- 4.40 Should clearance of the two trees with roosting potential be required for the development, soft felling will be undertaken. An inspection for bats or signs of bats by a tree climber and licensed bat worker will be undertaken prior to starting felling works if possible.
- 4.41 The dense patches of ivy will be carefully stripped from the tree and the felling will ensure that no cavities are cut through, that branches or trunk pieces with cavities are lowered carefully to the ground and left with the access hole upward facing over night to allow any bats to leave.
- 4.42 If bats or signs of bats are found in a tree during felling work to that tree must stop and a licence from Natural England sought.
- 4.43 Provided the above measures are implemented there will be no legal implications to felling the trees.

Stag beetle

- 4.44 The current plans appear to retain the dead wood habitat on site, this area should be fenced off with flexinet / high visibility fencing to prevent impacts during construction. However, during site clearance a watching brief will be maintained for any removal of the dead tree stump or log piles. Should larvae be found these will be re-buried in a safe shady place with some of the original rotting wood.
- 4.45 Prior to the removal of any dead wood features a section of felled broadleaved tree (oak, ash, elm, sycamore, lime, hornbeam, apple, cherry) should be buried to act as a receptor for any larvae found. These should be 10-50 cm in diameter with the bark still attached and buried to a minimum depth of 60 cm.
- 4.46 The dead wood needs to be situated in a shaded area with a buffer zone of uncut grass maintained around the dead wood to avoid disturbance.

Hedgehogs

- 4.47 The clearance of grassland and vegetation has the potential to cause the loss of some of the existing foraging opportunities as well as killing or injury to individuals present.
- 4.1 The following measures are therefore recommended during site clearance:

- The grassland and scrub clearance within the site will only be undertaken between March and October when the weather is sufficiently warm for hedgehog activity to occur;
 - Vegetation clearance will be undertaken directionally towards the boundaries. The clearance will result in the vegetation being cut to a height of <5cm over two stages, the first cut to 30cm and the second cut at least a day later to ground level.
 - Immediately remove arisings from any vegetation clearance;
 - Stop works and contact a suitably qualified ecologist if hedgehogs are encountered during works.
- 4.2 The mitigation proposed above for grassland and vegetation clearance should prevent killing or injury impacts to hedgehogs. No clearance will be undertaken during the winter hibernation period and staged clearance would allow animals to move out of the works area.
- 4.3 A log pile and an area of tussocky meadow grassland will be created/maintained, as well as access holes in any new fence gravel boards to allow hedgehogs to move through the site and forage.

Opportunities for Biodiversity Gain

- 4.4 Recommendations for ecological enhancements to provide net gains for biodiversity across the site have been made in line with the National Planning Policy Framework (2021) and Local Plan Policy:
- At least one woodstone bat box will be erected on mature tree at a minimum height of 3.5 metres on a southern-facing elevation.
 - A traditional meadow management regime could be implemented in areas of retained grassland. This will involve a main “hay” cut in late August, cutting the “hay” back to approximately 50mm. The ‘hay’ is left to dry and seeds to shed for 1-7 days before removal into a compost pile in a corner of the site. The re-growth should be mowed back to 50mm in the winter, and again in the spring if this is required. No cutting should be undertaken between spring and late July to August in order to give the mix a chance to flower.
 - The installation of an additional crevice feature in the cladding of the wall of the new garage will enhance the habitat for the local bat population. Bat features should be installed at the eaves on the south or western elevation.
 - Small holes (13 x 13cm) will be left in any fences separating the gardens from adjacent properties to allow hedgehogs to move freely throughout the site.
 - The provision of four sparrow terrace bird boxes on the wall of the new house and on the new garage, will enhance the habitat for the local bird population. These will be installed on the north or eastern elevation of at the eaves.
 - Installation of bee boxes on the wall of the new garage. Provision of bee bricks can provide excellent alternative habitat for solitary non-stinging bees. These bricks will be erected 1 metre above ground level on the cladding.
 - The areas to be planted as flowerbeds should include plants that provide good nectar sources for invertebrates such as bees and attract insects which will provide foraging for birds and attract moths for bats. Species include honeysuckle, jasmine, evening primrose,

hebe, sedum, night scented stock, lavender, chives, geranium, foxgloves, aquilegia, wallflower and fuchsia.

- A pond is proposed in the western end of the garden, whilst this area's primary purpose would not be wildlife it is suggested that the planting includes the use of a native pond plant seed mix such as Emorsgate EP1 and is designed with one shallow sloping side to allow animals to climb out (such as hedgehogs) and lined or clay puddled so that it holds water year-round. This would be beneficial for aquatic invertebrates, amphibians and provide drinking water for birds and mammals.

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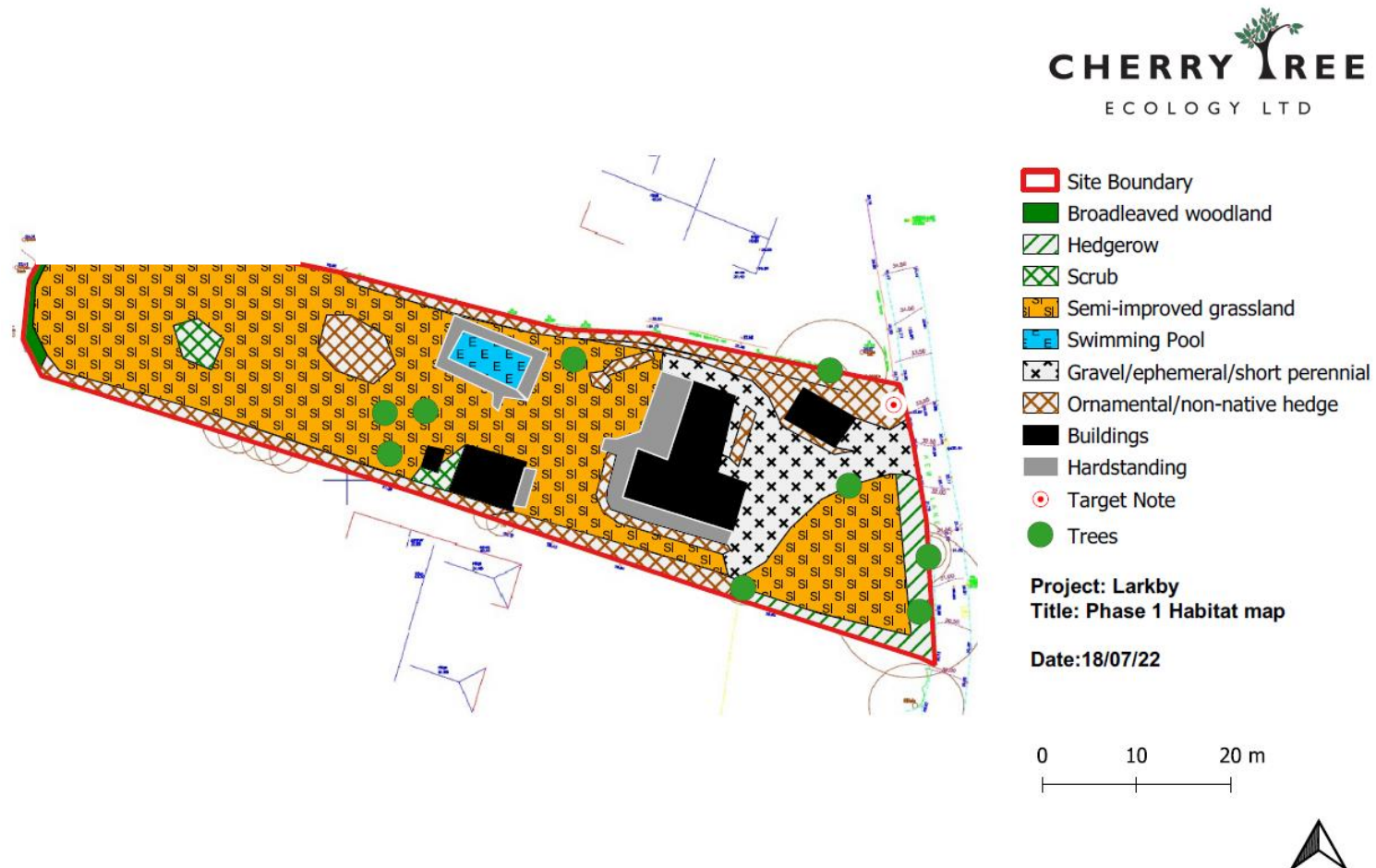
Joint Nature Conservation Committee (2010), Handbook for Phase I Habitat Survey. JNCC.

Ministry of Housing, Communities and Local Government (2021), National Planning Policy Framework.

Multi-Agency Geographical Information for the Countryside (MAGIC) Website at www.magic.gov.uk

Appendix 1

Phase 1 Habitat map



Appendix 2

Photographs

Photograph 1: House rear elevation and semi-improved grassland



Photograph 2: Garage



Photograph 3: Front of house, colonised gravel



Photograph 4: Inside roof void



Photograph 5: Outbuilding



Photograph 6: Semi-improved grassland and ornamental hedgerow



Photograph 7: Woodland on western boundary



Photograph 8: Log pile, scattered trees and hedgerows



Appendix 3

Emergence/re-entry survey results

House

Date: 02.08.2022	Weather conditions: Warm and breezy	Sunset: 20:51	Location: Larkby - House			
Temperature Start: 20°C End: 19°C	Wind Force: 3/12	Equipment: EMT2 and Anabat Scout	Cloud: 0/8	Start Time: 20:36	End Time: 22:21	Surveyor and location: Mallory Warrington. Located SW corner, views of south and west elevations, Jennifer Chambler, east of house, Laura Cowley North corner gable end
Time	Sp.	Number	Comments			
20:17	Soprano pipistrelle	1	Heard not seen			
20:18	Common pipistrelle	1	Heard not seen			
20:25	Serotine	1	Heard not seen			
20:26	Noctule	1	Heard not seen			
21:14	Soprano pipistrelle	1	Heard not seen			
21:18	Common pipistrelle	1	Heard not seen			
21:19	Long-eared species	1	Heard not seen			
21:25	Serotine	1	Emerged from soffit on east elevation. Flew east.			
21:25	Soprano pipistrelle	1	Heard not seen.			
21:26	Noctule	1	Commuting over house, from front to rear.			
21:35	Serotine	1	Heard not seen, faint			
21:45	Tawny owl	1	Flew over house to front tree.			
21:46	Serotine	1	Heard not seen			
21:46	Common pipistrelle	1	Heard not seen.			
21:50	Common pipistrelle	1	Heard not seen, brief and faint			
21:52	Serotine	1	Heard not seen.			
22:16	Common pipistrelle	1	Heard not seen, brief			
22:17	Common pipistrelle	1	Heard not seen, foraging, brief			

22:21	Common pipistrelle	1	Heard not seen, foraging, brief
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Date: 23.08.2022	Weather conditions: Warm and humid	Sunset: 20:10	Location: Larkby -House			
Temperature Start: 20°C End: 20°C	Wind Force: 1-2/12	Equipment: EMT2, IR Camera	Cloud: 8/8	Start Time: 19:55	End Time: 21:40	Surveyor and location: Sophie Smith – South corner, Simon Collins – rear of house
Time	Sp.	Number	Comments			
20:06	Noctule	1	Heard not seen.			
20:07	Soprano pipistrelle	1	Heard not seen			
20:17	Soprano pipistrelle	1	Heard not seen			
20:23	Soprano pipistrelle	1	Heard not seen			
20:31	Common pipistrelle	1	Heard not seen – faint.			
20:31	Serotine	1	Heard not seen.			
20:35	Serotine	1	Heard not seen – faint			
20:42	Common pipistrelle	1	Heard not seen – foraging			
20:49	Common pipistrelle	1	Heard not seen.			
20:54	Common pipistrelle	1	Heard not seen -faint			
21:02	Noctule	1	Heard not seen			
21:05	Long-eared species	1	Heard not seen, foraging			
21:05	Noctule	1	Heard not seen			
21:07	Noctule	1	Heard not seen			
21:11	Long-eared species	1	Heard not seen – faint			
21:12	Noctule	1	Heard not seen			
21:13	Common pipistrelle	1	Heard not seen – faint			
21:18	Noctule	1	Heard not seen			
21:21	Noctule	1	Heard not seen			
21:22	Long-eared species	1	Heard not seen			
21:25	Common pipistrelle	1	Heard not seen – faint			

21:25	Noctule	1	Heard not seen
21:28	Common pipistrelle	1	Heard not seen.
21:29	Noctule	1	Heard not seen
21:37	Noctule	1	Heard not seen

Date: 13.09.2022	Weather conditions: Warm	Sunrise: 06:39	Location: Larkby- house			
Temperature Start: 19°C End: 18°C	Wind Force: 2/12	Equipment: EMT2, Anabat Scout and Bat Logger M	Cloud: 8/8	Start Time: 05:09	End Time: 06:54	Surveyor and location: Mallory Warrington. Located west corner with views of west and south elevations, Laura Cowley North corner gable end and Rick Sharp, east of house.
Time	Sp.	Number	Comments			
05:11	Long eared sp.	1	Heard not seen, foraging			
05:15	Soprano pipistrelle	1	Heard not seen, foraging			
05:17	Long eared sp.	1	Heard not seen			
05:24	Soprano pipistrelle	1	Heard not seen, foraging			
05:33	Soprano pipistrelle	1	Heard not seen, social calls			
05:43	Long eared sp.	1	Circled outbuilding then commuted south, seen not heard			
05:47	Common pipistrelle	1	Heard not seen			
05:47	Long-eared sp.	1	Heard not seen			
05:51	Soprano pipistrelle	1	Heard not seen, brief			
06:05	Common pipistrelle	1	Heard not seen			
06:13	Common pipistrelle	1	Heard not seen			
06:29	Common pipistrelle	1	Re-entry under eaves between windows on south elevation			
06:31	Soprano pipistrelle	1	Re-entry outbuilding east elevation			
06:32	Soprano pipistrelle	1	Commuting east to west.			

Garage

Date: 23.08.2022	Weather conditions: Warm and dry	Sunset: 20:11	Location: Larkby - Garage			
Temperature Start: 20°C End: 19°C	Wind Force: 2-3/12	Equipment: Bat Logger M	Cloud: 8/8	Start Time: 19:54	End Time: 21:41	Surveyor and location: Lisa Sharp – front
Time	Sp.	Number	Comments			
19:56	Common pipistrelle	1	Heard not seen			
20:17	Soprano pipistrelle	1	Foraging in trees to the north			
20:22	Soprano pipistrelle	1	Heard not seen, foraging			
20:31	Common pipistrelle	1	Heard not seen, commuting			
20:42	Common pipistrelle	1	Commuting south to north along road			
20:54	Common pipistrelle	1	Heard not seen, commuting			
21:13	Common pipistrelle	1	Heard not seen, commuting			
21:20	Common pipistrelle	1	Heard not seen, commuting			
21:30	Common pipistrelle	1	Heard not seen, commuting			

Outbuilding

Date: 11.08.2022	Weather conditions: Warm and dry	Sunset: 20:54	Location: Larkby - Outbuilding			
Temperature Start: 26°C End: 24°C	Wind Force: 0-1/12	Equipment: Ipads and EMT2	Cloud: 0/8	Start Time: 20:50	End Time: 22:04	Surveyor and location: Sophie Smith, front and Mallory Warrington, rear.
Time	Sp.	Number	Comments			
20:57	Soprano pipistrelle	1	Heard not seen			
21:01	Common pipistrelle	1	Commuting south to north, and foraging over garden			
21:04	Common pipistrelle	1	Foraging over house next door (south).			
21:04	Soprano pipistrelle	1	Foraging overhead			
21:04	Serotine	1	Commuting east to west			
21:05	Common pipistrelle	1	Heard not seen. Social calls.			
21:06	Soprano pipistrelle	1	Foraging over garden			
21:07	Soprano pipistrelle	1	Heard not seen.			
21:26	Common pipistrelle	1	Heard not seen			
21:32	Myotis species	1	Heard not seen, brief.			
21:33	Common pipistrelle	1	Heard not seen, faint.			
21:47	Long-eared species	1	Heard not seen, faint and brief			
22:01	Common pipistrelle	1	Heard not seen			
22:05	Noctule	1	Heard not seen, foraging.			

Date: 25.08.2022	Weather conditions: Humid	Sunset: 20:07	Location: Larkby - Outbuilding			
Temperature Start: 19°C End: 17°C	Wind Force: 0-1/12	Equipment: EMT2	Cloud: 0/8	Start Time: 19:25	End Time: 21:36	Surveyor and location: Katie Ford, front and Simon Collins, rear
Time	Sp.	Number	Comments			

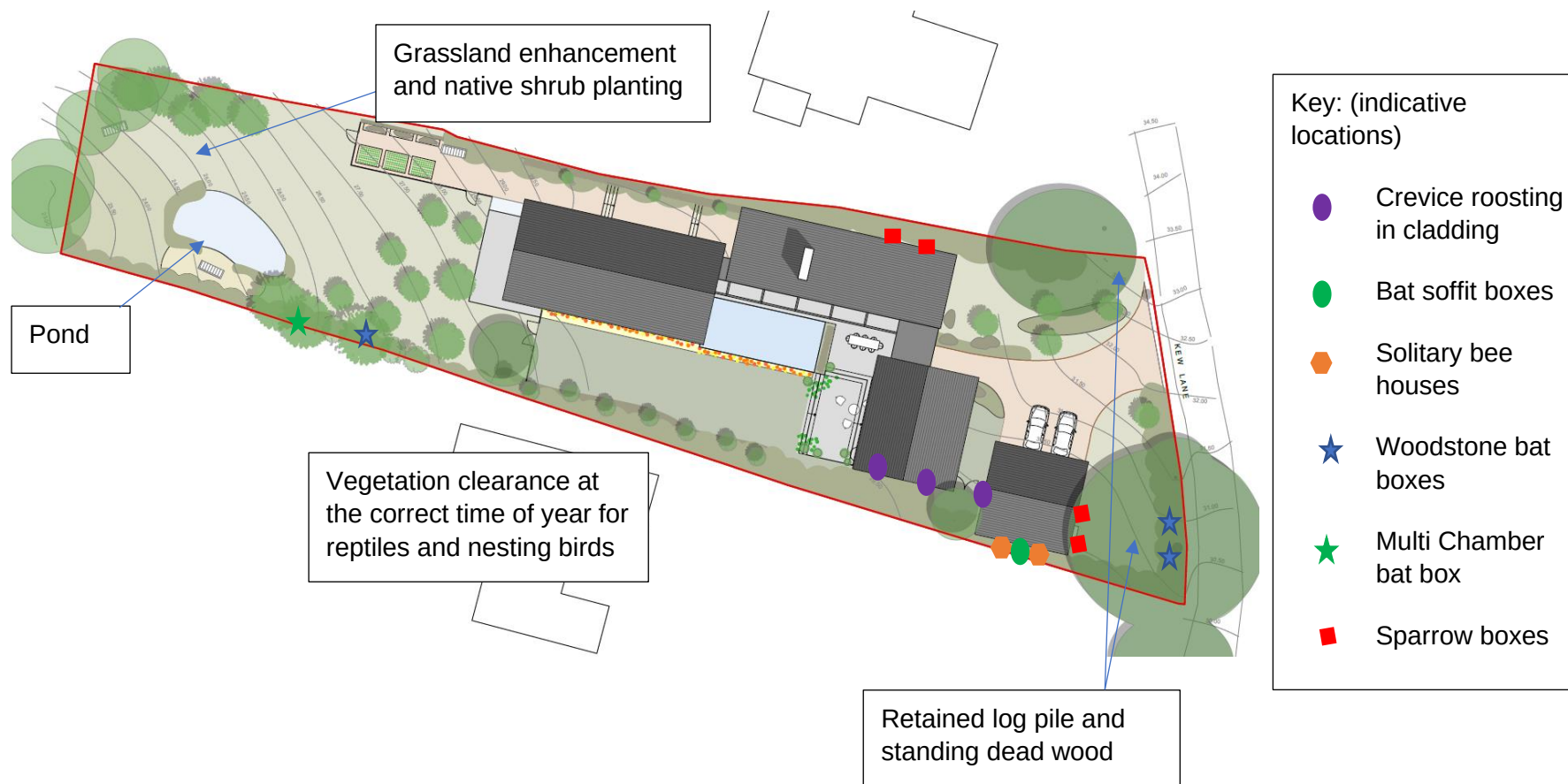
20:04	Soprano pipistrelle	1	Heard not seen
20:06	Soprano pipistrelle	1	Emergence from under the shingle tile on the east elevation then flew north
20:46	Serotine	1	Heard not seen, faint
21:57	Soprano pipistrelle	1	Heard not seen
21:00	Serotine	1	Heard not seen – brief
21:03	Serotine	1	Heard not seen
21:04	Noctule	1	Heard not seen
21:05	Common pipistrelle	1	Heard not seen
21:06	Noctule	1	Heard not seen
21:23	Serotine	1	Heard not seen
21:23	Long-eared species	1	Heard not seen
21:34	Noctule	1	Heard not seen
21:36	Noctule	1	Heard not seen
21:36	Soprano pipistrelle	1	Heard not seen

Date: 09.09.2022	Weather conditions: Cool	Sunrise: 06:30	Location: Larkby - outbuilding			
Temperature Start: 17°C End: 15°C	Wind Force: 2/12	Equipment: EMT2 and Bat Logger M	Cloud: 4/8	Start Time: 05:00	End Time: 06:45	Surveyor and location: Rick Sharp front, Mallory Warrington, rear
Time	Sp.	Number	Comments			
05:08	Soprano pipistrelle	1	Heard not seen, brief.			
05:09	Soprano pipistrelle	1	Heard not seen			
05:13	Noctule	1	Heard not seen, brief.			
05:15	Soprano pipistrelle	1	Heard not seen. Foraging.			
05:18	Common pipistrelle	1	Heard not seen, faint.			
05:19	Long eared sp.	1	Heard not seen, brief and faint.			
05:23-05:24	Long eared sp.	1	Heard not seen, foraging.			
05:26	Long eared sp.	1	Heard not seen, foraging.			
05:33-05:35	Long eared sp.	1	Heard not seen, foraging.			
05:37	Soprano pipistrelle	1	Heard not seen, foraging.			
05:55	Long eared sp.	1	Heard not seen, foraging.			

05:56	Soprano pipistrelle	1	Heard not seen.
06:22	Common pipistrelle	1	Flew east, followed by possible swarming at the front of the building.
06:23	Common pipistrelle	1	Committed north to south past the east elevation of the outbuilding.
06:26	Soprano pipistrelle	1	Commuting. Flew east to south.
06:27	Soprano pipistrelle	1	Circling south elevation.
06:29	Soprano pipistrelle	1	Re-entry on north-east corner.

Appendix 4

Mitigation and Enhancements





Sparrow boxes

