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Gladman Developments Limited

Henthorn Road, Clitheroe

ECOLOGICAL APPRAISAL

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1.0 NON-TECHNICAL SUMMARY

- 1.1 The site comprised a single field compartment of poor semi-improved grassland with a section of moderately species rich neutral semi-improved grassland in the south-eastern corner. The field boundaries of the site were formed by native hedgerows.
- 1.2 Proposals suggest the loss of the poor semi-improved grassland, which was considered to be of low nature conservation value. The eastern corner of neutral grassland and the field boundaries were considered to be of value at a local level and are to be retained within greenspace.
- 1.3 Three Biological Heritage Sites (BHSs) were found within 1km of the site, no negative impacts are anticipated in relation to the proposed development.
- 1.4 Two mature trees with bat roosting potential were identified along the boundary of the site. These are to be retained and buffered within greenspace.
- 1.5 Bat activity surveys were undertaken in spring and summer comprising static bat detectors and transect surveys. Overall the level of bat activity was considered to be low, with activity concentrated along the hedgerows.
- 1.6 The proposed design layout of the scheme includes the retention of all hedgerows. Additional enhancements in the form of greenspace with additional hedgerow and tree planting are also proposed for the site. As such it is not anticipated that any negative impacts on bats should arise as a result from the redevelopment of the application site. Further enhancements have been recommended through the provision of a range of new bat boxes.
- 1.7 Presence / absence surveys for GCN were undertaken on ponds within 500 m of the site. No GCN were found in any of the ponds surveyed, therefore they do not pose a constraint to the development.
- 1.8 Himalayan balsam and Japanese knotweed were recorded in the north-western corner of site. A Management / Eradication Strategy is currently being prepared.
- 1.9 The report identifies a number of potential ecological enhancements which are discussed throughout Section 5. These include an increase of habitat and species diversity throughout the site through the enhancement of retained habitats, creation of new green space and the strengthening of ecological networks. Whilst these will provide inherent enhancements, they will also provide new foraging habitat, corridors of movement and places of rest or shelter for a wide range of faunal species.

2.0 INTRODUCTION

- 2.1 The following report has been prepared by FPCR Environment and Design Ltd on behalf of Gladman Developments Ltd. It provides the results of an Extended Phase 1 Habitat survey, and a series of protected species surveys undertaken at a site off Henthorn Road, Clitheroe (central grid reference: SD 729 408) between May and July 2018.
- 2.2 The site was 5.2ha in extent, the Application Boundary, indicated by the red line on the figures, encompassed a field compartment and a further stretch of land along Henthorn Road to the south west. Surveys were undertaken on the Study Area, indicated by the blue line on the figures and referred to as 'site' in the rest of this report.
- 2.3 The site comprised a single field compartment of poor semi-improved grassland with a section of neutral semi-improved grassland in the south-eastern corner. The field boundaries of the site were formed by native hedgerows. The landscape beyond the site to the south and west was predominantly rural and largely pastoral in nature. To the north-east of the site was the residential area of Clitheroe, with a new residential development being built immediately to the south-east.
- 2.4 Proposals are for a residential development with green infrastructure and an attenuation area, as shown on the Framework Plan.
- 2.5 The objective of the assessment was to gain an understanding of the baseline ecology of the site and immediate surrounding area and to determine whether the site supports, or has the potential to support, protected species. This assessment involved a desk study, Extended Phase 1 Habitat survey, assessment of trees with bat potential, a badger *Meles meles* survey, aquatic great crested newt *Triturus cristatus* presence/ likely absence surveys, bat activity transect surveys and static bat detector surveys..
- 2.6 Breeding bird surveys were also undertaken and details of this assessment are included in the Breeding Bird Survey Report, August 2018.

3.0 METHODOLOGY

Desk Study

- 3.1 To support the field survey and further compile existing baseline information relevant to the site, ecological information was sought from third parties, including records of protected or notable species and sites designated for nature conservation interest. Organisations contacted included:
 - Lancashire Environment Record Network (LERN)
 Online sources of ecological data were also sought including:
 - Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk);
- 3.2 The search area of interest varied depending upon the likely significance and zone of influence of the data requested, as follows:
 - A minimum of a 10km radius around the site was searched for sites with an international statutory designation; Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites;

- A minimum of a 2km radius around the site for sites of national/regional importance with a statutory designation of Site of Special Scientific Importance (SSSI) or National Nature Reserve (NNR);
- Up to a 1km radius around the site for sites of local importance with statutory designation of Local Nature Reserve (LNR), or non-statutory designation of Site of Importance for Nature Conservation (SINC) or the equivalent Local Wildlife Site (LWS); and
- 1km search area for records of notable / protected species (i.e. including Species of Principal Importance under S41 of the Natural Environment and Rural Communities Act (NERC) 2006 and local biodiversity action plan species.

Field Survey- Habitats / Flora

Extended Phase 1 Habitat Survey

- 3.3 Extended Phase 1 habitat survey is a survey technique recommended by Natural England that largely follows guidance from JNCC 2010¹, with the scale of recording of habitat parcels adjusted to provide more detail for smaller sites. The survey comprised a walkover of the site, mapping the principal habitat types present and identifying a representative species list for each habitat. The abundance of species was quantified using the DAFOR scale, ranging from Dominant to Abundant, through Frequent and Occasional to Rare.
- 3.4 Any habitats suitable for, or features with the potential to support, protected or notable species were also assessed and recorded with the survey undertaken on 7th June 2018 by a suitably experienced ecologist from FPCR.

Hedgerows

- 3.5 Hedgerows were surveyed using the Hedgerow Evaluation and Grading System (HEGS)². This method of assessment includes recording canopy species composition, associated ground flora and climbers, structure of the hedgerow including height, width and gaps, associated features including number and species of mature trees, banks, ditches and grass verges.
- 3.6 Each hedgerow is given a grade using HEGS with the suffixes '+' and '-', representing the upper and lower limits of each grade respectively. These grades represent a continuum on a scale from 1+ (the highest score and denoting hedges of the greatest nature conservation priority) to 4- (representing the lowest score and hedges of the least nature conservation priority) as follows:
- Grade 1 – High to very high value
 - Grade 2 – Moderately high to high value
 - Grade 3 – Moderate value
 - Grade 4 – Low value
- 3.7 Hedgerows graded 1 or 2 are considered to be a priority for nature conservation.

¹ JNCC, (2010), Handbook for Phase 1 habitat survey - a technique for environmental audit, ISBN 0 86139 636 7

² Clements, D.K. & Tofts, R.J. (1992) Hedgerow Evaluation and Grading System (HEGS): A methodology for the ecological survey, evaluation and grading of hedgerows.

- 3.8 The hedgerows were also assessed against the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997³ to determine whether they qualified as ‘Important Hedgerows’ under the Regulations.

Badgers

- 3.9 Land within the development area was surveyed on 7th June 2018 following the methodology outlined by Harris et al (1989)⁴. This involves a walkover of the site searching for field signs which would indicate the presence of badgers as follows:
- Setts: including earth mounds and evidence of bedding and or runways between identified setts
 - Latrines: often located close to setts; at territory boundaries or adjacent to favoured feeding areas
 - Prints and established track or runways;
 - Hairs caught on rough wood or fencing;
 - Other evidence: including snuffle holes, feeding and playing areas and scratching posts. The identification of these latter signs on their own does not necessarily provide conclusive evidence of the presence of badgers. A number of such signs need to be seen in conjunction before badgers can be confirmed as being present.

Bats

Ground Level Assessment of Trees

- 3.10 The tree assessments for roost potential were undertaken from ground level on 7th June 2018, with the aid of a torch and binoculars where required. During the survey Potential Roosting Features for bats such as the following were sought:⁵
- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
 - Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems);
 - Woodpecker holes;
 - Cracks/splits in stems or branches (horizontal and vertical);
 - Partially detached, loose or bark plates;
 - Cankers (caused by localised bark death) in which cavities have developed;
 - Other hollows or cavities, including butt rots;
 - Compression of forks with occluded bark, forming potential cavities;

³ DEFRA (1997) The Hedgerow Regulations 1997: A Guide to the Law and Good Practice, London, HMSO

⁴ Harris, S., Cresswell, P. & Jefferies, D. 1989. Surveying for badgers. Occasional Publication of the Mammal Society No. 9. Mammal Society, Bristol.

⁵ BS 8596:2015, (October 2015): Surveying for bats in trees and woodland, Pg 16)

- Crossing stems or branches with suitable roosting space between;
 - Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk);
 - Bat or bird boxes;
 - Other suitable places of rest or shelter.
- 3.11 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings and its location in respect to other features, may enhance or reduce the potential value.
- 3.12 Based on the above, trees were classified into general bat roost potential groups based on the presence of these features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in Bat Surveys for Professional Ecologists: Good Practice Guidelines⁶.
- 3.13 Although the British Standard Document groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

Table 1: Bat Survey Protocol for Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
High Potential	A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.

⁶ Collins J, (2016), Bat Surveys for Professional Ecologists: Good Practice Guidelines. Bat Conservation Trust.

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Moderate Potential	A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.	A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August). Following additional assessments, a tree may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.
Low Potential	A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey required but a precautionary working method statement may be appropriate.
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

NB: The Conservation of Habitats & Species Regulations 2017 affords protection to “breeding sites” and “resting places” of bats. The EU Commission’s Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places “where there is a reasonably high probability that the species concerned will return”.

- 3.14 In combination with the above, all trees within the site were visually assessed for the existence of large cavities with the potential for use by nesting or roosting barn owl. Additional signs, such as pellets and faecal splashing were also searched for on or around potential perches.

Bat Activity Surveys

- 3.15 Bat activity surveys were undertaken to determine bat activity and behaviour within the site. Survey methodologies gave consideration to those present in the Bat Conservation Trust guidelines (Collins, 2017). The survey methodology also takes into account guidelines presented in the Bat Workers Manual by the Joint Nature Conservation Committee (JNCC, 2004).

Static Bat Detector Monitoring Surveys

- 3.16 Static (passive) monitoring was undertaken using automated logging systems (Song Meter SM4BAT+ logging bat detectors) with output saved to an internal storage device. With due consideration for the published guidance, the detectors were deployed during each season (Spring and Summer). The device was positioned on site to record bat registrations for at least five consecutive nights. Due to the relatively low bat activity recorded during the spring and summer surveys the autumn survey was considered to be unnecessary and as such cancelled.
- 3.17 The static bat detector survey was used to supplement the transect survey data and provide information on the activity and species composition within different points within the site. The devices were placed close to habitat features considered to be of value to bats, such as hedgerows, woodland edge and trees or close to habitat features which are likely to be impacted by the proposals.
- 3.18 The locations of the deployed static detectors during Spring and Summer are shown respectively on Figures 4 and 5. Devices were placed in each location during suitably mild weather conditions and were programmed to activate 30 minutes before dusk and record continuously until 30 minutes following sunrise. The recorded data was analysed using Kaleidoscope © version 5.4.4 (Wildlife Acoustics Inc.) software package to assess the amount of activity recorded on site by recording the number of bat registrations. Measurements including peak frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification.
- 3.19 Static detectors were deployed during the following periods; 24th May to the 29th May 2018 and 21st June to 26th June 2018.

Bat Transect Surveys

- 3.20 From the results of the preliminary protected species survey it was recommended that seasonal bat transects were undertaken. The transect route was predetermined prior to surveys commencing in order to comprehensively cover all habitats within the site. The survey also included a number of, point count stops (each five minutes in duration), to identify activity levels around the habitat features of potential value to bats and those that are most likely to be affected by proposals. The starting point of the surveys was rotated between surveys to avoid bias in the route and from coverage when most bats are less likely to be active at the start of the survey. However due to the relatively low bat activity recorded during the spring and summer surveys the autumn survey was considered to be unnecessary and as such cancelled.
- 3.21 The dusk transects commenced prior to sunset and continued for two to three hours after sunset. Each transect was walked at a steady pace and when a bat passed by, the species, behaviour and time were noted and recorded on a site plan. This information provides a general view of the bat activity present on site and identifies the key foraging areas and commuting routes. Surveyors used Wildlife Acoustics Inc. Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Apple Inc. iPad® during the transect surveys to detect bats and aid species identification. Post-survey, bat calls were analysed using Kaleidoscope© version 5.4.4 (Wildlife Acoustics Inc.) by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. From this, the level of bat activity across the site in relation to the abundance of individual species foraging and commuting along habitats was assessed.
- 3.22 Transect surveys were undertaken during suitable conditions when the ambient air temperature exceeded 10°C and the wind was no more than a gentle breeze (Beaufort 3 or 5m/s) and little or

no rain. The results of the transect surveys are shown in Figures 4 and 5. Table 2 below provides the survey timings and weather conditions.

Table 2: Bat activity transect survey conditions

Transect Date	Season	Sunset	Start Time	End Time	Start Temp	End Temp	Wind (BF)	Rain	Cloud cover
24/05/18	Spring	21:19	21:09	23:21	17°C	14°C	0-2	0	10%
21/06/18	Summer	21:45	21:45	23:45	13°C	11°C	0	0	5%

Great Crested Newts

Habitat Suitability Index (HSI)

- 3.23 An assessment was undertaken on ponds within 500m of the site, for their suitability to support great crested newts as part of the aquatic survey work by a great crested newt class licence holder. The Habitat Suitability Index provides a measure of the likely suitability that a water-body has for supporting newts (Evaluating the suitability for the Great Crested Newt⁷). Generally, ponds with a higher score are more likely to support great crested newts than those with a lower score and there is a positive correlation between HSI scores and ponds with newts recorded. Ten separate attributes are assessed for each pond to calculate the suitability of the ponds to support GCN:

- Geographic location
- Pond area
- Pond drying
- Water quality
- Shade
- Presence of water-fowl
- Presence of fish
- Number of linked ponds
- Terrestrial habitat
- Macrophytic coverage

- 3.24 A score is assigned according to the most appropriate criteria level set within each attribute and a total score calculated of between 0 and 1. Pond suitability is then determined according to the following scale:

Table 3 - HSI assessment scale

HSI score	Pond Suitability
<0.5	Poor
0.5 - 0.59	Below average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Aquatic Surveys (Presence/Absence and Population Size Class)

- 3.25 From the four ponds initially identified as being within 500m of the site and connected by suitable commuting habitat; a total of two ponds were surveyed as the other ponds were found to be dry.

⁷ Herpetological Journal, Vol. 10, pp. 143-155, Oldham *et al.* (2000)

- 3.26 Where possible, survey methods followed those recommended by Natural England as detailed in the Great Crested Newt Mitigation Guidelines (GCNMG, English Nature, 2001)⁸. To determine the presence or absence of great crested newts, four individual survey visits were carried out between March and June.

Egg searching

- 3.27 Newts lay eggs singly on leaves of aquatic plants or other suitable pliable material, after which the material is folded over the egg to protect it. Great crested newt eggs can be distinguished from those of the other newts by their size, shape and colour. Submerged and floating vegetation and leaf litter is examined for folded leaves containing newt eggs. Once a great crested newt egg is identified at the waterbody, no further egg searching takes place, as evidence of breeding has then been confirmed (to minimise disturbance).

Torchlight surveys

- 3.28 Carried out after dark using 1,000,000 candlepower torches. Surveyors slowly walk around the perimeter of each waterbody and searched by torchlight for amphibians in the shallows and the deeper areas used by great crested newt for courtship display.

Bottle trapping

- 3.29 Involves the placement of traps, comprising inverted two-litre plastic bottles fixed in place with bamboo canes, at an average of one every two metres around the margins of the pond. The traps are partially submerged with an air bubble trapped inside. The traps are then checked for the presence of amphibians early the next morning, with any captive animals released back into the pond and the traps removed.

Netting

- 3.30 Using a long-handled dip-net the pond edges are swept for approximately 15 minutes per 50m of shoreline. This technique is one of the least effective for capturing adult newts and cannot be used to estimate a population size-class, although can be very effective for detecting newt larvae, especially later in the season.

Population Size Class Assessment

- 3.31 Population size class assessments were made according to the Great Crested Newt mitigation guidelines. The population size class is derived from the highest maximum count of great crested newts observed on any one survey occasion. Categories are provided below:
- Low population 0-10 individuals
 - Medium population 11-100 individuals
 - High population >100 individuals
- 3.32 The surveys were undertaken by suitably experienced and licensed ecologists (Natural England survey class licence 2016-28825-CLS-CLS). All surveys were completed during the recommended survey period and during suitable weather conditions.

⁸ English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature, Peterborough

4.0 RESULTS

Desk Study

- 4.1 A summary of the relevant information is provided below; original data provided by the consultees has not been included in this report. Locations non-statutory designated sites referred to in the following section are illustrated on Figure 1.

Statutory Designated Sites

- 4.2 No designated sites of international nature conservation importance were located within 10km of the site.
- 4.3 No designated sites of national/regional nature conservation importance were located within 2km of the site.
- 4.4 No designated sites of local importance were located within 1km of the site.

Non-Statutory Designated Sites

- 4.5 There are three non-statutory sites within 1km of the site. The details of these sites are provided in Table 4 below and mapped on Figure 1.

Table 4: Designated Sites

Site Name	Designation	Proximity to site (approximate)	Description
River Ribble	Biological Heritage Site (BHS)	40 m west	The river and its associated habitats support a rich assemblage of plants and animals. The river is important for salmon <i>Salmo salar</i> , sea trout <i>Salmo trutta trutta</i> , otter <i>Lutra lutra</i> and water vole <i>Arvicola amphibius</i> . Much of the land associated with the river provides nesting habitat for bird species such as; sand martin <i>Riparia riparia</i> , kingfisher <i>Alcedo atthis</i> , oystercatcher <i>Haematopus ostralegus</i> , common sandpiper <i>Actitis hypoleucos</i> , little ringed-plover <i>Charadrius dubius</i> and goosander <i>Mergus merganser</i> .
Primrose Lodge	Biological Heritage Site (BHS)	660 m east	The site comprises the lodge for the former Primrose Print Works, created by the damming of Mearley Brook, and adjacent semi-natural broadleaved woodland. The site supports the largest known colony of Green Figwort <i>Scrophularia umbrosa</i> , a nationally scarce species in the Ribble Valley.

Site Name	Designation	Proximity to site (approximate)	Description
Barrow Clough Wood	Biological Heritage Site (BHS)	760 m south-east	The site comprises of clough woodland to the south of Clitheroe that is included in the Lancashire Inventory of Ancient Woodland (Provisional), (English Nature, 1994). The canopy consists of locally abundant Ash with Oak <i>Quercus</i> sp., Sycamore <i>Acer pseudoplatanus</i>, Beech <i>Fagus sylvatica</i>, Birch <i>Betula</i> sp. and occasional Horse-chestnut <i>Aesculus hippocastanum</i>. Alder <i>Alnus glutinosa</i> is frequent along the course of the brook. The ground flora includes Bluebell <i>Hyacinthoides non-scripta</i>, Tufted Hair-Grass <i>Deschampsia caespitosa</i> and Sweet Vernal-grass <i>Anthoxanthum odoratum</i>.

Protected Species

- 4.6 Records of protected and priority faunal species derived from the desk study consultees are provided in Table 5 below. Species records have been filtered to comprise protected and / or notable species within 1km of the site from the last 20 years. The locations of the pertinent species records are mapped on Figure 1.

Table 5: Summary of Relevant Species Records

Species	Conservation Status	Total Number of Records within 1km	Location / Minimum distance of records from site.
Amphibians			
Smooth Newt <i>Lissotriton vulgaris</i>	WCA, Sch5	1	A single record from 2015, 760 m NE of site within the residential area of Clitheroe.
Mammals			
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	Regs, WCA, Sch5 LBAP	4	Records of bats in flight and bat roosts ranging from 2005-2017, the closest being a roost located 430 m SE.
Pipistrelle Bat Species <i>Pipistrellus</i> sp.	Regs, WCA, Sch5 LBAP	2	Two records from 2004 and 2005, the closest being a roost record 620m N.
European Otter <i>Lutra lutra</i>	Regs, WCA, Sch5, SPI, LBAP	1	A single record from 2015, 500 m NW on the River Ribble.
Birds			
Black-headed Gull <i>Chroicocephalus ridibundus</i>	BoCC Amber, LBAP	2	Records ranging from 2008-2009, the closest being 220 m NE.
Bullfinch <i>Pyrrhula pyrrhula</i>	BoCC Amber, LBAP	1	A single record from 2009, 920 m E.

Species	Conservation Status	Total Number of Records within 1km	Location / Minimum distance of records from site.
Dunnock <i>Prunella modularis</i>	BoCC Amber, LBAP	9	Records ranging from 2008-2009, the closest being 310 m SE.
Grey Wagtail <i>Motacilla cinerea</i>	BoCC Red	1	A single record from 2008, 890 m E within Primrose Lodge BHS.
House Sparrow <i>Passer domesticus</i>	SPI, BoCC Red, LBAP	28	Records ranging from 2008-2009, the closest being 160 m SE.
Song Thrush <i>Turdus philomelos</i>	SPI, BoCC Red, LBAP	3	Three records from 2009, the closest being 270 m NE.
Starling <i>Sturnus vulgaris</i>	SPI, BoCC Red, LBAP	24	Records ranging from 2008-2009, the closest being 160 m SE.
Swift <i>Apus apus</i>	BoCC Amber, LBAP	2	Records ranging from 2010-2011, the closest being 930 m N.
Willow warbler <i>Phylloscopus trochilus</i>	BoCC Amber, LBAP	1	A single record from 2004, 270 m NE.

Status Key: Regs = The Conservation of Habitats and Species Regulations 2017. WCA = Wildlife and Countryside Act 1981 (as amended). Sch5 = Schedule 5 of WCA. SPI = Species of Principal Importance listed in Section 41, Natural Environment and Rural Communities Act (2006). BoCC Red = Birds of Conservation Concern Red List. BoCC Amber = Birds of conservation concern Amber List, LBAP = Lancashire Biodiversity Action Plan.

Habitats

- 4.7 The habitats described below correspond to those mapped on Figure 2. Plant Botanical species lists for the habitats are provided in Appendix A.

Semi-natural Broadleaved Woodland

- 4.8 A small copse of semi-natural broadleaved woodland was recorded off-site to the west, associated with the neighbouring residential property. Ash *Fraxinus excelsior* was the most frequent species recorded within the canopy, along with copper beech *Fagus sylvatica f. purpurea*, horse chestnut and wych elm *Ulmus glabra*. A scattered understorey of hawthorn *Crataegus monogyna* and hazel *Corylus avellana* was present over a ground flora characterised by frequent ivy *Hedera helix* and common nettle *Urtica dioica*. The invasive species Himalayan balsam *Impatiens glandulifera* and Japanese knotweed *Fallopia japonica* were noted along the margins of this habitat, in places the Himalayan balsam encroached into the boundaries of the site.

Neutral Semi-improved Grassland

- 4.9 The eastern corner of site supported a moderately species rich community of damp neutral grassland, associated with the riparian corridor of the small stream which bisects the site. The tall sward comprised frequent meadow foxtail *Alopecurus pratensis*, rough meadow-grass *Poa trivialis* and sweet vernal-grass, with Yorkshire-fog *Holcus lanatus*, marsh foxtail *Alopecurus*

geniculatus and hairy sedge *Carex hirta* appearing at lower frequencies. Herbaceous vegetation accounted for a proportion of the ground cover within this habitat with silverweed *Potentilla anserina*, meadow vetchling *Lathyrus pratensis* and meadowsweet *Filipendula ulmaria* all frequently recorded. Ribwort plantain *Plantago lanceolata*, great burnet *Sanguisorba officinalis*, greater bird's-foot-trefoil *Lotus pedunculatus*, water avens *Geum rivale* and red clover *Trifolium pratense* were all recorded, albeit at lower frequencies.

- 4.10 This community is broadly analogous with NVC community (MG4) *Alopecurus pratensis*-*Sanguisorba officinalis* grassland and therefore it has the potential to be representative of Lowland Meadows Habitat of Principal Importance under the NERC Act 2006.



Photograph 1: Foreground: poor semi-improved grassland. Background: right- hedgerow H1, left- hedgerow H4.



Photograph 2: Foreground: neutral semi-improved grassland, right- stream S1. Background: right- hedgerow H2.

Poor Semi-improved Grassland

- 4.11 The majority of the site comprised poor semi-improved grassland, which appeared to be managed for silage/haylage. Perennial rye-grass *Lolium perenne* was the most abundant species within the sward, with frequent meadow foxtail and white clover *Trifolium repens*. Occasional species included Yorkshire fog, soft-brome *Bromus hordeaceus*, meadow buttercup *Ranunculus acris* and silverweed.

Stream

- 4.12 A narrow stream (S1) flowed through site from north to south through the neutral semi-improved grassland. At the time of survey, the stream extended 0.5 m in width, but there was evidence that it occasionally floods. Great willowherb *Epilobium hirsutum* was frequently recorded along the stream, with occasional species brooklime *Veronica beccabunga*, common nettle *Urtica dioica*, floating sweet-grass *Glyceria fluitans*, meadowsweet and reed canary-grass *Phalaris arundinacea*.

Standing Water

- 4.13 Two waterbodies were recorded within the site. Detailed descriptions of each waterbody can be found within the great crested newt section below.

Scattered Scrub and Trees

- 4.14 Scattered scrub was present bordering, and within the compartment of neutral semi-improved grassland, comprising frequent common nettle and common ivy, with occasional great willowherb, herb-robert *Geranium robertianum* and hawthorn.
- 4.15 The site supported a small number of mature trees (standards) within the hedgerow network, Many of the trees were of a large size and exhibited features indicative of older trees with deadwood, rot holes etc. All mature trees were assessed for potential to support roosting bats, which is discussed later in the report.

Hedgerows

- 4.16 Four hedgerows were recorded bordering the site. These were moderately species rich in terms of woody species and had a low number of mature tree standards. The hedgerows were reasonably tall (2 - >4m) and wide (2 - >3m). None of the hedgerows qualified as 'Important Hedgerows' under the Hedgerow Regulations 1997.
- 4.17 Hawthorn was a dominant component of the hedges with other species such as blackthorn *Prunus spinosa*, elder *Sambucus nigra*, bramble *Rubus fruticosus* agg., dog-rose *Rosa canina*, and guelder-rose *Viburnum opulus* present. Tree standards such as ash *Fraxinus excelsior*, pedunculate oak *Quercus robur*, goat willow *Salix caprea* and grey willow *Salix cinerea* were interspersed within the hedge system. The hedge ground flora included common nettle, great willowherb, creeping thistle *Cirsium arvense* and cow parsley *Anthriscus sylvestris*.
- 4.18 All hedgerows supported at least 80% native canopy species and therefore meet the criteria as a Habitat of Principal Importance under the NERC Act 2006.
- 4.19 Further information regarding the quality and ecological value of the hedgerows is provided below in Table 6.

Table 6: Hedgerow Survey Summary

Ref	Canopy Sp.(from most abundant to least abundant)	Height / Width (m)	Length (m)	Sp. per Av. 30m†	Notes	HEGS Grade	Important Hedgerow
H1	<i>Cm, Ps, Fe, Rf, Mp, Rc, Sn, Sca, Ca, Sci, Ia, Qr</i>	>4 / >3	210	4.7	Unmanaged, <10% gaps, four standards, three end connections.	2	No
H2	<i>Cm, Rc, Fe, Rf, Ps, Sn, Ap, Ca, Ug</i>	>4 / >3	267	3.3	Unmanaged, <10% gaps, four end connections, one tree standard.	2	No
H3	<i>Cm, Ca, Rc, Vo, Fe, Ps, Psp.</i>	2-4 / 2-3	214	5	<10% gaps, five end connections, five mature and two young tree standards.	1	No
H4	<i>Cm, Ps, Rc, Qr, Sn, Ca, Ia</i>	2-4 / 2-3	95	4	<10% gaps, two end connections, one tree standard.	3	No

Species Key: *Ap* *Acer pseudoplatanus* – sycamore, *Ca* *Corylus avellana* – hazel, *Cm* *Crataegus monogyna* – hawthorn, *Fe* *Fraxinus excelsior* – ash, *Ia* *Ilex aquifolium* – holly, *Mp* *Malus pumila* – apple, *Psp.* *Prunus* spp. – cherry species, *Ps* – *Prunus spinosa* – blackthorn, *Qr* *Quercus robur* – pedunculate oak, *Rc* *Rosa canina* – dog-rose, *Rf* *Rubus fruticosus* agg. – bramble, *Sca* *Salix caprea* – goat willow, *Sci* *Salix cinerea* – grey willow, *Sn* *Sambucus nigra* – elder, *Ug* *Ulmus glabra* – wych elm, *Vo* *Viburnum opulus* – guelder-rose.

Field Survey - Fauna

Birds

- 4.20 The hedgerows recorded bordering the site and the off-site woodland provide potential nesting habitat for a limited range of common farmland and urban fringe bird species. Depending on timing of the cutting regime, the poor semi-improved grassland recorded onsite provide potential habitat for species of ground nesting farmland birds.
- 4.21 The proposals will result in the loss of land that has the potential to support a range of breeding farmland bird species, including Species of Principal Importance. Therefore, in order to establish the magnitude of potential impacts upon the local bird population breeding bird surveys have been completed and are reported on separately (Breeding Bird Survey Report, FPCR July 2018).

Badgers

- 4.22 Whilst it was considered that the grassland and hedgerows may provide suitable foraging habitat for this species, during the survey no signs attributable to badgers such as setts, latrines, hairs or footprints were recorded within the site or its immediate surrounds (where accessible).

Bats

Habitats

- 4.23 Due to its species-poor nature, the semi-improved grassland habitat recorded across the majority of site is unlikely to support a high abundance of invertebrate species and therefore is less likely to provide a significant foraging resource for local bat populations. However, the neutral semi-improved grassland, hedgerows, mature trees, waterbodies and scrub would provide suitable foraging and commuting habitat and linkages into the wider area.

Assessment of Trees

- 4.24 Two mature trees present within the site were assessed for potential to support roosting bats. The details of mature trees with potential roost features are provided in Table 7 below, and indicative locations are shown on Figure 2.

Table 7: Trees with Bat Potential

Tree Ref	Species	Potential Roost Feature Description – Height & Aspect	Bat Roost Potential Category
T1	Ash <i>Fraxinus excelsior</i>	Mature ash just off-site in adjacent garden. Knot hole 7m high on northern aspect. Callused hole 6 cm in diameter, slight brown staining around rim. Branch tear out 12m high on a central limb. Branch tear out 2m high on eastern aspect. Large callused tear with new growth. Possible access into hollow stem.	Moderate
T2	English Oak <i>Quercus robur</i>	Branch tear out 6m high on northern aspect with cavity.	Moderate

Bat Activity Surveys – Static Bat Detector Monitoring Surveys

- 4.25 A summary of the static bat detector monitoring is provided in Tables 8 and 9. Full details of the static bat detector data can be found in Appendix A. The locations of the static detector units are shown in Figures 4 and 5 respectively.

Spring Surveys

- 4.26 A single static detector was deployed on 24th May to 29th May 2018. The unit was positioned along hedgerow H3 adjacent to the neutral semi-improved grassland to the east of site. The unit recorded: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, a *Myotis* species *Myotis* sp., a *Nyctalus* species *Nyctalus* sp. and noctule *Nyctalus noctule*. By far the most commonly occurring species was common pipistrelle with over 83% of the total registrations over the survey period, with a peak of 142 registrations on the night of 25th/26th May. There was a nightly peak of 32 registrations for soprano pipistrelle, 1 for *Myotis* species, 4 for *Nyctalus* species and 3 for noctule.

Table 8 – Spring static detector results summary

Location	Avg. registrations per hour	Total registrations	Most recorded species (number of registrations)	Other species recorded (number of registrations)
Hedgerow H3 adjacent to the neutral semi-improved grassland	8.9	410	Common pipistrelle (341)	Soprano pipistrelle (54), <i>Myotis</i> sp. (2), <i>Nyctalus</i> sp. (8), noctule (5)

Summer Surveys

- 4.27 A single static detector was deployed on 21st June to 26th June. The unit was positioned at the intersection of hedgerows H1 and H4. The unit recorded: common pipistrelle, soprano pipistrelle, a *Myotis* species and noctule. Soprano pipistrelle was the most commonly occurring species with over 54% of the total registrations over the survey period, with a peak of 206 registrations on the night of 21st/26th June. There was a nightly peak of 169 registrations for common pipistrelle, 36 for a *Myotis* species and 9 for noctule.

Table 9 – Summer static detector results summary

Location	Avg. registrations per hour	Total registrations	Most recorded species (number of registrations)	Other species recorded (number of registrations)
At intersection of hedgerows H1 and H4	40.97	1766	Soprano pipistrelle (960)	Common pipistrelle (689), <i>Myotis</i> sp. (96), noctule (21)

Static Bat Detector Monitoring Survey Summary

- 4.28 Activity levels were higher in summer than in spring, with four times the number of bat registrations recorded on the summer static, positioned at the intersection of hedgerows H1 and H4. Approximately five different bat species were recorded utilising the site. Common pipistrelle

accounted for the majority of bat activity within the site, comprising 47.3% of the total bat registrations recorded over the whole survey period. Soprano pipistrelles were the next most frequently recorded species within the site accounting for 46.6% of the total bat registrations recorded. Relative usage of the site per species, as shown by percentage of all bat registrations recorded over the duration of the static monitoring period is shown in Table 10, below.

Table 10 – Static detector percentage species abundance

Species Recorded	Percentage
Common pipistrelle	47.3
Soprano pipistrelle	46.6
Myotis species	4.5
Noctule	1.2
Nyctalus species	0.4

Bat Activity - Transect Surveys

- 4.29 The transect routes, bat locations, and tabulated results from each survey occasion are provided in Figures 4 and 5 respectively and summaries of each survey are provided below.

Spring Transect 1: Dusk 24th May 2018 (Figure 4)

- 4.30 The weather conditions during this survey were suitable for bat surveys. The survey started at 21:09 and finished at 23:21. Sunset was at 21:19. The route began and ended at the centre point of hedgerow H1 at the north-western boundary. The route looped twice around the site, incorporating hedgerows and trees of potential interest to commuting and foraging bats. The first bat recorded was a soprano pipistrelle commuting along hedgerow H1 at 21:50, 31 minutes after sunset. A further 19 bat contacts were recorded during the survey both commuting and foraging. Species recorded also included common pipistrelle and noctule. All bats recorded comprised individuals. Overall the level of bat activity was considered to be unexceptional / low, with activity concentrated along hedgerows.

Summer Transect 2: Dusk 21st June, 2018 (Figure 5)

- 4.31 The weather conditions during this survey were again suitable for bat surveys. The survey started at 21:45 and finished at 23:45. Sunset was at 21:45. The survey followed the same transect route but began and ended at the access gate on Henthorn Road. The first bat was recorded at 22:24 and was a common pipistrelle commuting over the field compartment from east to west. A further 15 bats were observed over the transect survey both commuting and foraging. Species recorded also included soprano pipistrelle and an unidentified Myotis species. Overall the level of bat activity was considered to be unexceptional, with activity concentrated along the hedgerows in the western half of the site.

Limitations

- 4.32 Where calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Pipistrellus* genus bats) making a definite identification difficult, a likely species identification is provided. This is based on the features displayed by the calls when analyses

using the Kaleidoscope© data analysis software package and taking into account the geographical location of the site and the habitats present. It was therefore considered that;

- Pipistrelle species bats were either common or soprano pipistrelle;
- *Nyctalus* species bats were likely to be noctule;
- Given the known species distributions of *Myotis* species locally, *Myotis* species bats were likely to be whiskered / Brandt's *Myotis mystacinus* / *brandtii*, Natterer's *Myotis nattereri* or Daubenton's *Myotis daubentoni*.

Great Crested Newts

- 4.33 The hedgerows / field margins are considered to be suitable terrestrial habitat for great crested newts for foraging, commuting and as resting place / shelter habitat. The grassland habitats are likely to represent a suitable foraging and commuting resource only, with limited features suitable for resting place / shelter habitat.

Pond Descriptions and HSI Assessment

- 4.34 From mapping and online aerial photography four ponds were found to be present on site and within 500m of the site and were considered to be connected by suitable terrestrial habitats to the site. Permission was granted to survey all of the ponds: (refer to Figure 3) but the initial site visit found ponds P1 and P4 to be dry. Pond P2 was located in the north-west of site, adjacent to the boundary and pond P3 was located just north-east of the site. Descriptions of the waterbodies are provided in Table 11 below.
- 4.35 Details of all scores from the HSI assessment are provided in Appendix C. A summary of the HSI results is provided in Table 12.

Table 11 – Pond descriptions

Pond	Description
P1	Dry pond along hedgerow H1 on the sites north-western boundary. The pond was dry at the time of survey, with marginal vegetation including soft rush and creeping buttercup, indicating that the pond holds standing water for a least part of the year.
P2	Onsite pond at the north-western boundary, adjacent to hedgerow H1. Approximately 4m x 4m with turbid water and an abundance of algae. Emergent vegetation was limited to soft rush and yellow iris.
P3	Offsite pond, located 12m east of the site. Approx. 4m X 4m. A balancing facility situated within a recent housing development. Emergent vegetation comprised predominantly duck weed <i>Lemna minor</i> , reed-mace <i>Typha latifolia</i> . and <i>Juncus sp.</i>

Table 12 – HSI Assessment summary

Pond	HSI Score	Pond Suitability	Predicted Presence
2	0.37	Poor	3%
3	0.60	Below Average	20%

Aquatic Surveys

- 4.36 Both ponds (P2 and P3) were subject to aquatic surveys. These were undertaken on four occasions during May 2018, three of which were within the peak survey period (mid-April to mid-May⁸).
- 4.37 Great crested newts were not recorded within any of the ponds surveyed. A summary of the aquatic survey results is provided in Table 13 below whilst full detailed results are provided in Appendix C.

Table 13: Presence / Absence Survey Results

Waterbody	Survey Date	Methodology Employed	Results	
			Smooth newt	Palmate newt
Pond 2	08/05/2018	Bottle, Torchlight, Netting, Egg Search	2	5
	11/05/2018	Bottle, Netting, Egg Search	3	0
	17/05/2018	Bottle, Torchlight, Egg Search	2	1
	24/05/2018	Bottle, Torchlight, Egg Search	0	0
Pond 3	08/05/2018	Bottle, Torchlight, Netting, Egg Search	0	0
	11/05/2018	Bottle, Netting, Egg Search	2	0
	17/05/2018	Bottle, Netting, Egg Search	0	0
	24/05/2018	Dry	-	-

Schedule 9 Plant Species

- 4.38 Two non-native invasive species: Japanese knotweed and Himalayan balsam were recorded adjacent to the north-western boundary of the site, with Himalayan balsam encroaching into site. These species fall under Section 14, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 4.39 These are currently being treated and the location of stands are shown as a target note on Figure 2.

5.0 DISCUSSION AND RECOMMENDATIONS

Statutory Sites

- 5.1 The degree to which designated sites receive consideration under the planning system and legislative protection depends on the designation itself and its level of importance and value. This ranges from sites of international importance protected by UK legislation that transposes European directives, to protection under UK legislation or national and local planning policy.
- 5.2 No designated sites of international nature conservation importance are located within 10km and no designated sites of national nature conservation importance within 2km of the survey site.

Non-statutory Sites

- 5.3 Whilst not necessarily protected in law, non-statutory designated sites do generally receive policy protection (as “Locally Designated Sites”), as reflected in the National Planning Policy Framework (NPPF)⁹. NPPF suggests that Locally Designated Sites can have a fundamental role to play in meeting overall national biodiversity targets and that appropriate weight should be attached to designated sites when making planning decisions.
- 5.4 Three non-statutory Biological Heritage Sites (BHSs) were located within 1km of the survey site; River Ribble, Primrose Lodge and Barrow Clough Wood.
- 5.5 The River Ribble BHS is located 40m west of the site and is designated for the range of flora and fauna it supports. Potential risks that may result from proposals could include increased recreational pressure, litter and fly tipping. However, it is not considered that the development of the site will significantly increase the risk of these impacts from that which is already present, given the PRow which borders the river. Due to the nature of the proposals, The River Ribble BHS could be at risk from pollution during works as a result of soil/silt-laden runoff or accidental spillages, with adverse impacts on dependent fauna associated with the watercourse. Adoption of sound site management principles and adherence to current best practice guidelines for working near water should also help to prevent negative impacts on the associated wetland habitats from pollution events during construction, as will good working practice to prevent soil contamination in the event of, for example, a fuel spill.
- 5.6 Both Primrose Lodge and Barrow Clough Wood BHS don't have any formal public access arrangements and so negative impacts are not anticipated as a result of the proposals.

Habitats

- 5.7 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:
- Inclusion within specific policy (e.g. veteran trees and ancient woodland in NPPF, or non-statutory site designation);
 - Identification as a habitat of principal importance for biodiversity under Natural Environment and Rural Communities Act (NERC) 2006 and consequently identification as a Priority Habitat

⁹ Department for Communities and Local Government. (2018). National Planning Policy Framework. Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

within the local Biodiversity Action Plan (LBAP) and a Priority Habitat for England under Biodiversity 2020.

- 5.8 Under NPPF, development should provide a net gain in biodiversity with an emphasis on improving ecological networks and linkages where possible.
- 5.9 The poor semi-improved grassland which form the majority of the site was considered to be of low nature conservation value and no rare plant species were confirmed in this habitat type. Consequently, loss of this land is unlikely to be a significant ecological constraint to development of the site.

Neutral semi-improved grassland

- 5.10 The small area of grassland within the riparian corridor to the east of the site was assessed as supporting relatively diverse, damp semi-improved neutral grassland.
- 5.11 A grasslands conservation value can be assessed through a number of means with the best examples qualifying as a Habitat of Principal Importance through the presence of a particular National Vegetation Classification (NVC) community. Grasslands of importance at a more regional/local level are identified as being of Local Wildlife Site quality (within Lancashire as a BHS) or being considered a priority habitat within the local BAP.
- 5.12 The results of the Extended Phase 1 habitat surveys would suggest that the semi-improved neutral grassland community recorded within the site is broadly analogous with NVC community (MG4) *Alopecurus pratensis-Sanguisorba officinalis* grassland and therefore it has the potential to be representative of Lowland Meadows Habitat of Principal Importance under the NERC Act 2006. The area of grassland would not meet the criteria for qualification as a Biological Heritage Site within Lancashire¹⁰ as the extent of the habitat (0.28ha) falls well below the minimum required for selection (0.5ha). As such, this area of grassland would be considered to be of importance at a local scale.
- 5.13 The Development Framework reflects the importance of this grassland within the site by its retention and buffering by further greenspace with new tree planting. It is recommended that the retained grassland is managed appropriately through the implementation of a long-term management plan, which would gradually enhance its value as a semi-natural habitat.

Hedgerows

- 5.14 All four hedgerows bordering the site were greater than 20m in length and comprised more than 80% native species. As a result, all hedgerows qualify as a Habitat of Principal Importance under the NERC Act 2006. Three hedges (H1, H2 and H3) were found to be of high ecological value (Grade 1 or Grade 2 under the HEGS methodology) however none of them were deemed to be 'Important' under the Hedgerow Regulations.
- 5.15 The proposed design layout of the scheme includes the retention of all of the hedgerows and a green buffer around all existing field boundaries, which will protect the retained hedges from any adverse impacts of development.

¹⁰ Bell (1998) Biological Heritage Sites: Guidelines for Site Selection. Lancashire County Heritage Sites Scheme. Lancashire County Council

- 5.16 Gap creation may also be required along hedgerow H1 and H2 to facilitate pedestrian access to the existing residential development to the north-east of site and some very minor losses (approx. 7m in total) either side of the main development access in H3, at the location of the existing field gate access. As the gaps / losses would be very small, this would not impact on the status of the hedgerows and anticipated scrub and hedgerow planting would more than compensate for these losses in the long term.

Mitigation and Enhancement Measures

- 5.17 Any hedgerow planting should include species similar to those currently present such as hawthorn, blackthorn, elder and dog-rose. Long-term enhancement to the structure of the retained hedgerows would be achieved by adoption of an appropriate long term sympathetic management plan with the aim to increasing the height and width of the hedgerows, as well as maintaining a continuous supply of fruits and flowers for foraging wildlife.

Mature Trees

- 5.18 A small number of mature trees were recorded across the site primarily in association with the hedgerow network. Mature trees provide potential habitats for invertebrates, nesting birds and other local wildlife in addition to providing structural diversity and continuity of habitat. The proposals indicate that all mature trees will be retained and buffered by greenspace. During development it is recommended that mature trees are protected from damage and soil compaction by maintaining fenced Root Protection Areas (RPAs) in accordance with current best practice and guidelines.

Protected / Notable Species

- 5.19 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017. Some species, for example badgers, also have their own protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.
- 5.20 This guidance states that as the presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions.
- 5.21 In addition to protected species, there are those that are otherwise of conservation merit, such as species of principal importance for the purpose of conserving biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006. These are recognised in the National Planning Policy Framework (NPPF), which advises that when determining planning applications, LPA's should aim to conserve and enhance biodiversity by applying a set of principles including:
- *If significant harm resulting from a development cannot be avoided....., adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*

- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*

- 5.22 The implications that various identified species or those that are thought reasonably likely to occur may have for developmental design, planning and programming considerations are outlined below.

Badger

- 5.23 Badgers and their active setts are protected under the Protection of Badgers Act 1992, making it an offence to kill, injure or take badgers or to damage or obstruct access into a badger sett. The Act also prohibits disturbance of a badger whilst it is occupying a sett.
- 5.24 No evidence of the presence of badger was recorded within the site during the survey and subsequently badgers are not considered to pose a constraint to development of the site.

Bats

- 5.25 All species of bats and their roosts are listed on the Conservation of Habitats and Species Regulations 2017 making it illegal to deliberately disturb any such animal or damage / destroy a breeding site or roosting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection. Some bat species, including soprano pipistrelle, are Species of Principal Importance under the NERC Act.
- 5.26 Six records of common pipistrelle and a pipistrelle species were returned from within the search area, including several records of roosts, the closest being a common pipistrelle roost located 430m south-east of the site.

Bat Roosts in Trees

- 5.27 Two mature trees recorded on site had features that could potentially be used by roosting bats, (Figure 2). Current proposals indicate that these trees and the neighbouring connective habitats are to be retained within areas of public open space and therefore negative impacts on any potential roosts are not anticipated. Should the proposals change and the trees are affected by proposals either directly (i.e. removal or arboricultural remediation works to facilitate proposals), indirectly (i.e. isolation through removal of connecting hedgerows) or if it was to be subject to direct lighting, then the presence or likely absence of roosting bats should first be ascertained via either detailed climbing inspection to internally view all cavities, or if not possible, using emergence/return to roost surveys. Inspection survey can be carried out at any time of year and emergence/return to roost survey would need to be carried out in the optimal bat active season from May to August, inclusive. If bats or evidence of previous presence of bats is found within the tree's features, impacts to the roost would need to be avoided, or a licence would need to be obtained from Natural England to disturb the bats or remove the roost. Appropriate mitigation measures would also need to be implemented.

Bat Activity

- 5.28 During the transect surveys, bat activity was recorded across all areas of the site, albeit from small numbers of bats and with small numbers of registrations. Peak activity was associated with the hedgerows and mature trees. The species assemblage recorded during the transects within the site comprised in order of decreasing abundance; common pipistrelle (c. 50% of total activity), soprano pipistrelle (c. 32%), noctule (c. 15%), an unidentified species of *Myotis* (c. 3%). Activity recorded using this survey technique was relatively consistent throughout the seasons.
- 5.29 Up to five species of bat were recorded during the static detector surveys of the site: comprising common pipistrelle, soprano pipistrelle, a *Myotis* species, a *Nyctalus* species and noctule.
- 5.30 The species and composition of bats recorded on static detectors are broadly similar to those recorded during the transect surveys with common and soprano pipistrelle the most frequently recorded species'. Common and soprano pipistrelle are both common and widespread species that are frequently associated with the habitat types within the application site and surrounding landscape. The levels of activity associated with these species, and also *Myotis* species, *Nyctalus* species and noctule are consistent with their known abundance at a regional and national scale and is not considered to be significant.
- 5.31 The bat activity recorded within the site during the transect and static bat detector surveys was unexceptional considering the sites rural-edge setting and the habitats present both onsite and adjacent, which do offer foraging and commuting opportunities. The static bat detector survey completed in summer 2018, at the intersection of hedgerows H1 and H4 on the north-western boundary of the site, recorded increased numbers of bat registrations compared to the spring survey. Registrations recorded on static bat detectors could potentially relate to either several passes of one bat or single passes of several bats and cannot be reliably distinguished. Therefore, these results need to be interpreted with reference to the transect surveys. During the summer transect survey a common pipistrelle, soprano pipistrelle and a *Myotis* bat were recorded continuously foraging around the mature trees in the north-western corner of site. As such, it is considered likely that the increased number of registrations during the summer static survey period was due to a small number of individual bats, foraging along the hedgerows and mature trees for an extended period.
- 5.32 Due to the unexceptional level of bat activity recorded during both the spring and summer survey occasions and the unlikely impacts resulting from the development. It was considered that an autumn survey would not provide any further information about the value of the site for bat species.

Mitigation and Enhancement Measures

- 5.33 Proposals suggest that residential elements of the scheme will be confined to the semi-improved grassland area. This habitat is considered to provide suboptimal value for foraging bats and its loss is considered unlikely to have a negative impact upon the Favourable Conservation Status of local bat populations. To minimise potential impacts of development, the development framework has sought to retain all areas of higher value habitat resources such as hedgerows and mature trees and has included a green buffer around all existing field boundaries. This will maintain connectivity for bats through the development and into the wider countryside from off-site roost sites identified during the desktop study.

- 5.34 Creating dark corridors along retained boundary features will be important to maintaining and enhancing value for bats as sources for invertebrate prey and commuting and dispersal routes through the landscape. The hedgerow network and mature trees will be retained and enhanced to provide a key habitat resource for local bat populations and care should be taken to avoid artificially lighting these habitats.
- 5.35 It is recommended that as a further enhancement, the roosting opportunities provided within the scheme are increased and bat boxes are placed on suitable retained trees or within new buildings on the periphery of developed areas. The bat boxes should be a variety of designs to encourage different environmental conditions. However, all the boxes should be suitable for both common pipistrelle but also a wide range of British species, both common and uncommon. There are a wide range of suitable bat boxes available, these should ideally be made from a cement and wood-based material. Suppliers include; Schwegler, Vivara Pro and Ibstock.
- 5.36 With the implementation of the mitigation proposed above, residual effects on the local population of bats are likely to be positive.

Great Crested Newts

- 5.37 Great crested newts are afforded legal protection by Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and under the Conservation of Habitats and Species Regulations 2017. Great crested newts are also listed as a Species of Principal Importance under the NERC Act.
- 5.38 No records of great crested newts were returned from within 1km of the site from consultees.
- 5.39 The habitats recorded within the site provided suitable terrestrial habitat for great crested newts during all phases of their life cycle. However, during the aquatic surveys great crested newts were not recorded in any of the ponds surveyed.
- 5.40 Given that waterbodies were surveyed at the optimal time of year it is reasonable to conclude that should great crested newts be present within the site or the wider area they would have been recorded during the survey. As such, great crested newts are considered highly unlikely to be present within the site during their breeding or terrestrial phase and would therefore not pose a constraint to the scheme.

Schedule 9 Plant Species

- 5.41 Two non-native invasive species; Japanese knotweed and Himalayan balsam were recorded adjacent to the north-western boundary of the site, with Himalayan balsam encroaching into site. Seeds likely colonised from the nearby River Ribble.
- 5.42 Under Section 14, Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) it is an offense to plant or otherwise cause these species to grow in the wild. Additionally, under the Environmental Protection, (Duty of Care) Regs 1991 and Environmental Protection Act 1990 Sect 34, soil contaminated with these Schedule 9 plants is classed as 'controlled waste' and can only be disposed of at a registered landfill site.
- 5.43 A Management Strategy for the eradication or control of Japanese knotweed and Himalayan balsam is currently being prepared.

General enhancements

- 5.44 The Lawton report¹³ published in 2010 and the government white paper¹⁴, which followed from it, established the need for a great focus on producing more resilient ecological networks. As such, significant biodiversity enhancements are possible through the strengthening of wildlife corridors on site as part of development proposals. The following recommendations would enhance the functionality of these wildlife corridors and result in a significant biodiversity gain:
- The hedgerow network and associated mature tree resource are an important ecological network, proposals should seek to implement:
 - Selective planting of native locally produced woody species to reduce the number of gaps within the network;
 - A management plan, as part of proposals with a view to creating tall wide hedgerows that provide a continuous supply of fruit, berries and nectar to local wildlife.
 - Any new habitats created as part of the green infrastructure of the site should aim to increase the diversity of habitats present and provide structural diversity, with scrub and grassland areas and should be designed in a way to have connectivity with each other and existing habitats on site.
- 5.45 In addition to the recommendations with respect to individual species and habitats outlined above, opportunities may exist within the scheme for general biodiversity enhancements to be undertaken. As such, the following are recommended for this site:
- Areas of informal grassland should seek to use a herb-rich mix suitable for the local area, with any more formal areas using a flowering lawn mix as an alternative to a standard rye grass mix. Any garden planting proposed at the outset should also use native species of value to wildlife. Suitable small tree species for inclusion in garden planting schemes include field maple, silver birch and holly. All informal areas of planting should use native species and be subject to sympathetic management and a management plan to promote their conservation value.
 - Soft landscaping using native and ecologically valuable species would enhance the site, avoid using non-native species with overly complex flower structure or those of an invasive nature such as cotoneasters.
 - An ecological management plan should be devised and adhered to for all retained and created habitats in order for them to maintain existing value and/or realise enhanced value, making sure that management is appropriate and ongoing for the life of the development.
 - Small gaps could be left under or in the corners of garden fences to permit access for wildlife such as hedgehog, badger and fox.
 - Deadwood piles could be created in areas of retained open space to provide a habitat niche for amphibians and small mammals as well as deadwood for invertebrates such as saproxylic beetles.

¹³ J. Lawton et al. (2010) Making Space for Nature: a Review of England's Wildlife Sites and Ecological Network. Report to Defra. London: Department for Environment, Food and Rural Affairs.

¹⁴ DEFRA (2011) Government response to the Making Space for Nature review. Department for Environment, Food and Rural Affairs

- The attenuation area should be designed to provide optimal habitat for wildlife as well as serving drainage functions, for example a storage pond designed to hold water all year round, or else a scrape planted with meadow mixture for wetlands.

APPENDIX A – PHASE 1 HABITAT SURVEY SPECIES LISTS

The principal habitat types were mapped within the site and a representative species list for each habitat recorded. Species lists are not exhaustive of all flora present in each habitat type.

Abundance is described on the DAFOR scale.

D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare. (L = Locally)

Semi-natural Broadleaved Woodland

Common Name	Scientific Name	DAFOR
Canopy		
Ash	<i>Fraxinus excelsior</i>	F
Copper beech	<i>Fagus sylvatica f. purpurea</i>	R
Wych Elm	<i>Ulmus glabra</i>	R
Understorey		
Hawthorn	<i>Crataegus monogyna</i>	O
Hazel	<i>Corylus avellana</i>	O
Blackthorn	<i>Prunus spinosa</i>	R
Elder	<i>Sambucus nigra</i>	R
Holly	<i>Ilex aquifolium</i>	R
Horse Chestnut	<i>Aesculus hippocastanum</i>	R
Pedunculate Oak	<i>Quercus robur</i>	R
Ground flora		
Common Ivy	<i>Hedera helix</i>	F
Common Nettle	<i>Urtica dioica</i>	F
Himalayan balsam	<i>Impatiens glandulifera</i>	LF
Great Willowherb	<i>Epilobium hirsutum</i>	O
Herb-Robert	<i>Geranium robertianum</i>	O
Rough Meadow-grass	<i>Poa trivialis</i>	P
Male-fern	<i>Dryopteris filix-mas</i>	R
Ramsons	<i>Allium ursinum</i>	R
Japanese knotweed	<i>Fallopia japonica</i>	R

Neutral Semi-Improved Grassland

Common Name	Scientific Name	DAFOR
Meadow Foxtail	<i>Alopecurus pratensis</i>	F
Rough Meadow-grass	<i>Poa trivialis</i>	F
Silverweed	<i>Potentilla anserina</i>	F
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	F
Great Willowherb	<i>Epilobium hirsutum</i>	F
Meadow Vetchling	<i>Lathyrus pratensis</i>	F
Meadowsweet	<i>Filipendula ulmaria</i>	F
Common Sorrel	<i>Rumex acetosa</i>	O
Marsh Foxtail	<i>Alopecurus geniculatus</i>	O
Yorkshire-fog	<i>Holcus lanatus</i>	O
Cock's-foot	<i>Dactylis glomerata</i>	O
Great Burnet	<i>Sanguisorba officinalis</i>	O
Hairy Sedge	<i>Carex hirta</i>	O
Meadow Fescue	<i>Schedonorus pratensis</i>	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O
Dandelion	<i>Taraxacum officinale agg.</i>	R
Perennial Rye-grass	<i>Lolium perenne</i>	R
Red Clover	<i>Trifolium pratense</i>	R
Red Fescue	<i>Festuca rubra</i>	R
Bittersweet	<i>Solanum dulcamara</i>	R
Common Vetch	<i>Vicia sativa</i>	R
Compact Rush	<i>Juncus conglomeratus</i>	R

Common Name	Scientific Name	DAFOR
Creeping Thistle	<i>Cirsium arvense</i>	R
Crested Dog's-tail	<i>Cynosurus cristatus</i>	R
False Oat-grass	<i>Arrhenatherum elatius</i>	R
Field Wood-rush	<i>Luzula campestris</i>	R
Floating Sweet-grass	<i>Glyceria fluitans</i>	R
Germander Speedwell	<i>Veronica chamaedrys</i>	R
Greater Bird's-foot-trefoil	<i>Lotus pedunculatus</i>	R
Slender Lady's-mantle	<i>Alchemilla filicaulis</i> spp. <i>Vestita</i>	R
Hard Rush	<i>Juncus inflexus</i>	R
Water Avens	<i>Geum rivale</i>	R

Poor Semi-Improved Grassland

Common Name	Scientific Name	DAFOR
Perennial Rye-grass	<i>Lolium perenne</i>	A
Meadow Foxtail	<i>Alopecurus pratensis</i>	F
White Clover	<i>Trifolium repens</i>	F
Marsh Foxtail	<i>Alopecurus geniculatus</i>	LF gate
Creeping Buttercup	<i>Ranunculus repens</i>	O
Meadow Buttercup	<i>Ranunculus acris</i>	O
Red Clover	<i>Trifolium pratense</i>	O
Silverweed	<i>Potentilla anserina</i>	O
Soft-brome	<i>Bromus hordeaceus</i>	O
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	O
Yorkshire-fog	<i>Holcus lanatus</i>	O
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R
Common Mouse-ear	<i>Cerastium fontanum</i>	R
Common Sorrel	<i>Rumex acetosa</i>	R
Creeping Bent	<i>Agrostis stolonifera</i>	R
Cuckooflower	<i>Cardamine pratensis</i>	R
Daisy	<i>Bellis perennis</i>	R
Dandelion	<i>Taraxacum officinale</i> agg.	R
Pineappleweed	<i>Matricaria discoidea</i>	R
Red Fescue	<i>Festuca rubra</i>	R
Sticky Mouse-ear	<i>Cerastium glomeratum</i>	R
Timothy	<i>Phleum pratense</i>	R
Fat-hen	<i>Chenopodium album</i>	R
Rough Meadow-grass	<i>Poa trivialis</i>	R to F

Stream

Common Name	Scientific Name	DAFOR
Great Willowherb	<i>Epilobium hirsutum</i>	F
Brooklime	<i>Veronica beccabunga</i>	O
Common Nettle	<i>Urtica dioica</i>	O
Floating Sweet-grass	<i>Glyceria fluitans</i>	O
Meadowsweet	<i>Filipendula ulmaria</i>	O
Reed Canary-grass	<i>Phalaris arundinacea</i>	O

Hedgerows and Scattered Trees / Scrub

Common Name	Scientific Name
Woody species	
Apple	<i>Malus pumila</i>
Ash	<i>Fraxinus excelsior</i>
Blackthorn	<i>Prunus spinosa</i>
Bramble	<i>Rubus fruticosus</i> agg.
Cherry spp.	<i>Prunus</i> spp.
Common Ivy	<i>Hedera helix</i>
Common Nettle	<i>Urtica dioica</i>

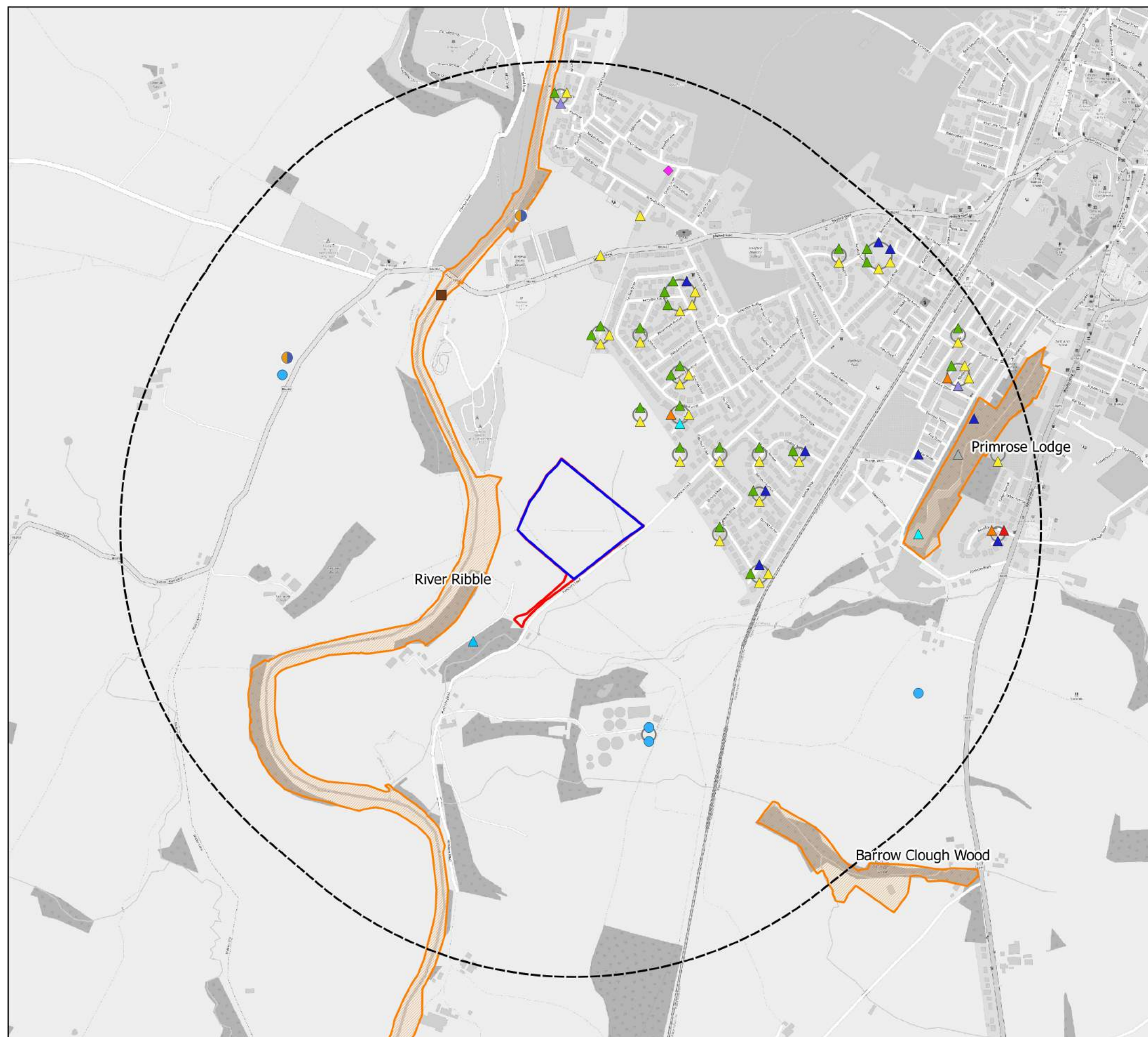
Common Name	Scientific Name
Copper beech	<i>Fagus sylvatica f. purpurea</i>
Dog Rose	<i>Rosa canina</i>
Elder	<i>Sambucus nigra</i>
Goat Willow	<i>Salix caprea</i>
Grey Willow	<i>Salix cinerea</i>
Guelder-rose	<i>Viburnum opulus</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Pedunculate Oak	<i>Quercus robur</i>
Sycamore	<i>Acer pseudoplatanus</i>
Wych Elm	<i>Ulmus glabra</i>
Apple	<i>Malus pumila</i>
Ash	<i>Fraxinus excelsior</i>
Ground flora	
Bittersweet	<i>Solanum dulcamara</i>
Common Ivy	<i>Hedera helix</i>
Common Nettle	<i>Urtica dioica</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Cowslip	<i>Primula veris</i>
Creeping Thistle	<i>Cirsium arvense</i>
Dog's Mercury	<i>Mercurialis perennis</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Iris spp.	<i>Iris spp.</i>
Marsh Woundwort	<i>Stachys palustris</i>
Marsh-marigold	<i>Caltha palustris</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Red Campion	<i>Silene dioica</i>
Rough Meadow-grass	<i>Poa trivialis</i>
Soft-rush	<i>Juncus effusus</i>
Wood Dock	<i>Rumex sanguineus</i>

APPENDIX B – STATIC DETECTOR RESULTS TABLE

Recording Period	Unit Number	Survey Dates	Survey Hours	Total Avg.per hour	Total Registrations	Common Pipistrelle			Soprano Pipistrelle			Myotis Species			Noctule			Nyctalus Species		
						Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total	Avg.per hour	Peak Count	Period Total
Spring	1	24/05/2018 - 29/05/2018	46	8.90	410	7.40	142	341	1.17	32	54	0.04	1	2	0.11	3	5	0.17	4	8
Summer	2	21/06/2018 - 26/06/2018	43	40.97	1766	15.99	169	689	22.27	206	960	2.23	36	96	0.49	9	21	0.00	0	0
Total			89	24.41	2176	11.55	169	1030	11.37	206	1014	1.10	36	98	0.29	9	26	0.09	4	8

APPENDIX C – HABITAT SUITABILITY INDEX ASSESSMENT

		SI -1		SI - 2		SI -3		SI -4		SI -5		SI -6		SI -7		SI -8		SI -9		SI -10				
Pond No.	Survey Date	Geographical Location		Pond Area		Pond Drying		Water Quality		Shade (perimeter)		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes		HSI score	Pond suitability	Predicted presence
		Field result (A,B,C)	SI score	Field result (m2)	SI score	Field result	SI score	Field result	SI score	Field result (% cover)	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score	Field result	SI score			
2	08/05/2018	A	1	16	0.05	Annually	0.1	Poor	0.33	100	0.2	Absent	1	Absent	1	4	0.67	Mod	0.67	5	0.35	0.37	Poor	3%
3	08/05/2018	A	1	16	0.05	Some-times	0.5	Mod	0.67	0	1	Absent	1	Absent	1	4	0.67	Mod	0.67	100	0.8	0.60	Below Average	20%



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Key

- Application Boundary
- Study Area
- 1km buffer
- Biological Heritage Site (with ref)
- Common Pipistrelle
- Pipistrelle Bat species
- European Otter
- ◆ Smooth Newt
- ▲ Black-headed Gull
- ▲ Bullfinch
- ▲ Dunnock
- ▲ Grey Wagtail
- ▲ House Sparrow
- ▲ Song Thrush
- ▲ Starling
- ▲ Swift
- ▲ Willow Warbler

client
Gladman Developments Limited

project
Henthorn Road,
Clitheroe

drawing title
**SITE LOCATION &
CONSULTATION RESULTS PLAN**

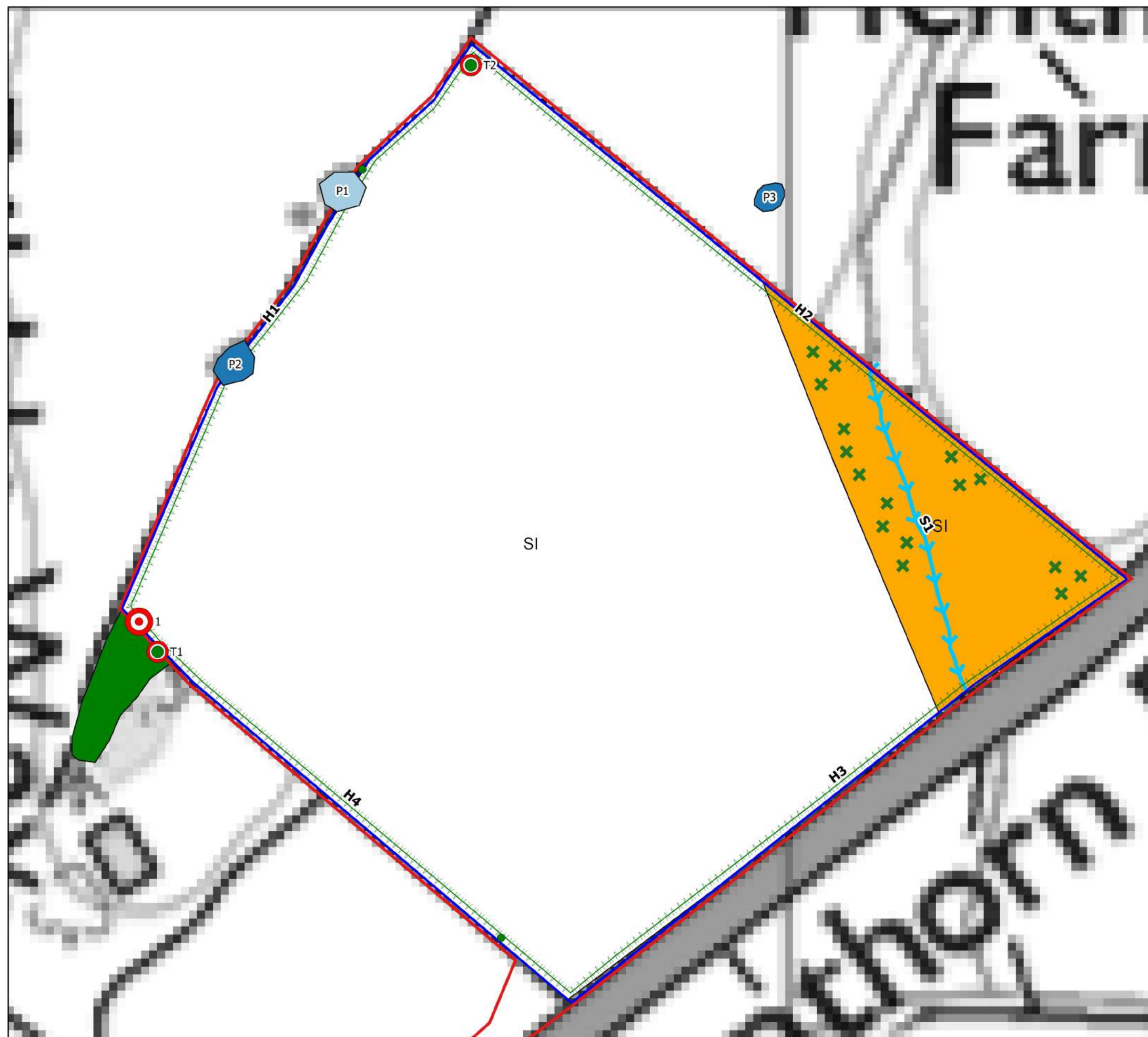
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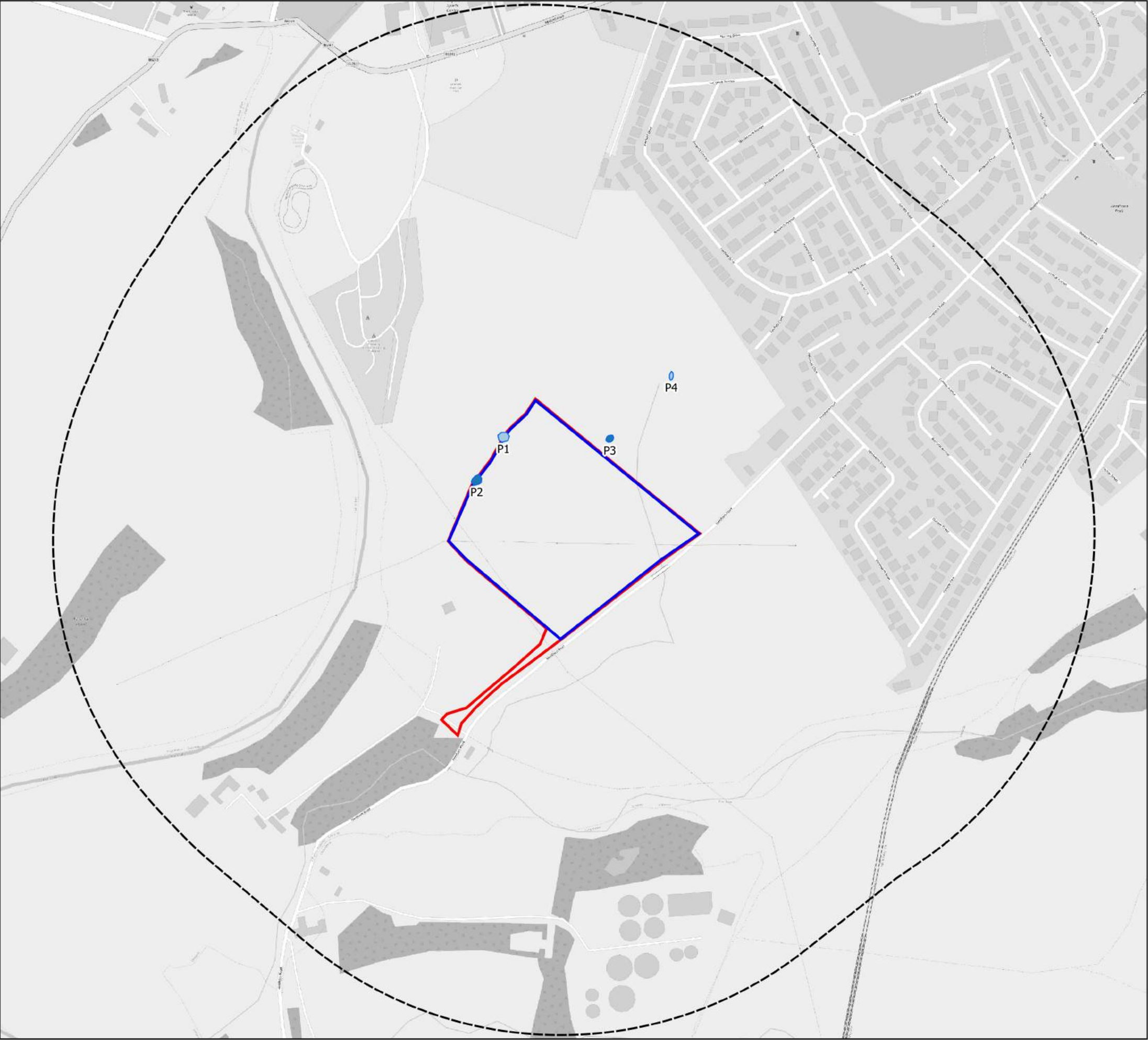


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Key

- Application Boundary
- Study Area
- Broadleaved woodland
- Neutral grassland - semi-improved
- Poor semi-improved grassland
- Running water
- x x x x Intact hedge - native species-rich
- x Scrub - scattered
- Tree with bat potential
- Broadleaved tree
- Target note
1) Himalayan balsam & Japanese knotweed
- Waterbody (with reference)
- Wet
- Dry



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Key

 Application Boundary

 Study Area

 500m buffer

Waterbody (with reference)

 Surveyed- No GCN

 Dry



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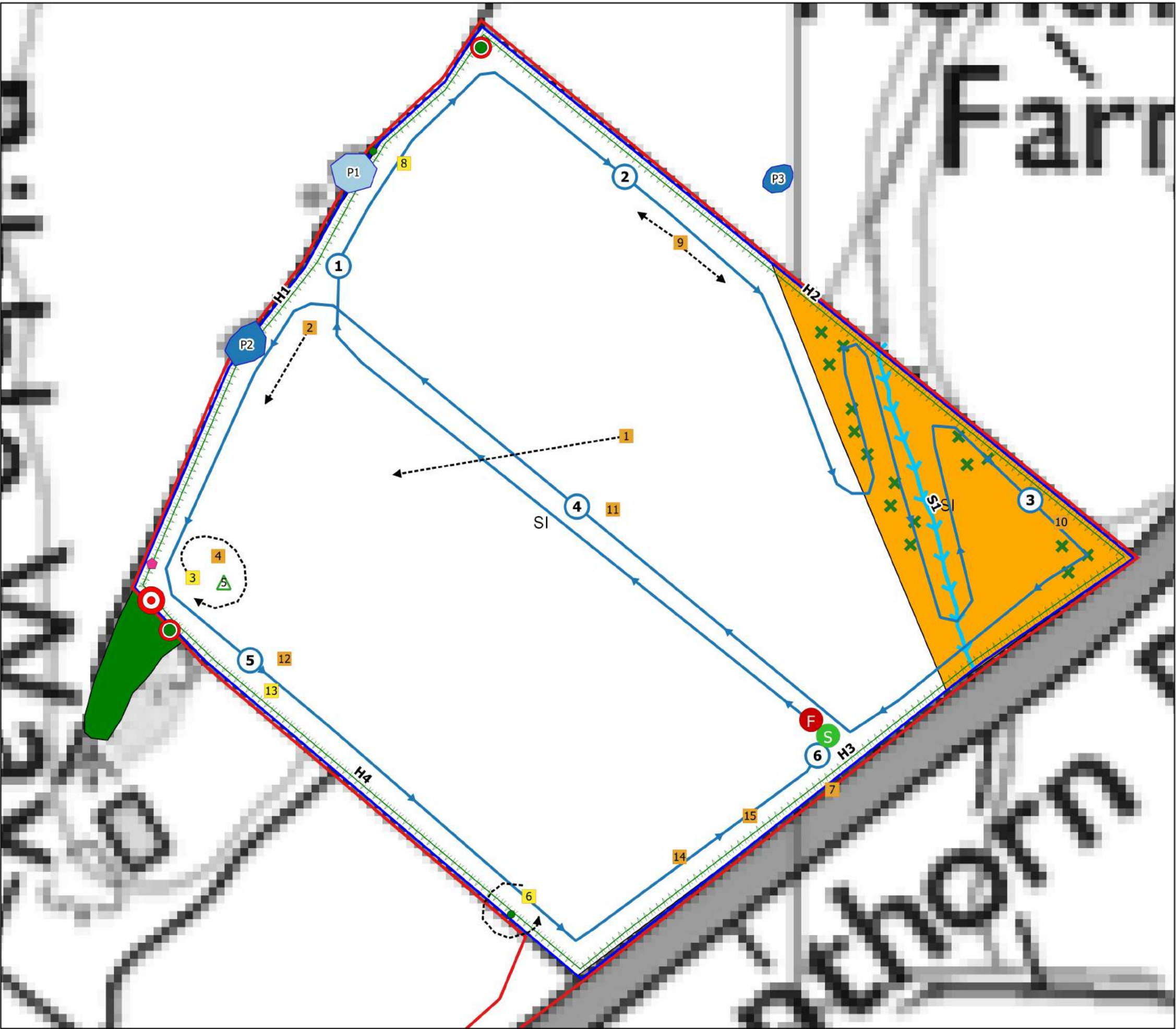
- Application Boundary
- Study Area
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path
- Spring Static Bat Detector Location

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Noctule

For habitat symbology see Phase 1 Habitat Plan

Ref	Time	Species	Behavior	Habitat	Passes
1	21:50:45	Ppy	Commute	Hedge/grassland	1
2	21:51:56	Nn	Commute	Hedge/grassland	1
3	22:00:40	Ppy	Commute	Hedge/grassland	1
4	22:06:47	Ppi	Commute	Hedge/grassland	1
5	22:10:29	Ppi	Commute	Hedge/grassland	2
6	22:11:08	Ppy	Commute	Hedge/grassland	2
7	22:13:05	Ppi	Commute	Hedge/grassland	1
8	22:17:12	Ppy	Commute	Hedge/grassland	1
9	22:30:46	Ppi	Commute	Hedge/grassland	2
10	22:33:16	Nn	Forage	Hedge/grassland	Continuous
11	22:34:18	Ppi	Forage	Hedge/grassland	Continuous
12	22:38:46	Ppy	Commute	Hedge/grassland	1
13	22:41:42	Ppi	Commute	Hedge/grassland	1
14	22:44:26	Nn	Commute	Hedge/grassland	1
15	22:50:37	Nn	Commute	Hedge/grassland	3
16	22:53:24	Ppy	Commute	Hedge/grassland	1
17	23:00:02	Ppi	Commute	Hedge/grassland	1
18	23:02:50	Nn	Social	Hedge/grassland	1
19	23:07:01	Ppi	Forage	Hedge/grassland	3



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Key:

- Application Boundary
- Study Area
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Arrow
- Summer Static Bat Detector Location

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Bat Species

For habitat symbology see Phase 1 Habitat Plan

Ref	Time	Species	Behavior	Habitat	Passes
1	22:24:21	Ppi	Commute	Grassland	1
2	22:31:55	Ppi	Commute	Hedgerow	1
3	22:34:12	Ppy	Forage	Trees	Continuous
4	22:36:14	Ppi	Forage	Trees	Continuous
5	22:38:35	Myotis	Forage	Trees	3
6	22:43:13	Ppy	Forage	Oak tree	2
7	22:48:14	Ppi	Commute	Hedgerow	1
8	23:01:22	Ppy	Commute	Hedgerow	1
9	23:05:22	Ppi	Forage	Hedgerow	3
10	23:15:24	Ppi	Forage	Hedgerow	4
11	23:24:02	Ppi	Commute	Grassland	1
12	23:31:12	Ppi	Forage	Treeline	Continuous
13	23:33:08	Ppy	Forage	Treeline	1
14	23:42:24	Ppi	Forage	Hedgerow	2
15	23:44:31	Ppi	Commute	Hedgerow	1

