Ecological Appraisal

Clitheroe Road, Whalley, BB7 9RG

Presented to **Trafford Housing Trust**

Issued: September 2018

Delta-Simons Project No. 18-0886.02

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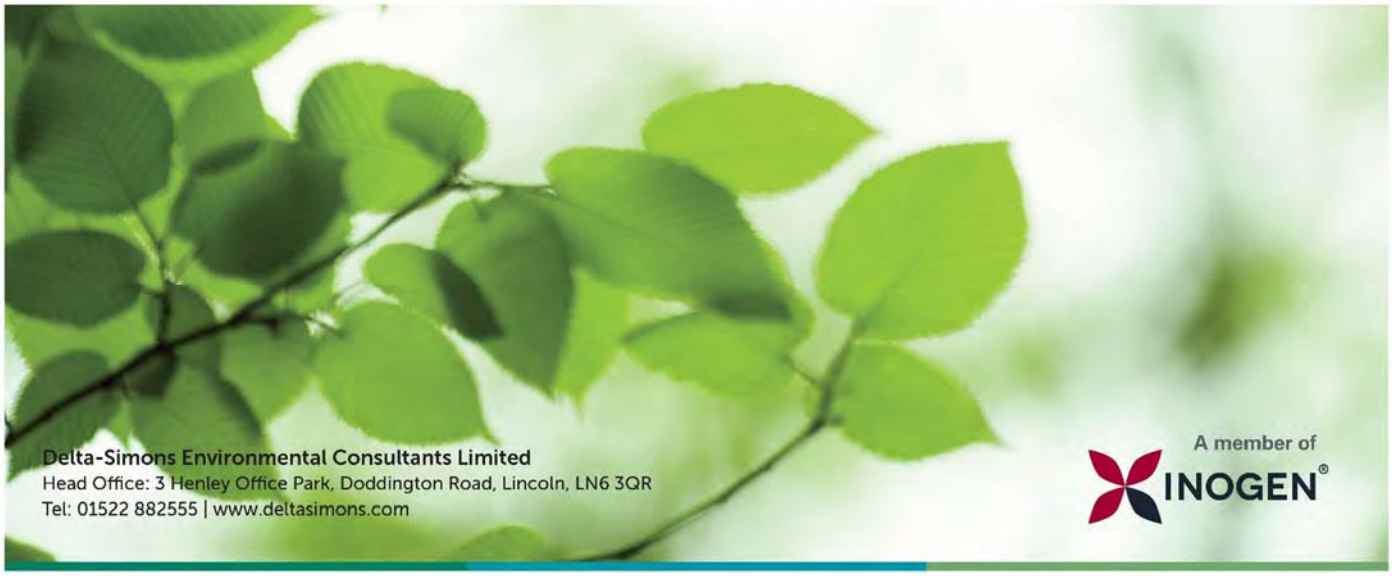

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Report Details

Client	Trafford Housing Trust
Report Title	Ecological Appraisal
Site Address	Clitheroe Road, Whalley, Lancashire, BB7 9RG
Project No.	18-0886.02
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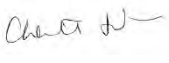
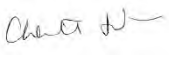
2	Final	10th September 2018				
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Executive Summary

Scope of Works	Delta-Simons Environmental Consultants Ltd was instructed by Trafford Housing Trust ('the Client') to undertake a Preliminary Ecological Appraisal (PEA) and Protected Species Surveys of an area of land situated east of Clitheroe Road in Whalley, Lancashire (the Site'). The PEA comprised a Phase 1 Habitat Survey and protected species assessment, together with a Bat Roost Potential (BRP) Survey and a Badger Survey, which were completed on 19th July 2018. Bat transect surveys and static detector surveys were undertaken in July and August 2018. The surveys are being undertaken to inform a planning application for the Site.
Current Site Status	The Site comprises grassland fields divided by an access road and stream in the south-west, with an active construction storage/ parking area in the west of the Site. Hedgerows, woodland and scattered trees are present around the boundaries and a patch of scrub lies in the west.
Proposed Development	It is understood that the proposed development will comprise up to 188 residential properties, with new access roads and landscaping, and attenuation ponds as part of the drainage strategy for the Site.
Results: **Habitats on-Site**	The following habitats are found on the Site: ▲ Dense Scrub; ▲ Scattered Scrub; ▲ Broadleaved Scattered Trees; ▲ Poor Semi-Improved Grassland; ▲ Running Water; ▲ Intact Species-Rich Hedgerow; ▲ Intact Species-Poor Hedgerow; ▲ Defunct Species-Poor Hedgerow; ▲ Hedgerow with Trees; ▲ Fence; ▲ Wall; ▲ Dry Ditch; ▲ Bare Ground; and ▲ Hardstanding.
Habitats adjoining the Site	The Site is surrounded by grassland fields and sports pitches to the north and Spring Wood to the east. Further grassland and woodland lie to the south-east and residential properties within Whalley border the Site to the south and west. These include a recently built residential development on Springwood Drive with an area of adjacent grassland.
Potential for Protected/ Notable Species	The hedgerow, scattered trees, scrub and overhanging trees from the adjacent woodland provide opportunities for nesting birds. A number of trees at the Site provide roosting potential for bats, including a mature oak assessed as offering moderate BRP, whilst the Site offers foraging potential and links into the adjacent Spring Wood. The Site would offer potential foraging for both badger and hedgehog with suitable shelter for hedgehog at the hedgerow bases and within scrub, whilst the adjacent woodland offers potential for badger.

	Himalayan balsam, a Schedule 9 invasive species under the Wildlife and Countryside Act (1981, as amended) was present around the grassland at the Site, and horsetail was recorded in the southern field, and whilst not listed as a Schedule 9 invasive species, it spreads rapidly through rhizomes which can reach a depth of 2 m, making it particularly difficult to eradicate from soils. Snowberry, a non-native species and aggressive coloniser, was also noted on the stream banks in the west of the Site. The streams were assessed as being unsuitable for water vole and otter. There are records of Great Crested Newts (GCN) in the wider area but connectivity to the Site is limited such that it is considered unlikely this species would colonise the Site.
Requirement for Further Surveys	<u>Bats</u> Should pruning, or works within 5 m, be needed to the pedunculate oak assessed as having Moderate BRP two nocturnal surveys would be required to determine the presence/ likely absence of roosting bats, and the requirement for any mitigation.
Construction and Operational Phase Recommendations and Enhancement Measures	The detailed recommendations set out within the Report are summarised below: <u>Nesting Birds</u> If any habitat removal or felling works are to be undertaken on areas of scattered trees, hedgerow and scrub at the Site, or overhanging woodland vegetation, these should be performed either before early March or after late August in order to avoid the main bird nesting season. If, however, Site clearance works are deemed necessary during the nesting period an experienced ecologist will be required to check the Site habitats immediately prior to works commencing to confirm that no nesting birds will be affected by the proposed works. <u>Bats</u> Any proposed management works to the trees assessed as having low BRP should be completed under a method statement which could include a single dawn survey completed during the active bat season (April – October, inclusive) on the morning prior to the works being undertaken, or alternatively a licenced bat ecologist trained to use specialist tree climbing equipment could undertake a thorough inspection of the potential roost features immediately prior to works commencing. New planting should provide green corridors and linkages both through the Site and around its boundaries. The detailed lighting design on Site should be functional and directional and in line with current guidance. It should avoid excessive up-lighting and light spill. The vegetation retained or planted on Site should be unlit. <u>Badgers and Hedgehogs</u> ▲ As is general good practice for Sites where badgers and hedgehogs may occur, it is recommended that no excavations or trenches are left uncovered overnight during the development works in order to prevent any mammals from becoming trapped. Alternatively, ramps can be provided to enable them to climb out of trenches or excavations; ▲ Care should also be taken during removal of the dense scrub for the presence of hedgehogs. If a hedgehog is found it should be carefully lifted to a place of refuge outside the working area; and ▲ Fencing around the Site should allow access and egress for hedgehogs. This requires 13 cm^2 access to be left in a coordinated network to enable access and egress between suitable foraging habitats throughout the Site, and to the wider landscape. Hedgehogs require territories of up to 1 km and, as such, it is important

	large feeding areas are made available. Hedgehogs do not generally damage domestic gardens and this size of hole is not large enough for most household pets, or rabbits, to use. Himalayan balsam, Snowberry, and Horsetail ▲ It is recommended that the balsam is treated next season before it sets seed (approximately July/ August) to prevent it spreading further. It should be either hand pulled and the waste material disposed of in a responsible way, as if left on the ground it re-roots, or sprayed off by a trained professional. Care should be taken by individuals entering the Site to prevent the spread of the seeds on clothing and footwear; ▲ Any clearance of snowberry should be done appropriately to prevent its spread off-Site; and ▲ A treatment plan to eradicate horsetail from the Site should be put in place immediately. **Site Protection** All works on Site should follow an appropriate working methodology to avoid inadvertent damage to any habitats and associated fauna retained on, or surrounding, the Site. This includes the following: ▲ All works should be undertaken to current Pollution Prevention Guidance (PPG). Although formally withdrawn, the Environment Agency PPG 5 remains the industry best practice until replaced; ▲ Best practice measures should be followed to prevent dust and noise pollution to the adjacent habitats, Spring Wood in particular. Lighting during the construction phase should also be directional to prevent additional light spill; and ▲ Retained trees will be protected following advice provided within the Delta-Simons arboricultural report (report reference 18-0179.02) following BS 5837:2012. **Site Enhancements** A list of recommendations to enhance the biodiversity of the Site are found in Section 6.0 of this Report.
This Ecological Appraisal Executive Summary is intended as a summary of the assessment of the Site based on information received by Delta-Simons at the time of production. This Executive Summary should be read in conjunction with the full Report.	

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1.0 Introduction

1.1 Purpose and Scope of the Survey

Delta-Simons Environmental Consultants Ltd was instructed by Trafford Housing Trust ('the Client') to undertake a Preliminary Ecological Appraisal (PEA) and protected species surveys including a Bat Roost Potential (BRP) Survey, Bat Transect Surveys, and a Badger Survey of land east of Clitheroe Road in Whalley, Lancashire (hereafter referred to as the "Site"). In addition, public land immediately surrounding the Site was surveyed, where access allowed. The survey was undertaken to inform a planning application for residential development at the Site.

The aims of the PEA were to:

- Identify habitat types on the Site using the standard methodology devised by the Joint Nature Conservation Committee (JNCC, 2010);
- Identify areas of potential for protected species/ species of conservation concern within the Site;
- Identify areas of potential for protected species/ species of conservation concern immediately outside the Site;
- Identify any invasive plant species included within Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 (as amended);
- Prepare a Phase 1 Habitat Plan of the Site; and
- Propose recommendations for further surveys, where appropriate.

The Site location and the Site red line are shown in Figure 1.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SD 73777 36423, in the north-east of Whalley in Lancashire. The Site covers an area of approximately 10.4 hectares (ha) and comprises three grassland fields with a dividing access track and stream in the south-west. An active construction area is present in the south-west of the larger field and a small concrete storage area is located in the north-east. Hedgerows form a number of the boundaries, and scattered trees are present amongst these and around the field. Areas of woodland also border the eastern boundary. The area surveyed comprised the Site and areas within Spring Wood accessible from public footpaths. A stream flowed through the Site which contained patchy standing water for much of its length whilst a smaller tributary flowed into it from the north.

The Site is surrounded by grassland fields and sports pitches to the north and Spring Wood to the east. Further grassland and woodland lie to the south-east, and residential properties within Whalley border the Site to the south and west. These include a recently built residential development on Springwood Drive with an area of adjacent grassland.

The Site layout is shown in Figure 2.

1.3 Proposed Development

It is understood from the drawing provided that the Site is to be developed for residential end use, with up to 188 dwellings proposed, with new access from Springwood Drive in the north-west connecting into a recent development and onto the A671 in the north-east. Attenuation ponds and landscaping divides the development, with Public Open Space in the north-east, and forming a buffer along the eastern boundary (Figure 3).

2.0 Legislation & Policy Summary

Specific habitats and species of relevance to the Site receive legal protection in the United Kingdom under various pieces of legislation, including:

- National Planning Policy Framework (NPPF, 2018);
- The Conservation of Habitats and Species Regulations 2017;
- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- The Natural Environment and Rural Communities Act (NERC) 2006;
- The Hedgerow Regulations 1997; and
- The Protection of Badgers Act 1992.

Where relevant, this appraisal takes account of the legislative protection afforded to specific habitats and species. The legislation surrounding each faunal or floral species or group is provided in Appendix A and references are included in Appendix B.

3.0 Methodology

The PEA has been undertaken to the following current guidance: CIEEM (2017), Guidelines for Preliminary Ecological Appraisal; and BS 42020: 2013 Biodiversity. Code of Practice for Planning and Development.

3.1 Desk Study

Data search

A data search was undertaken to identify statutory and non-statutory designated sites and records of protected and notable species.

In July 2018, available records of protected and notable species were collated from the local record centre, Lancashire Environment Record Network (LERN), along with the non-statutory designated sites within a 2 km radius of the Site centre. A search for international statutory designated sites for nature conservation within 6 km of the Site was undertaken, together with a search for national statutory designated sites for nature conservation within 2 km of the Site centre, using the Multi-Agency Geographic Information for the Countryside (MAGIC) website.

A search for statutory sites designated for bats, and for granted EPSL for bats, within a 2 km radius of the Site centre was performed using the Multi-Agency Geographic Information for the Countryside (MAGIC) website.

In addition, free and publicly accessible Ordnance survey maps and aerial photographs were searched for waterbodies on, or within, 500 m of the Site boundary. This information has been used to assess the Site for its potential for amphibians, the results of which are found in Section 4.3.

Review of Previous Survey

The Land off Clitheroe Road, Whalley, an Ecological Appraisal, prepared by Baker Consultants in March 2012 was reviewed of the adjacent plot of land.

3.2 Survey

The habitats on the Site and on adjoining land to 100 m, were surveyed on 19th July 2018 by two Delta-Simons ecologists. Since access was not permitted to the surrounding land, it was visually assessed from the Site boundary.

The following was undertaken during the survey:

- Habitats were classified and mapped using the standard JNCC Phase 1 habitat classification and methodology (JNCC, 2010). Dominant plant species were recorded in each different habitat. The plant species nomenclature followed that of Stace (2010);
- Terrestrial habitats on-Site were surveyed for the presence of, or potential for the following protected or notable species:
  - Birds: All species with special reference to key species (such as those on Schedule 1 of the WCA, 1981 (as amended), England Biodiversity Priority Species (EBP) (previously UK Biodiversity Action Plan (UKBAP) species) and Birds of Conservation Concern (BoCC) (Eaton et al., 2015);
  - Amphibians: Great Crested Newt (GCN) *Triturus cristatus*;
  - Reptiles: common lizard *Zootoca vivipara*, adder *Vipera berus*, slow worm *Anguis fragilis* and barred grass snake *Natrix Helvetica*; and
  - Mammals: bat (all species) and badger *Meles meles*.
- Aquatic habitats were assessed for their potential to support, and any signs of otter *Lutra lutra*, water vole, *Arvicola amphibius* white clawed crayfish *Austropotamobius pallipes*, GCN, and barred grass snake; and
- Widespread terrestrial and aquatic invasive species listed on Schedule 9 of the WCA 1981 (as amended) were recorded. These are Japanese knotweed, *Fallopia japonica* giant knotweed *Fallopia sachalinensis*

hybrid knotweed, *Fallopia baldschuanica*, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, and New Zealand pygmyweed *Crassula helmsii*.

3.2.1 Birds

Visual and/ or audible identification was made of any birds on the Site or flying over the Site during the survey period. Suitable habitat was, where possible, inspected and any evidence of old nesting activity was recorded.

3.2.2 Amphibians

The terrestrial habitats at the Site were assessed for their potential to support amphibian species and a desk search was undertaken (see Section 3.1).

3.2.3 Reptiles

A cold-searching method was employed which involved identifying suitable habitats for reptiles within areas on-Site and immediately off-Site. Natural and artificial refugia (logs, large debris and so on) were lifted and examined for the presence of reptiles and their field signs (such as shed skins).

3.2.4 Bats

BRP

An assessment of BRP of trees on the Site was completed by two surveyors (one of whom holds a Natural England Bat Survey Licence), and with reference to the guidelines specified within Natural England's Bat Mitigation Guidelines (2004), and the Collins (2016) Good Practice Guidelines. The survey method enables each tree to be categorised in relation to its value for roosting bats. In addition, the suitability of the on-Site habitats to support foraging and commuting bats was also assessed (see Appendix C).

All of the trees on, or within close proximity (approximately 10 m) to, the development footprint at the Site were assessed for their potential to support a bat roost, where access allowed. Binoculars were used to check the trees for suitable features to support bats such as cracks, crevices and hollows in the trunks or branches as a result of decay, weathering or pruning. These are all features more commonly associated with mature or semi-mature trees. Furthermore, these features can be concealed by ivy *Hedera helix*, or dense woody ivy can itself provide the necessary features to support an occasional bat roost.

Any trees that had features suitable to support a bat roost were also checked for signs of bats, such as droppings, scratch marks and staining around possible entrance holes. All tree inspections were undertaken by visual observation, aided by binoculars, from ground level, and where possible, using ladders and endoscope to allow a closer inspection of potential roost features.

Transect Survey

Dusk transect surveys were carried out in July and August 2018 to assess bat activity associated with the different habitats at the Site. The dusk surveys commenced approximately at sunset and ceased two hours following sunset.

Two surveyors each walked the predetermined route shown in Figure 4, following the letters in order (A-I) until the two-hour survey period was complete. The bat transects were walked at a steady pace with each transect route including nine spot counts (A-I), where the surveyors remained stationary for three minutes. The location of each stop was chosen to incorporate different areas of the Site and different habitat types. The locations of the spot counts are shown in Figure 4. The surveyors were equipped with Duet bat box detectors or Bat box Baton XD detectors, and Edirol recording equipment. Records were made of any bats seen and/ or heard and the species, the time, location and direction of flight. Table 1 below details timings and weather conditions at the time of surveys.

Table 1 - Timings and Weather Conditions of the Transect Surveys

Date	Timing	Weather
19/07/18	21:28 – 23:28 (sunset 21:28)	16 °C, dry, 1/8, F1
14/08/18	20:42 – 22:42	21°C, dry, 8/8, Still

With reference to the Bat Mitigation Guidelines (2004), Collins (2016) and professional judgement the weather conditions during the transect surveys were considered suitable for bat activity.

Automated Bat Detector Survey

SM2 remote bat detectors were deployed in two fixed locations in July and August 2018 for a minimum of five nights. The detectors were positioned in both open areas and in locations associated with linear habitat features to enable bat activity between the different habitats to be compared. The locations of the remote bat detectors are provided in Table 2, and in Figure 4.

Table 2 - Location of Static Detectors

Location	Grid Reference	Description
1	SD 7371 3635	Located at the base of a tree along the central stream
2	SD 7393 3662	Located in the northern grassland field adjacent to the ash tree with low BRP on the northern boundary

Bat activity recorded is presented in passes per night per month. This is calculated as follows:

Bat Activity Index = Number of Bat Passes/ Night

Table 3 - Details of Surveyors

Name and Experience of Surveyor	Preliminary Habitat Assessment	BRP	Activity Surveys
Pete Morrell MCIEEM, (Natural England Licence No. 2015-14429-CLS-CLS) 10 years' survey experience	✓	✓	✓
Jennifer Britt ACIEEM, Natural England Licence No. 2015-13633-CLS-CLS, 7 years' survey experience			✓
Catherine Bywood ACIEEM, 4 years' survey experience	✓	✓	✓

3.2.5 Badgers

A suitably experienced ecologist undertook a systematic search of suitable habitat on the Site and within 200 m radius of the Site boundary, where suitable habitat was present and access allowed, for evidence of badger activity on 19th July 2018. Sett entrances and other signs of badger activity were searched for, including spoil heaps, bedding material, runs, footprints, hairs, scratching posts and feeding signs. All observations were marked on an appropriately scaled map. The survey was undertaken in accordance with Harris *et al*. (1989).

3.2.6 Otters

Suitable habitats for otter on-Site and immediately off-Site were identified and assessed.

3.2.7 Water Voles

Suitable habitats for water vole on-Site and immediately off-Site were identified and assessed.

3.2.8 Other Protected or Notable Species

Where applicable, during the survey, evidence was recorded of any other protected or notable species, including England Biodiversity Priority (EBP) species. Habitats with the potential to support additional protected or notable species were also recorded, if present, during the survey.

3.2.9 Invasive Species

The occurrence of any invasive plant species on the Site was identified in terms of species and stand size.

3.2.10 Hedgerows

An assessment of any hedgerows at the Site, which will be adversely affected by the proposed development, was undertaken using the standard hedgerow survey methodology outlined in the Hedgerow Regulations 1997. The purpose of the assessment was to ascertain whether the hedgerows are classified as 'nationally important' and, therefore, protected under the Hedgerow Regulations 1997. The assessment involves a scoring system which relies on particular features, number of woody and floral species present within the hedgerow habitat, and the age of the hedgerow.

3.2.11 Limitations to the Survey

There were no limitations to the survey in terms of access, timing and weather conditions.

The baseline conditions described in this report were accurate at the time at which the survey was undertaken. Should at least two years pass by, and/or conditions on-Site change prior to the commencement of works, an update survey should be undertaken.

4.0 Results

4.1 Desk Study

The pertinent information from the data search is set out below for designated sites, whilst species are discussed in the relevant species sections. Full results of the LERN data search are available to the Client on request.

Designated Sites

The results of the MAGIC data search and the LERN desk search indicate that there are no internationally designated sites within 6 km of the Site.

Two Sites of Special Scientific Interest (SSSI), statutory designated sites, lie within 2 km of the Site. Light Clough SSSI is located 1.5 km north-east of the Site boundary and Cock Wood Gorge SSSI is 1.8 km south-east and both are designated for their geology such that they are not considered further in this Report.

A total of 12 non-statutory sites, all Biological Heritage Sites (BHS), were identified within 2 km of the Site. Table 4 below sets out the designated sites identified.

Table 4 - Non-Statutory Designated sites within 2 km of the Site centre

Site Name	Designation	Distance and Direction from Site Boundary	Designation Criteria Summary
Spring Wood	BHS	Adjacent to the eastern boundary	An area of wood and scrub – description missing from data sheet
Calder Bank, Broken Brow	BHS	260 m south	Scrubby continuation of Sir Johns Wood along the River Calder. It supports rough horsetail *Equisetum hyemale* listed as vulnerable on the Lancashire Red Data List of Vascular Plants
Sir John's Wood and Lords Park Wood	BHS	380 m south-east	An area of wood and scrub – description missing from data sheet
Planes Wood	BHS	740 m south-east	An area of wood and scrub – description missing from data sheet
Banks Wood and Marsh	BHS	850 m south	The BHS borders the River Calder and includes semi-natural ancient woodland, flushes, areas of alder carr, fen and grassland
Calderstones Hospital Woodland/ Railway Line	BHS	1.19 km north-west	A dismantled railway lies in the east of the BHS whilst in the west is alder-carr woodland, an adjacent swamp and grassland
Thornber Wood	BHS	1.25 km east	Small woodland with a stream flowing through, it contains a number of herb species indicative of ancient woodland

Barrow Brook Field	BHS	1.43 km north-west	An area of damp species-rich, semi-natural, neutral grassland adjacent to the railway with a belt of trees on the eastern boundary
Hard Hill Common	BHS	1.49 km north-west	Formerly common land, the BHS comprises flushes alongside the stream crossing the north and an area of woodland
Brocklehurst Wood	BHS	1.58 km east	Small semi-natural woodland situated along Sabden Brook
Old Park Plantation, New Marls Wood and Sager Heys Plantation	BHS	1.73 km south-east	Features woodland, scrub, fen and swamp and is known to support birds - description missing from data sheet
Cock Wood and Wheatcroft Wood	BHS	1.79 km south-east	Ancient semi-natural woodland divided by grassland. Sabden Brook runs south through the woodland and has created Cock Wood Gorge SSSI

Review of Previous Surveys

The Ecological Appraisal for the adjacent site, now completed, included an Extended Phase I Survey, breeding bird survey, bat roost assessment, bat activity survey, badger survey, water vole survey white-clawed crayfish habitat assessment and hedgerow assessment. The site comprised grazed grassland with hedgerows, scattered scrub and a stream. GCNs were not mentioned at all within the Report.

The breeding bird survey covered the site and adjacent fields and recorded 28 bird species, blackbird were confirmed to be breeding and a further seven were identified as probable breeders. No Schedule 1 species were recorded, however, song thrush is a BoCC Red List species and were thought to probably be breeding in the hedgerow and trees. No trees were identified to support roosting features for bats and only two species were recorded during the transect surveys, common pipistrelle and soprano pipistrelle. Bats were noted heading towards Spring Wood commuting along the stream (anticipated to be within our Site boundary). No signs of badger were recorded on-Site or within Spring Wood and no evidence of water vole or otter were noted on the stream. The stream, and that on our Site, were assessed as offering limited potential for white clawed crayfish, however, given the depth of the water it was thought unlikely they were present. Habitats on the site were assessed as being unsuitable for reptiles.

4.2 Survey

4.2.1 Habitats on Site

The Site is characterised by grassland fields divided by an access road and stream with an active construction storage/ parking area in the west of the Site. Hedgerows, woodland and scattered trees are present around the boundaries and an area of scrub lies in the west.

Figure 2 shows the extent of habitat types and boundary features. Descriptions of the habitat types and dominant plant species found at the Site are provided below. Habitat descriptions and codings are by broad habitat type, as listed in the Phase 1 Habitat Survey Manual (JNCC, 2010). Target Notes are listed in Appendix D and photographs of the Site survey are located in Appendix E.

Habitats recorded on Site are:

Dense Scrub

Patches of dense bramble *Rubus fruticosus* agg. and raspberries *Rubus idaeus* were present within the smallest field in the west (Photograph 1) and a further patch was located in the south-western corner.

Scattered Scrub

Occasional buddleia *Buddleia davidii*, bramble and dog rose *Rosa canina* were present along the western boundary of the southern field. Hawthorn *Crataegus monogyna* was present amongst the trees along the edge of the smaller stream in the west of the Site.

Broadleaved Scattered Trees

Within the largest field were a mature pedunculate oak *Quercus robur* and ash *Fraxinus excelsior*, and along the banks of the stream were trees including elm *Ulmus procera*., pedunculate oak, sycamore *Acer pseudoplatanus,* alder *Alnus glutinosa* and goat willow *Salix caprea* (Photograph 2). Beneath them towards the west was an area of snowberry *Symphoricarpos albus* (TN1).

Along and overhanging the western stream was occasional immature elm, sycamore, goat willow and ash.

Poor Semi-Improved Grassland

Three unmanaged fields of varying size were present at the Site. The smallest field in the west of the Site supported frequent false oat grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus* and occasional meadow foxtail *Alopecurus pratensis.* Within the grassland was also abundant common nettle *Urtica dioica*, great willowherb *Epilobium hirsutum* and creeping thistle *Cirsium arvense*, and frequent blackthorn *Prunus spinosa* saplings and cleavers *Galium aparine*.

Within the southern field was abundant Yorkshire fog and false oat grass, frequent cock's-foot *Dactylis glomerata* and perennial ryegrass *Lolium perenne* and occasional sweet vernal grass *Anthoxanthum odoratum*, bent *Agrostis* sp. and meadow foxtail. Frequent broadleaved dock *Rumex obtusifolius* and occasional soft rush *Juncus effusus*, creeping thistle and ragwort *Senecio jacobaea* were also present, Around the field edge with the residential properties were also common nettle and great willowherb whilst Himalayan balsam *Impatiens glandulifera* was present in the south-eastern corner (TN2) and horsetail *Equisetum arvense* towards the northern extent (TN3).

The largest field had previously been grazed and supported frequent meadow foxtail, cock's-foot, false oat grass and creeping buttercup *Ranunculus repens.* Timothy *Phleum pratense*, crested dogs-tail *Cynosurus cristatus*, hard rush *Juncus inflexus*, ragwort, perennial ryegrass, ribwort plantain *Plantago lanecolata*, white clover *Trifolium repens* and dandelion *Taraxacum* agg.were all occasionally seen (Photograph 3). Creeping thistle and broadleaved dock were abundant throughout, occasional hogweed *Heracleum sphondylium* was noted, and Himalayan balsam (TN2) and cleavers were both locally common towards the south-eastern corner with horsetail also noted near the dry stone wall in the north (TN3). In the north-eastern corner was an area dominated by common nettle and used to store old tyres. Within the construction area was a band of grassland approximately 10 m wide containing the same species composition as the larger field.

Running Water

A stream flowed parallel to the access track through the Site (Photograph 4). At its widest it was approximately 1.5 – 2 m and narrowed to 1 m in places, it had a pebble base and earth bank sides that were reinforced in the west of the Site close to the residential properties. Likely due to the dry weather, much of the stream at the time of the survey supported patchy standing water with occasional sections where it was slowly flowing. The banks supported patchy tall ruderals and herbs including common nettle, cleavers and fescue *Festuca* sp. and occasional burdock *Arctium lappa*, ground elder *Aegopodium podagraria*, pendulous sedge *Carex pendula*, garlic mustard, *Alliaria petiolata,* herb Robert *Geranium robertianum,* male fern *Dryopteris filix-mas* and hogweed. Himalayan balsam was also noted throughout the length of the stream (TN2).

A smaller tributary joined the stream towards the west of the Site, it was approximately 0.5 m wide and up to 10 cm deep and was slow flowing in places (Photograph 5). The banks were grassed with occasional overhanging

scrub, although, a section of the stream had been scraped back as part of the construction works leaving banks of bare earth.

Intact Species-Rich Hedgerow

Along a portion of the north-western boundary of the southern field was a hedgerow showed signs of recent management and had a height of 5 m and a maximum width of 4 m. Blackthorn *Prunus spinosa*, elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and cherry *Prunus* sp. were present, planted in a double staggered row (Photograph 6).

Intact Species-Poor Hedgerow

Along the northern boundary was unmanaged hedgerow approximately 8 m high and 4 m wide containing hawthorn, ash, elm, and dog rose, with common nettle and lords and ladies *Arum maculatum* beneath.

Defunct Species-Poor Hedgerow

Along a portion of the western boundary of the southern field was a defunct hawthorn hedgerow with occasional elder *Sambucus nigra* present.

Hedgerow with Trees

Along a portion of the eastern boundary was an unmanaged hedgerow comprising sycamore, hawthorn, hazel, elder and elm, with an understorey of bramble and Himalayan balsam (TN2). It was unmanaged standing approximately 5 m high and 4 m wide.

Fence

Wooden panel fences formed the western and south-western boundaries with the residential properties, whilst the southern boundary comprised a mixture of wooden panels and post and wire fencing. Post and rail fencing continued around the off-Site utilities building, adjacent to the stream, and along a portion of the access track. Temporary Heras fencing surrounded the construction area with scrub and ruderals comprising bindweed, common nettle, bramble and cleavers growing through it.

Wall

A short length of 1 m high dry stone wall was present on the northern boundary with the sports field. Concrete walls with metal posts approximately 2 m high were present around three aspects of the hardstanding in the north-eastern corner, which was used to store sileage. A small length of breeze block wall was present on the western boundary with a residential property.

Dry Ditch

The northern hedgerow was growing parallel with a dry ditch to a maximum depth of 1 m and supporting grassed banks. The base of the ditch supported terrestrial vegetation to indicate that it had not supported water in recent months.

Bare Ground

An area currently being developed for attenuation ponds was present in the south-west of the largest field (Photograph 7). Much of the ground comprised bare earth for materials storage and gravelled access and car parking.

Hardstanding

A single-track access road initially tarmacadam and becoming crushed stone crosses through the Site southern portion of the Site west- east to an off-Site utilities building (Photograph 2). An area of concrete is present in the north-east of the Site (Photograph 8).

4.2.2 Habitats immediately surrounding the Site

North of the field was an uncut grassland field and a managed field used for sports pitches. East of the Site is Spring Wood (Photograph 9), a broadleaved woodland, which continues beyond the A671, and supports pedunculate oak, ash, elm, hawthorn and occasional rowan *Sorbus aucuparia* with an understorey of laurel, elder, bramble, male fern, Himalayan balsam and glaucous sedge. An area of unimproved grassland leads towards the underpass beneath the A671 accessing the remainder of the woodland on the other side of the road. Species within this included barren brome *Anisantha sterilis*, tufted hair grass *Deschampsia cespitosa*, pendulous sedge, meadowsweet *Filipendula ulmaria* and creeping buttercup. A dry ditch runs parallel to the Site and the on-Site stream continues through the woodland. A utilities building comprising yellow stone with a pitched slate tile roof was present adjacent to the east of the Site at the end of the access track. To the south-east is further grassland and another area of broadleaved woodland with an understorey dominated by Himalayan balsam and horsetail borders the south-eastern corner. Species within the woodland comprise elm, hawthorn, sycamore, pedunculate oak and goat willow with occasional rowan, hazel and holly *Ilex aquifolium*. To the south and south-west of the Site are residential properties within Whalley with trees overhanging the Site including holly, Norway spruce *Picea abies*, Nordman fir *Abies nordmanniana*, elm, and cherry *Prunus* sp. whilst to the west are new build properties on Southwood Drive, and a small area of unmanaged grassland and scrub with Clitheroe Road beyond.

4.3 Notable and Protected Species Assessment Relevant to the Site

Birds

Recent records of 13 bird species were provided within the data search, and of these only Goshawk *Accipiter gentilis* is listed on Schedule 1 of the WCA. Six of the 13 bird species are listed on the BoCC Red List (Eaton et al., 2015), which are herring gull *Larus argentatus*, grey wagtail *Motacilla cinerea*, house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos* and lapwing *Vanellus vanellus,* and a further four species are listed on the BoCC Amber List, swift *Apus apus*, reed bunting *Emberiza schoeniclus*, dunnock *Prunella modularis* and bullfinch *Pyrrhula pyrrhula*. The remaining two species, grey heron *Ardea cinerea* and sand martin *Riparia riparia*, both appear on the BoCC Green List. The closest record to the Site is of house sparrow located within a residential garden bordering the southern boundary.

Habitats featured on the Site suitable for nesting birds, include the hedgerow, scattered trees, scrub and over hanging off-Site woodland. Nesting woodpigeon *Columba palumbus* were noted in a tree along the access track into the Site.

Bird species recorded at the time of the survey were woodpigeon, barn owl *Tyto alba*, swift *Apus apus*, chaffinch *Fringilla coelebs*, magpie *Pica pica*, carrion crow *Corvus corone*, blackbird *Turdus merula*, goldfinch *Carduelis carduelis*, house sparrow, dunnock *Prunella modularis*, kestrel *Falco tinnunculus*, pheasant *Phasianus colchicus*, great tit *Parus major* and wren *Troglodytes troglodytes*. Barn owl are listed on Schedule 1 and house sparrow are listed on the Red List of BoCC. It should be noted that this is not a comprehensive inventory of the bird species which may be present at the Site. Barn owl were seen during the first transect survey foraging along the northern edge of the Site within the grassland field, and an owl (not identified to species) was also seen during the second survey heading southwards across the northern grassland before flying over the treeline with the central drain.

Great Crested Newts

A total of 40 GCN records were within the data search, 34 from within the last 10 years, all but one were from 2011. The closest records are from 270 m north-west of the Site in 2011, fragmented to the Site by residential development. Three records of GCN were from a reservoir 360 m north-east, however, these were historic, from 1985, and do not represent current species distribution.

A total of 26 recent palmate newt *Lissotriton helveticus* records were provided from 2011, the closest from 120 m west of the Site. Twelve smooth newt *Lissotriton vulgaris* records were identified all from within 270 - 300 m west in 2011. Fouty-one recent common frog *Rana temporaria* records were within the data search including one on-Site in 2011 and three recent common toad *Bufo bufo* records were provided, the closest two from 610 m south-west in 2011.

A review of aerial photographs and OS maps revealed that there are seven possible ponds within 500 m of the Site boundary:

- A potential pond, the location of the closest palmate newt record, may lie within a garden on Brookes Lane 120 m west of the Site but is separated from the Site by other gardens;
- At least one pond lies within a residential garden on Limefield Avenue 270 m west of the Site but is separated from the Site by properties and roads within Whalley;
- Two more ponds lie beyond the A671, one small pond 220 m north-east within grassland and one a reservoir 360 m north-east within further woodland with historic GCN records, these are separated from the Site by the A671 and lie within suitable habitat;
- A pond is present within Spring Wood approximately 300 m east of the Site boundary (Photograph 10), and palmate newts have been recorded here. At the time of the survey it had virtually dried leaving approximately 3 m^2 of very shallow water and an area of mud preventing a full HSI assessment. When full it would be approximately 200 m^2 in size and there did not appear to be any evidence that aquatic or marginal plants had been present. The pond does drain into a shallow stream that flows through the wood which is culverted beneath the A671 limiting connectivity to the Site, as the A671 passes through the wood creating a dispersal barrier other than for a rocky underpass beneath the road;
- A pond also lies 490 m north-west of the Site but is separated from the Site by the town of Whalley; and
- The seventh potential pond is located within a garden along Clitheroe Road where a record of a palmate newt was recorded within the data search 180 m west of the northern boundary hedgerow. Connectivity to the Site from this pond is limited to the hedgerow.

The Site offers suitable terrestrial habitat for foraging, sheltering and dispersing amphibians, however, it does not offer breeding opportunities. Given that a comprehensive GCN survey was undertaken in 2011 to provide the records held by the data centre, and all recent records are off-Site to the north-east and fragmented from the Site by development, and GCNs were not considered a constraint to the adjacent development proposals, GCNs are not considered to be a constraint at this Site and are not considered further within this Report.

Reptiles

No recent records of reptiles were within the data search. No evidence of reptiles was recorded on the Site. The grassland would offer potential cover and foraging for reptiles, however, from aerial photographs it shows that the field had previously been sheep grazed, which would limit the time for reptiles to colonise if present in the local area.

Reptiles are not considered to be a constraint at this Site and are not considered further within this Report.

Bats

A review of the MAGIC website in July 2018 revealed a single granted EPSL within a 2 km radius of the centre of the Site. The licence was for common pipistrelle between 2011 and 2013 and further available details are shown in Table 5.

Table 5 – Granted EPSL within a 2 km radius of the centre of the Site

Distance from the Site	EPSL Case Reference	Damage to Breeding Site	Damage to Resting Place	Destruction of Breeding Site	Destruction of Resting Place
1.05 km north	EPSM2011-3043	-	-	N	Y

The following bat records were provided within the data search:

- Two records of soprano pipistrelle *Pipistrellus pygmaeus*, the closest and most recent from 360 m south of the Site in 2014;
- A single noctule *Nyctalus noctula* record from 360 m south in 2014;
- A single unidentified bat from 360 m south in 2014;

- Four records of common pipistrelle *Pipistrellus pipistrellus,* the closest again from 360 m south in 2014; and
- Four records of pipistrelle *Pipistrellus* sp. including two roosts, one located 1.13 km north in 2009, and a second 1.16 km north-west in 2008.

BRP

A small number of trees at the Site supported features suitable for roosting bats and these are shown on Figure 5. In addition, a number of trees within the off-Site woodland (Spring Wood) to the east supported bat boxes.

- A mature oak in the south of the large field (Grid reference SD 73807 36360) supported significant damage to the trunk creating a large cavity as well as a number of dead branches supporting splits (Photograph 11), it was assessed as offering moderate BRP.

The following ten trees were assessed as offering low BRP:

- A mature oak adjacent to the access track (SD 73622 36433) in the west supported splits on a dead branch and on the trunk approximately 8 m above the ground;
- Oak adjacent to the confluence of the streams (SD 73658 36412) supported a narrow 2 m split on the northern aspect from the base of the trunk (Photograph 12);
- A mature oak near the confluence of the streams supported cracked and lifted bark on the trunk (SD 73669 36407);
- A semi-mature ash north of the track (SD 73699 36381) supported ivy cladding and a dead stem with splits at one end of a branch;
- An alder on the stream side was ivy clad potentially offering gaps behind or disguising damage;
- An ash (SD 73783 36336) with a north-easterly facing dead branch supporting holes approximately 2 m above ground level was present on the stream side in the east of the Site (Photograph 13);
- An ash (SD 73880 36338) off-Site on the edge of Spring Wood towards the south-eastern corner of the larger field supported two bat boxes, one still supported a lid whilst one had lost it leaving it exposed;
- A sycamore (SD 73911 36377) on the eastern boundary within the edge of Spring Wood supported two bat boxes, one of which was still functional and supported a lid;
- An oak (approximately located at SD 73927 36410) within Spring Wood overhanging the larger field supported two bat boxes, although both had lost the lids, and a rot hole where a branch had been previously, it was approximately 3 m high facing onto Site (Photograph 14); and
- An ash on the northern boundary supported damage to an easterly facing branch offering low BRP.

Transect Surveys

The results of the July transect survey is summarised in Table 6, below, and illustrated in Figure 6. The raw data is included in Appendix F.

Table 6 – Summary of the Transect Survey Results July - August 2018

Month	Transect
July	Five species of bat were recorded during the survey. Common pipistrelle, soprano pipistrelle, and noctule were frequently recorded, with occasional brown long-eared and Daubenton's passes. The first bat was a noctule recorded flying over the woodland adjacent to the south-eastern corner at 21:44, 16 minutes after sunset. Activity was recorded throughout the transect route with particular activity noted along the edge of Spring Wood with a common pipistrelle also recorded flying along a ride through the woodland towards the Site. Brown long-eared and noctule were recorded flying over the grassland field, whilst common pipistrelle were seen along the central access track parallel to the stream.

August	Four bat species were recorded during the survey with common pipistrelle and soprano pipistrelle both frequently recorded, and occasional noctule and a single recording of Daubenton's bat. The first bats were noted 8 minutes after sunset heading eastwards along the access track. Activity was recorded throughout the survey, although, few bats were seen due to the cloudy conditions.

The Site was frequently used by bats along the woodland edges, hedgerow and streams, although, bats were still recorded to commute and forage over the grassland. Habitats on-Site also link into the areas of woodland adjacent to the eastern boundary as well as the grassland adjacent to the northern and eastern boundaries. A common pipistrelle was recorded within a grassland ride through Spring Wood which opens out onto the Site and also leads beneath the A671. Early on during the August transect common pipistrelle and soprano pipistrelle were recorded foraging along the track in the west of the Site suggesting there is a roost in close proximity to the Site.

The Site is mainly unlit which contributes to it potentially being used by a greater range of species, although, security lighting was noted around the buildings within the construction area.

Automated Bat Detector Survey

Four confirmed species, common pipistrelle, soprano pipistrelle, noctule and Brown Long-Eared (BLE) *Plecotus auritus,* were identified on the static detectors as well as a myotis species, which is consistent with the transect surveys. Location 2 recorded more average passes per night, however, the results at this location also varied more with one night over 600 common pipistrelle passes being recorded and a second night only one pass was heard. Location 1 by contrast had consistent results with a single myotis recorded each night during July and noctule passes only varying between three and twelve per night across July and August.

The first bat recorded at Location 1 was again more consistent. In July the earliest bat was a common pipistrelle which was recorded across all five surveyed nights, with the earliest bat at 17 minutes after sunset and the latest, 30 minutes. In August the timings varied more, however, the earliest bat, also a common pipistrelle, was recorded at 13 minutes past sunset suggesting a roost close by. At Location 2, the earliest bat was a soprano pipistrelle recorded at 22 minutes after sunset, and for three further nights in July the first bat was recorded within the first 28 minutes after sunset. The earliest bat recorded at Location 2 in August was a common pipistrelle at 27 minutes past sunset.

A summary of the automated detector surveys is included in Appendix G.

Badgers

Three records of badger were within the 2 km search radius, two of these are recent and date from 2014 and 2015 (details are confidential due to welfare issues).

The Site did not support any evidence to indicate that badgers were using or inhabiting it. There were no sett entrances, latrines, snuffle holes, or badger dung found within the survey area. A small number of worn paths were seen around the northern field, particularly in the north and east, with gaps under the eastern boundary fence, however, there was no evidence to confirm they were made by badger. Occasional worn paths were noted leading through Spring Wood within an area accessed by the public with no evidence of sett digging or other signs of badger.

Otters

A single record of otter was provided on the River Calder 1.23 km west of the Site in 2015.

Neither stream was deep enough for otter to swim and the shallow water also restricts the likelihood of foraging opportunities. The streams are also separated from the River Calder by a large culverted section beneath Whalley limiting potential otter movement to the Site.

There are no further recommendations for otter at the Site.

Water Voles

No recent records of water vole were within the data search. A single historic record was provided from the 1 km grid square a minimum of 1.1 km south in 1968 and does not represent current species population levels. Neither stream supported sufficient water for water vole to swim currently. The larger stream was also heavily overshaded with reinforced banks in places and limited suitable foraging vegetation and as such was assessed as being unsuitable for the species. The smaller stream did support grassed banks suitable for burrowing, however, as it joins the larger stream which is culverted through Whalley it is unlikely water vole will have colonised since the previous survey in 2010.

There are no further recommendations for water vole at the Site.

Other Protected Species

Two records of west European hedgehog *Erinaceus europaeus* were within the data search, both from 2013 and located within tetrads SD73H and SD73I. No evidence was recorded during the survey, however, the Site would provide foraging and shelter for the species, with access to additional habitat within Spring Wood.

Five records of brown hare *Lepus europaeus* were identified between 2012 and 2014 and locations of all but one were within tetrad squares within 2 km of the Site. The fifth record is from 1.57 km north of the Site in 2013. No signs of brown hare were noted during the survey and connectivity for the species to the Site is limited with a small number of adjacent fields and features including the A671 to the east, residential properties and the River Calder. There are no recommendations with regards to brown hare at the Site.

Invasive Species

Three recent records of Japanese knotweed *Fallopia japonica* were within the data search, the closest from approximately 900 m west of the Site in 2012.

Two recent records of giant hogweed were within the data search from approximately 1.6 km west on the River Calder in 2009 and 2011. Giant hogweed has been recorded in Spring Wood BHS approximately 100 m from the eastern Site boundary in 1988.

Twenty-one recent records of Himalayan balsam *Impatiens glandulifera* were provided, the closest from 95 m south of the Site. Himalayan balsam was recorded at the Site within the grassland and along the central stream (TN2), it was also dominant within the ground flora of the adjacent woodland.

Horsetail, a vigorous growing plant, was recorded within both the southern and northern fields whilst snowberry, a non-native vigorous species, was recorded adjacent to the central stream.

Hedgerows

No hedgerow supported sufficient woody species or features to meet the criteria of ‘Important’ according to the Hedgerow Regulations (1997).

5.0 Evaluation

Designated sites-statutory sites/ non-statutory sites

No internationally designated site lies within 6 km of the Site. Twelve non-statutory designated sites lie within 2 km, all BHS, the closest is Spring Wood adjacent to the eastern boundary. A landscape buffer is to be left to separate the woodland from the development and to limit any disturbance effects both during the construction and operational phases of works. Care will be taken to ensure that appropriate planting is put in place to deter both people and their pets from the area. The proposals do include areas of POS, which are anticipated to limit increased footfall within the woodland. Therefore, there are not expected to be any significant adverse impacts upon any of the BHS as a result of the proposed development.

Habitats

The Site is characterised by grassland fields divided in the south by an access road and stream with an active construction storage area / car park in the west of the Site. Hedgerows, woodland and scattered trees are present around the boundaries and an area of scrub lies in the west.

Much of the grassland and scrub is to be developed on with a number of trees anticipated to be removed from along the central stream to create access into the southern field. Replacement trees will be incorporated into the new design and patches of species-rich grassland can be incorporated into areas of POS and managed appropriately. The landscape buffer to the adjacent woodland will incorporate a native dense scrub mix at the west, with new tree planting adjacent to the woodland. The incorporation of attenuation ponds will provide a potentially seasonally wet habitat at the Site.

Species

Habitats including the hedgerow, scattered trees, scrub and over hanging woodland provide opportunities for nesting birds. A small number of trees and the scrub are anticipated to be removed to facilitate the development, and, therefore, appropriate mitigation will need to be put in place to ensure that no active nests are disturbed. Replacement habitat will be included within residential gardens and POS at the Site, and bird boxes will also be installed on trees/ new buildings to ensure there is no loss in nesting potential at the Site. Barn owl were foraging along the northern edge of the Site and, as part of the development areas of open grassland should be left to provide continued foraging opportunities for the species.

Eleven trees at the Site and overhanging the Site provide roosting potential for bats, including a mature oak assessed as offering moderate BRP and the remainder low BRP. If any of these trees require removal further surveys would be required to determine the presence/ likely absence of roosting bats and the requirement for any mitigation. The boundary vegetation provides opportunities for foraging and commuting bats and should remain unlit. The results of the ongoing transect and static detector surveys should provide more information on the species present and activity levels at the Site, and this Report will be updated accordingly on completion of the works.

Although no signs of badgers were identified, there is potential for this species and hedgehogs to access the Site and potentially become trapped during the construction phase. As such measures should be in place to ensure neither species is harmed or trapped.

Himalayan balsam was identified within the grassland at the Site and the species spreads by seeds and, although, frequent along the banks of the stream and in the adjacent woodland, efforts should be made through management to prevent further spread of the species downstream and across the Site during the construction phase of works. Horsetail was recorded in the northern extent of the southern field and adjacent to the stone wall in the northern field, and snowberry was recorded along the stream banks. These species are vigorous plants capable of quickly spreading, and chemical treatment will be required to ensure their eradication from the Site prior to the commencement of any groundworks.

6.0 Recommendations

6.1 Further Survey Requirement

The findings of the initial Site assessment have identified habitat or potential for bats with a damaged pedunculate oak offering moderate BRP. As such, surveys to identify the presence or likely absence of these species are recommended to inform the development proposals. The survey requirements and their seasonal constraints are given in Table 7, below. All surveys listed (unless otherwise stated) are to current guidance.

Table 7: Scope of Recommended Protected Species Surveys

Species	Scope of Survey	Seasonal Constraints
Bats	Should pruning, or works within 5 m, be needed to the pedunculate oak assessed as having moderate BRP two nocturnal surveys would be required to determine the presence/ likely absence or roosting bats and the requirement for any mitigation.	Surveys between May-August (inclusive), with at least two weeks between survey visits.

6.2 Construction and Operational Phase Protection/ Enhancement Measures

Species Protection

Nesting Birds

- If any habitat removal or felling works are to be undertaken on areas of scattered trees, hedgerow and scrub at the Site, or overhanging woodland vegetation, these should be performed either before early March or after late August in order to avoid the main bird nesting season. Conflict with the development can be avoided by clearing the Site of any suitable nesting habitat outside of the breeding period in advance of any proposed works; and
- If, however, Site clearance works are deemed necessary during the nesting period an experienced ecologist will be required to check the Site habitats immediately prior to works commencing to confirm that no nesting birds will be affected by the proposed works.

Bats

- Any proposed management works to the trees assessed as having low BRP should be completed under a method statement which could include a single dawn survey completed during the active bat season (April – October, inclusive) on the morning prior to the works being undertaken, or alternatively a licenced bat ecologist trained to use specialist tree climbing equipment could undertake a thorough inspection of the potential roost features immediately prior to works commencing;
- Green corridors should be retained around the Site, and created through the Site to allow bats to commute and forage between on-Site and off-Site habitats. In particular, where the central treeline along the drain is lost to facilitate the new access road into the southern portion of the Site, replacement planting should be included to create linear features and provide linkages between habitats east and west of the new road; and
- The detailed lighting design on Site should be functional and directional and in line with current guidance (BCT, 2009; BCT, 2014; Stone, E.L. (2013). It should avoid excessive up-lighting and light spill. The vegetation retained or planted on Site should be unlit.

Badgers and Hedgehogs

- As is general good practice for Sites where badgers and hedgehogs may occur, it is recommended that no excavations or trenches are left uncovered overnight during the development works in order to prevent any mammals from becoming trapped. Alternatively, ramps can be provided to enable them to climb out of trenches or excavations;

- Care should also be taken during removal of the dense scrub for the presence of hedgehogs. If a hedgehog is found it should be carefully lifted to a place of refuge outside the working area; and
- Fencing around the Site should allow access and egress for hedgehogs. This requires 13 cm^2 access to be left in a coordinated network to enable access and egress between suitable foraging habitats throughout the Site, and to the wider landscape. Hedgehogs require territories of up to 1 km and, as such, it is important large feeding areas are made available. Hedgehogs do not generally damage domestic gardens and this size of hole is not large enough for most household pets, or rabbits, to use.

Himalayan balsam, Snowberry and Horsetail

- It is recommended that the balsam is treated before it sets seed to prevent it spreading further. Strimming should be undertaken and the waste material disposed of in a responsible way. Care should be taken by individuals entering the Site to prevent the spread of the seeds on clothing and footwear;
- Snowberry was recorded along the stream side and, although not a Schedule 9 invasive species under the WCA (1981, as amended), any clearance of the species should be done appropriately to prevent its spread off-Site; and
- Horsetail was recorded within the southern and northern fields. Whilst not listed as a Schedule 9 invasive species under the WCA (1981, as amended), this species spreads rapidly through rhizomes which can reach a depth of 2 m, making it particularly difficult to eradicate from soils. Therefore, in order to prevent further spread across the Site, it is recommended that a treatment plan is put in place immediately.

Site Protection

All works on Site should follow an appropriate working methodology to avoid inadvertent damage to any habitats and associated fauna retained on, or surrounding, the Site. This includes the following:

- All works should be undertaken to current Pollution Prevention Guidance (PPG). Although formally withdrawn, the Environment Agency PPG 5 remains the industry best practice until replaced;
- Best practice measures should be followed to prevent dust and noise pollution to the adjacent habitats, Spring Wood in particular. Lighting during the construction phase should also be directional to prevent additional light spill; and
- Retained trees will be protected following advice provided within the Delta-Simons arboricultural report (report reference 18-0179.02) following BS 5837:2012.

General Site Enhancement

Following the issue of the NPPF (2018), by the Ministry of Housing, Communities and Local Government, *"Planning policies and decisions should contribute to and enhance the local environment by (d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures…"* ; and, therefore, we recommend the following principles of design should be followed:

- Planting should aim to enhance retained or adjacent vegetation and be of native species, or those of known value to wildlife, sourced from local nurseries to enhance foraging opportunities for local birds and bats, by increasing the invertebrate diversity on-Site. It is recommended that where trees are planted, they have a functional understorey. A species list of recommended trees and shrubs is provided in Appendix H;
- Installation of bird nest and bat boxes on buildings or trees to be retained around the Site. These should include a variety to suit the birds recorded at the Site including house sparrow terrace, small holed nest boxes, open fronted boxes and swift bricks. Once the bat surveys have been completed the type of and number of bat boxes to be included can be determined; and
- The buffer to the woodland should include an area of open grassland leading to a graduated woodland edge comprising woody shrubs such as guelder rose *Viburnum opulus*, spindle *Euonymus europaea*, and wayfaring tree *Viburnum lantana*, alongside the new tree planting. The wider areas of grassland around the new attenuation area and in the north-east should also include patches of species-rich grassland managed annually in September and all arisings removed after one week, along with the proposed tree and scrub planting.

7.0 Disclaimer

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Ecology Consultant. Delta-Simons does not warrant or guarantee that the Site is free of Bats or other protected species.

The behaviour of animals can be unpredictable and may not conform to characteristics recorded in current scientific literature. This Report, therefore, cannot predict with absolute certainty that animal species will or will not occur in apparently suitable locations or habitats or that they will not occur in locations or habitats that appear unsuitable.

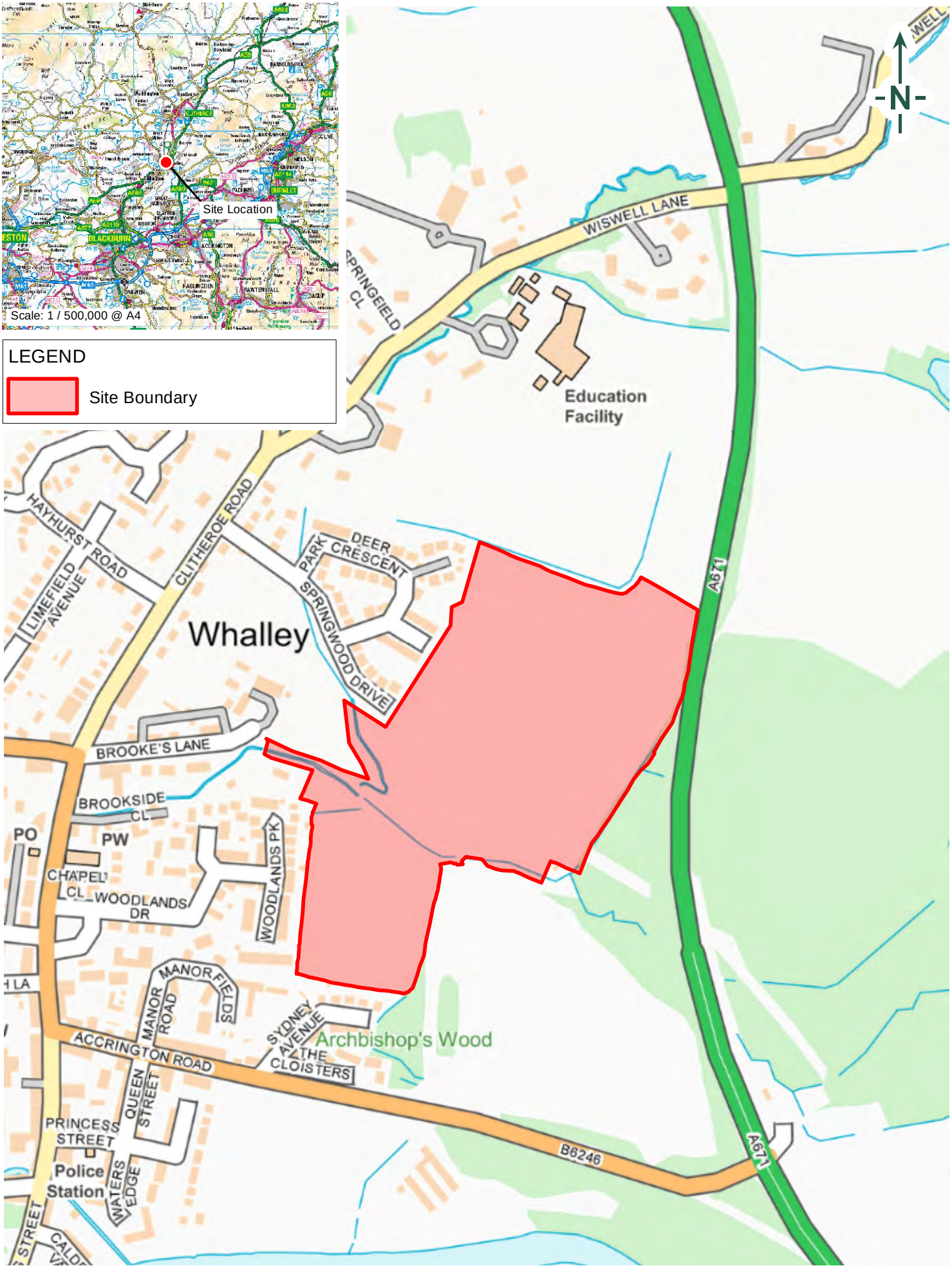
No part of the survey included an assessment of the materials and conditions of any buildings. No part of the survey included an asbestos assessment, nor did it represent an appraisal of other deleterious materials or hazardous substances.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.0 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Figure 1 – Site Location Plan

LEGEND

Site Boundary



Scale: 1 / 5,000 @ A4

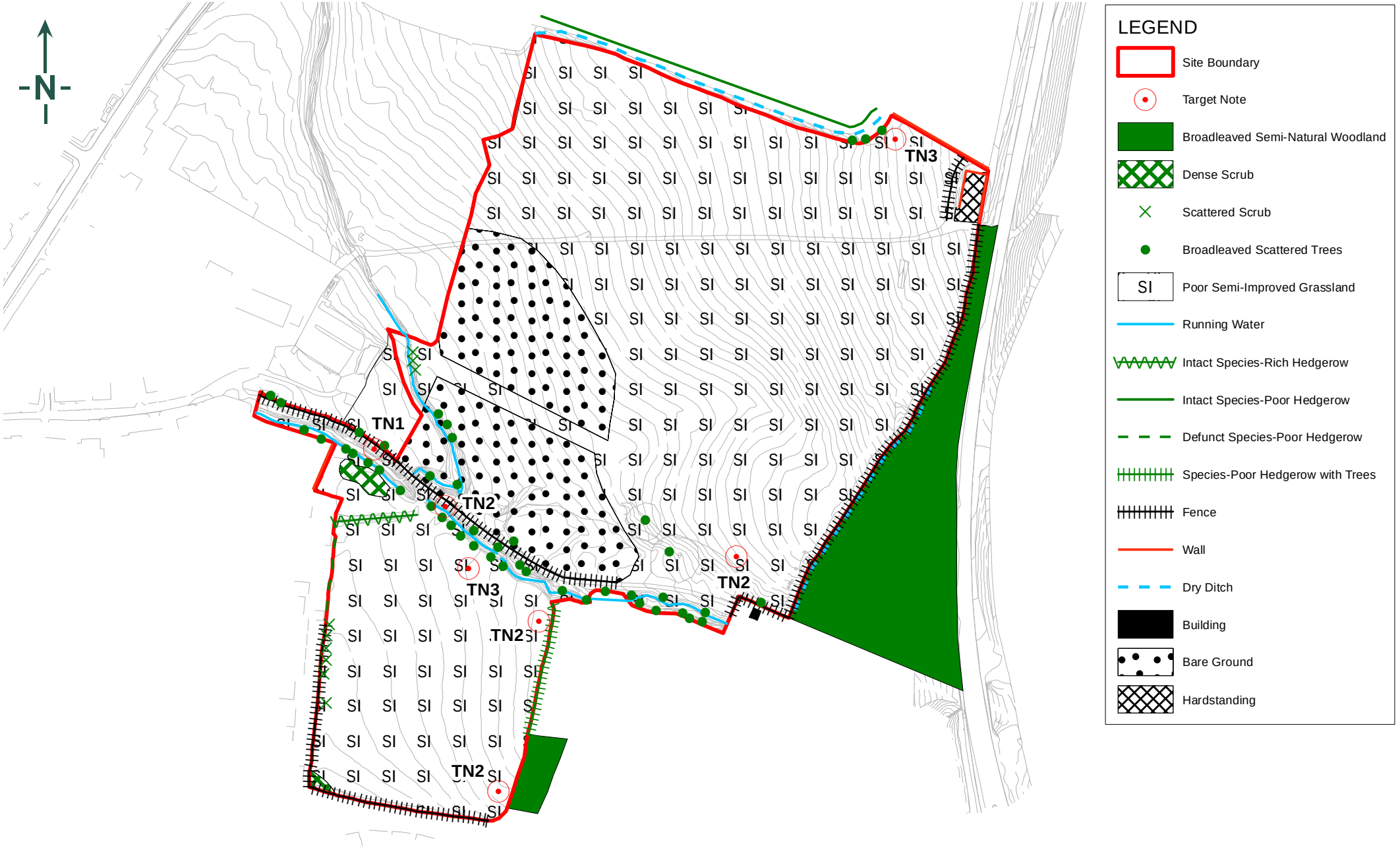
Service Layer Credits: Contains OS data © Crown Copyright and database right 2018

deltasimons
Environment - Health & Safety - Sustainability

TITLE:
Site Location Plan
Clitheroe Road
Whalley

DRAWN BY: RB	SCALE: 1:5,000	PROJECT NO: 18-0886.02
CHECKED BY: CB	REVISION: 0	FIGURE NO: 1
DATE: 14 August 2018		

Figure 2 – Phase 1 Habitat Survey Plan



Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

TITLE:
Phase 1 Habitat Survey Plan
Clitheroe Road
Whalley

DRAWN BY:	SCALE:	PROJECT NO:
RB	NTS	18-0886.02
CHECKED BY:	REVISION:	FIGURE NO:
CB	0	2
DATE:		
17th August 2018		

Figure 3 – Proposed Development Plan

Site Plan Provided by Client

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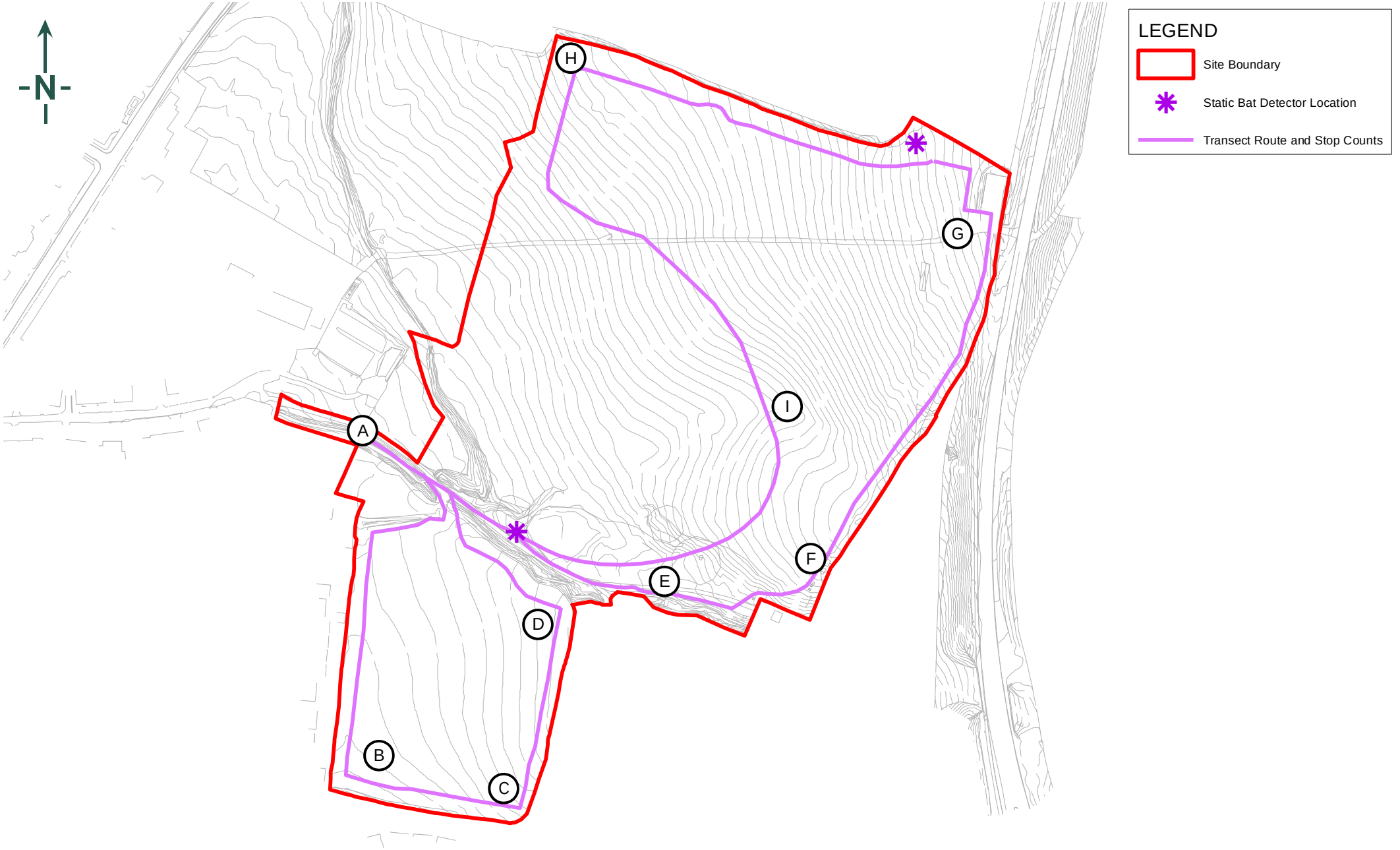
TITLE:

Proposed Development Plan
Land off Clitheroe Road
Whalley

DRAWN BY: RB	SCALE: NTS	PROJECT NO: 18-0886.02	
CHECKED BY:: CB	REVISION: 0	FIGURE NO: 3	
DATE: 14th August 2018			

Figure 4 – Bat Transect Route and Location of Static Detectors



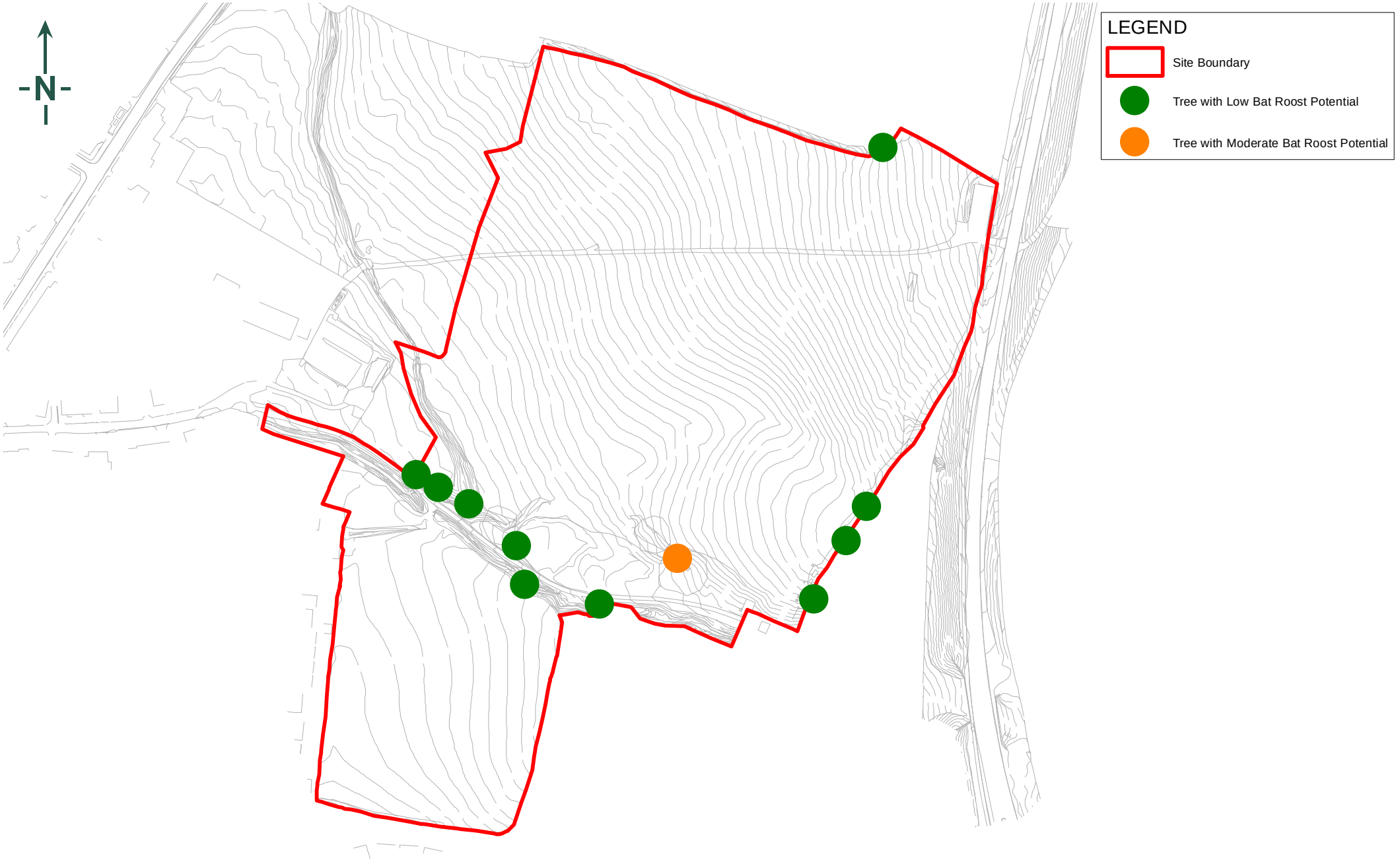
Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

TITLE:
Bat Transect Route and Location of Static Detectors
Clitheroe Road
Whalley

DRAWN BY:	SCALE:	PROJECT NO:
RB	NTS	18-0886.02
CHECKED BY:	REVISION:	FIGURE NO:
CB	0	4
DATE: 6th September 2018		

Figure 5 – Bat Roost Potential Assessment



Site Plan Provided by Client

deltasimons
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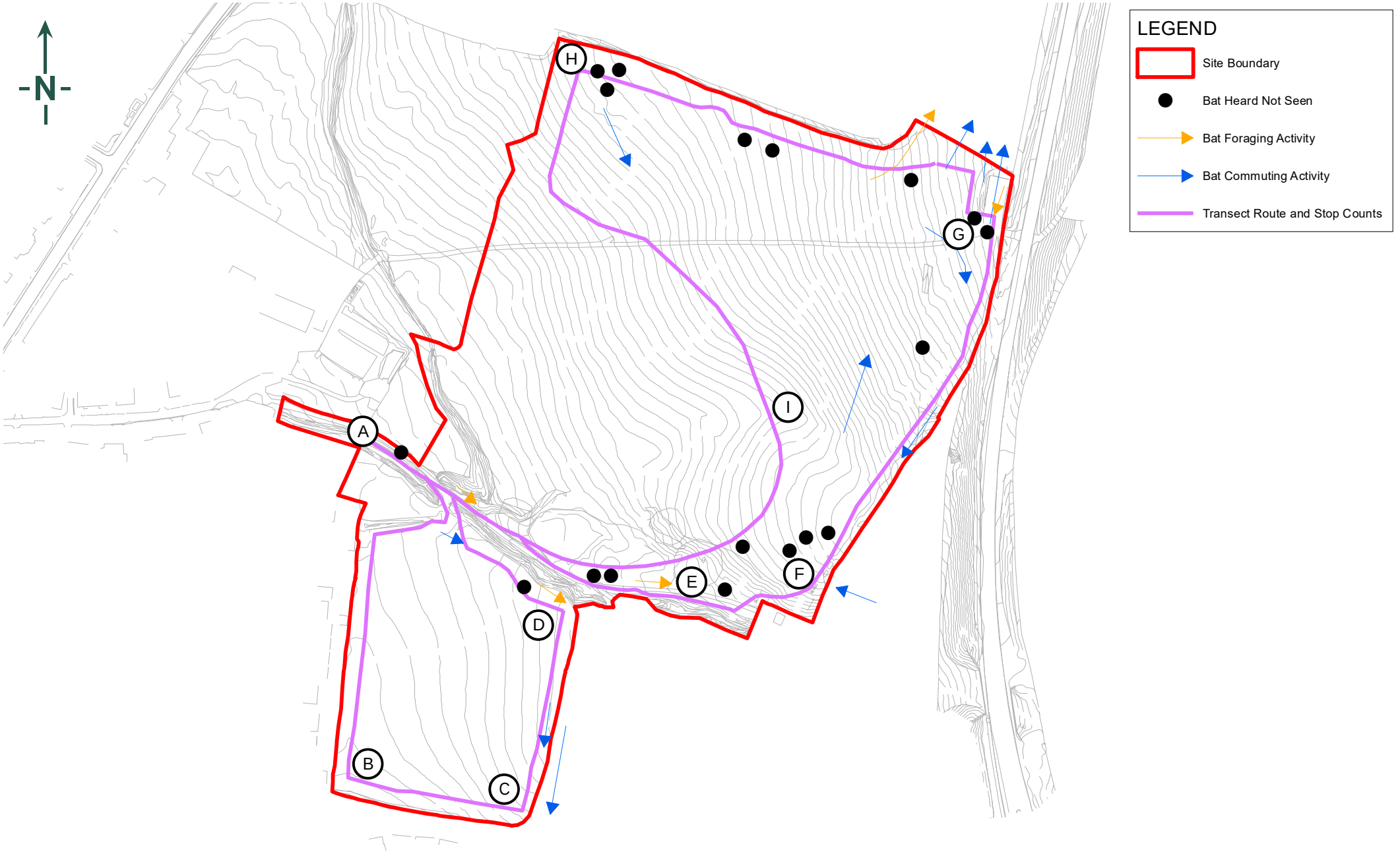
TITLE:
Bat Roost Potential Assessment
Clitheroe Road
Whalley

DRAWN BY: RB	SCALE: NTS
CHECKED BY: CB	REVISION: 0
DATE: 15th August 2018	

PROJECT NO: 18-0886.02

FIGURE NO: 5

Figure 6 – Results of the Transect Survey - July 2018



Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

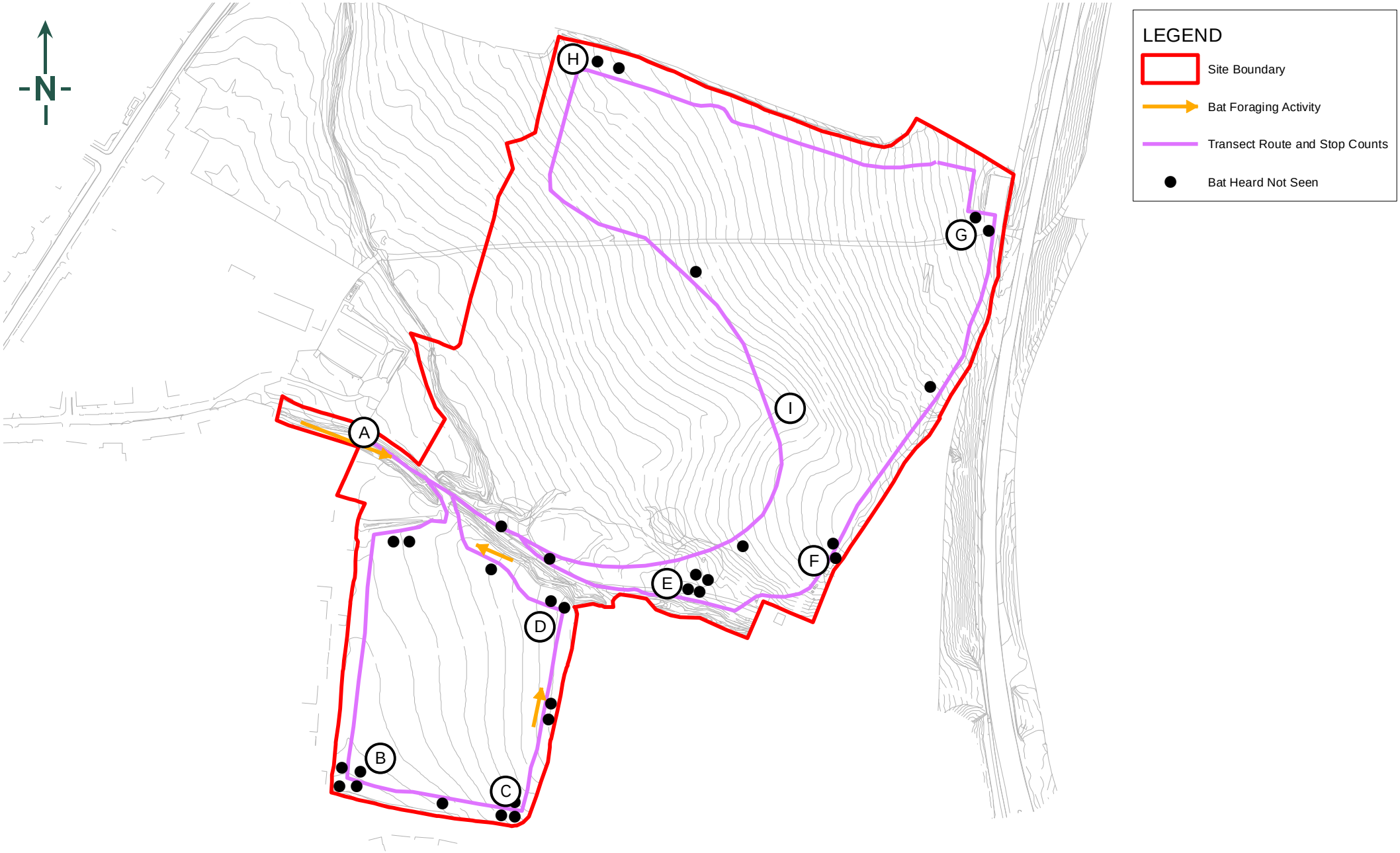
TITLE:
Results of the Transect Survey – July 2018
Clitheroe Road
Whalley

DRAWN BY: RB	SCALE: NTS
CHECKED BY: CB	REVISION: 0
DATE: 16th August 2018	

PROJECT NO: 18-0886.02

FIGURE NO: 6

Figure 7 – Results of the Transect Survey - August 2018



Site Plan Provided by Client

deltasimons
Environment - Health & Safety - Sustainability

TITLE:
Results of the Transect Survey - August 2018
Clitheroe Road
Whalley

DRAWN BY: RB	SCALE: NTS
CHECKED BY: CB	REVISION: 0
DATE: 6th September 2018	

PROJECT NO: 18-0886.02

FIGURE NO: 7

Appendix A – Relevant Legislation

Relevant Legislation

National Planning Policy Framework

The revised National Planning Policy Framework (NPPF), sets out, amongst other points, how '*Planning policies and decisions should contribute to and enhance the natural and local environment by:*

"Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity…"

The NPPF states that this should be achieved through local planning development frameworks and gives recommendations for criteria based policies which recognise the hierarchy of designated sites which range from internationally important habitat, to sites of importance at a local level and ensure that protection is *"in a manner commensurate with their statutory status or identified quality in the development plan.*"

A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF:

- *"If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[1] and a suitable compensation strategy exists;*
- *Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest; and*
- *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."*

It is also worth noting that where there are potential impacts upon internationally designated sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites) as a result of a proposed development, *"The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined."*

In addition, the Office of the Deputy Prime Minister circular 06/ 2005 remains current. It states that '*The presence of a protected species is a material consideration when a planning authority is considering a development proposal'. The circular advises that local authorities should consult Natural England before granting planning permission if the proposals could adversely affect a protected species.*'

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 are the British response to the Habitats & Species Directive 1992, and consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

The Regulations for the protection of European Protected Species (EPS) have been amended and consolidated with key changes including the removal of most of the defences from Regulation 40 and Regulation 43 including the removal of the 'incidental result of an otherwise lawful operation' defence, and the increase in the threshold for the offence of deliberately disturbing a EPS. Proposals that will affect European protected species may require a licence from Natural England to allow an otherwise unlawful act. In the 2009 a new offence of

1 For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

'breaching condition of an EPS licence' was added to the regulations. The licensing process is separate from and planning process. European protected species include all species of bats, great crested newt *Triturus cristatus*, dormouse *Muscardinus avellanarius*, and European otter *Lutra lutra*, amongst others.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

This is the primary legislation covering endangered species in England and sets out the framework for the designation of Sites of Special Scientific Interest (SSSIs). It confers differing levels of protection on species themselves, their habitats or both depending on their conservation status. Species offered protection by the Act are listed in a series of schedules. These Schedules are subject to a rolling review every five years. Protected species are listed under Section 1 (birds), Schedule 5 (animals other than birds and invertebrates) and Schedule 8 (plants).

The Countryside and Rights of Way (CRoW) Act 2000

The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife legislation detailed in the WCA. It places a duty on government departments and the National Assembly for Wales to have regard for biodiversity, and provides increased powers for the protection and maintenance of SSSIs.

The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all of their functions. Section 41 (England) list habitats and species of principal importance to the conservation of biodiversity in England. These species and habitats are a material consideration in the planning process.

The Hedgerow Regulations 1997

Under the Hedgerow Regulations 1997, it is against the law to remove or destroy certain hedgerows without permission from the local authority.

Local planning authority permission is required before removing hedges that are at least 20 metres (66 feet) in length more than 30 years old and contain certain species of plant. The authority will assess the importance of the hedgerow using criteria set out in the regulations.

Species

Birds

All wild birds are protected under Section 1 of the WCA 1981 (as amended). Subsection 1(1) makes it an offence to intentionally kill, injure, or take any wild bird; take, damage or destroy the nest of any such bird whilst it is in use or being built; or take or destroy an egg of any such wild bird. It is, furthermore, an offence to either intentionally, or recklessly, disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird. The law covers all species of wild birds including common, pest or opportunistic species.

Amphibians

All native amphibians are protected under the WCA 1981 (as amended), with some species also protected under the European Habitats Directive (92/43/EC), transposed in England and Wales through the Conservation of Habitats and Species Regulations 2017. All amphibians are protected from keeping, transporting, selling or exchanging. This means that in practice reasonable measures must be taken to avoid their incidental mortality.

The Great Crested Newt (GCN) is protected under the Conservation of Habitats and Species Regulations 2017 and Schedule 5 / 9(4)(b) and (c) of the WCA 1981 (as amended). It is an offence to deliberately kill, injure, capture GCN or to deliberately disturb this species, or to intentionally or recklessly obstruct access to their places of shelter or protection, to damage or destroy their breeding sites or resting places, or to intentionally or recklessly disturb a GCN whilst in a place of shelter or protection. The legislation applies to all stages of the life cycle including eggs, larvae and juveniles. It should be noted that GCNs spend the majority of their lives on

land, venturing up to 500 m (but more usually 250 m) from their breeding ponds and as such any ground works within 500 m of a breeding pond could potentially have an adverse effect on GCNs.

Reptiles

All six native species of reptiles are protected under the 1981 WCA (as amended), from intentional killing or injury. As such, all reasonable steps must be taken to avoid their incidental mortality when carrying out works.

Bats

All bats and their resting places are protected under Section 9(4)(b) and (c) of the WCA 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2017.

It is an offence to destroy or damage a breeding site or resting place of a bat, to intentionally or recklessly obstruct access to any place of shelter or protection for bats, to deliberately disturb bat species, to intentionally or recklessly disturb a bat whilst in its place of shelter or protection, or deliberately capture, injure or kill a bat. It should be noted that a breeding site or resting place of a bat is protected whether or not bats are present, as long as it is likely that they will return, and any activity or works damaging or destroying such a breeding site or resting place are likely to require a Natural England European Protected Species Licence (EPSL).

Badgers

Badgers *Meles meles* and their setts are protected under the 1992 Protection of Badgers Act. Under this Act it is an offence to wilfully kill, injure, take, possess or cruelly ill-treat badgers, or to attempt to do so. It is also an offence to intentionally or recklessly damage, destroy, or obstruct access to any part of a sett, or to disturb an occupied sett, either by intent or negligence. When interpreting the Act, Natural England defines a sett as any structure within an area used by badgers that shows signs of having been occupied by badgers within the last 12 months.

Otters

Otter *Lutra lutra* is afforded strict protection under Section 9 of the WCA 1981 (as amended) on Schedule 5 of the WCA 1981 (as amended) and Annex IV of the Conservation of Habitats and Species Regulations (2017). They also receive protection through their inclusion in Schedule 5 of the WCA 1981 (as amended).

Under the legislation, it is an offence to intentionally capture; injure or kill an otter; intentionally or recklessly damage or destroy a breeding site or resting place of an otter; intentionally or recklessly disturb an otter while it is occupying a structure or place which it uses for shelter or protection; obstruct access to any structure or place which it uses for that purpose; possess or control a live or dead animal, or part of; sell, offer for sale, possess or transport for the purpose of sale, a live or dead animal or part of one.

Water Voles

The water vole *Arvicola amphibius* received limited legal protection up until April 1998 through its inclusion in Schedule 5 of the WCA 1981 (as amended) for some offences. This protection was extended on 6th April 2008, so the water vole is now fully protected under Section 9, which includes protection of their resting places.

Legal protection makes it an offence to:

- Intentionally kill, injure or take (capture) a water vole;
- Possess or control a live or dead water vole, or any part of a water vole;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection; or intentionally or recklessly disturb water voles while they are using such a place; and
- Sell, offer for sale or advertise for live or dead water voles.

Invasive Species

Invasive species are plant species which are prohibited from release into the wild. There is an extensive list (currently 42) which are set out in section 14(2) of the WCA 1981 (as amended) which states that '*if any person plants or otherwise causes to grow in the wild any plant which is included in Part II of Schedule 9, he shall be guilty of an offence*.'

The most widespread of these are Japanese knotweed *Fallopia japonica* and giant hogweed *Heracleum mantegazzianum* which are also is covered by several pieces of legislation. The Environmental Protection Act 1990 (as amended) is a broad ranging piece of legislation that singles out Japanese knotweed and giant hogweed for special mention. The Act places a 'Duty of Care' on the producer and anyone they employ to dispose of soil or other material contaminated with Japanese knotweed or giant hogweed, such material becomes a controlled waste, which can only be taken to licensed landfill and must be dealt with in an appropriate way.

Appendix B – References

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Wildlife and Countryside Act 1981 (as amended). HMSO

Appendix C – Assessment of Structures, Trees and Habitats for Bats

Assessment of Structures, Trees and Habitats for Bats

Guidance on Assessing the Potential Suitability of Development Sites to Support Bats (adapted from Collins, J. (ed)).

Suitability	Description	
	Roosting	**Commuting and Foraging**
Negligible	An inspected structure or tree which is considered to have no features of importance for roosting bats. No further constraints apply to the method or timing of proposed works.	Negligible habitat features on-Site to support commuting or foraging bats.
Low	A structure with at least one or more features suitable to support opportunistic individual bats. However, inadequate space, shelter, protection and conditions, and the low suitability of surrounding habitats means that it is unlikely to be used as a maternity or hibernation roost site. A tree of adequate age and stature to support potential roosting features, however, either no features, or only features of limited potential recorded from the ground.	Habitat with potential to support low numbers of commuting bats due to its quality and connectivity. For example, a gappy hedgerow or unvegetated stream that is isolated from the surrounding landscape. Alternatively, suitable but isolated habitats suitable to support low numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that are of adequate size, shelter and protection, with suitable conditions and surrounding habitat to support a bat roost not of high conservation status (with respect to roost type not individual species conservation status).	Linear habitat continuity connecting to the wider landscape offering potential to support commuting bats, such as rows of trees and scrub or linked back gardens. Habitat such as trees, scrub, grassland or a waterbody with connectivity to the wider landscape offering foraging opportunities for bats.
High	A structure or tree with one or more potential roost sites that are suitable for use by large numbers of bats on a regular basis and for long periods of time due to their size, shelter, protection, conditions and the surrounding habitat.	Continuous high-quality habitat with strong connectivity to the wider landscape that is likely to be used by commuting bats on a regular basis, such as flowing waterbodies, hedgerows, rows of trees and woodland edges. High quality habitat with strong connectivity to the wider landscape that is likely to be regularly used by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to, and connected to, known roost sites.

Appendix D – Target Notes

Target Notes

Target Note 1	Snowberry located on the streamside
Target Note 2	Areas of abundant Himalayan balsam
Target Note 3	Areas of abundant horsetail

Appendix E – Photographs

Clitheroe Road, Whalley

Delta-Simons Project No. 18-0886.02

Photograph 1 – Area of scrub within smallest field

Photograph 2 – Trees along the central stream

Photograph 3 – Grassland within the largest northern field

Photograph 4 – Central stream supporting shallow and patchy slow flowing water

Photograph 5 – Smaller stream flowing into the central stream

Photograph 6 – Hedgerow dividing the southern two fields

Photograph 7 – Construction area comprising partially built attenuation ponds and remnants of grass

Photograph 8 – Area of concrete storage in the north-eastern corner

Photograph 9 – Spring Wood overhanging the eastern Site boundary

Photograph 10 – Pond within Spring Wood currently holding little water

Photograph 11 – Oak with trunk and branch damage assessed as offering moderate BRP

Photograph 12 – Oak on stream side supporting split up the trunk from the base

Photograph 13 – Dead branch on ash tree offering low BRP

Photograph 14 – Tree supporting two bat broken boxes and a rot hole on edge of Spring Wood

Appendix F – Results of the Activity Transect Surveys

Results of The Activity Transect Surveys

July 2018

Transect			
Time	**Species**	**Location**	**Activity/Comments**
21:44 *16 min after sunset*	Noctule	Listening Stop C - along and over woodland adjacent to the south-eastern corner	Commuting
21:46	Noctule	Stop C – repeated 21:44 along and over woodland adjacent to the south-eastern corner	Commuting
21:49	Soprano pipistrelle	Heading southwards along hedgerow and woodland between stops C and D	Commuting
21:52	Common pipistrelle Soprano pipistrelle	Stop D – around corner of field adjacent to stream and flew towards the southern corner	Foraging
21:55	Noctule	Stop D – heard not seen	Commuting
21:57	Common pipistrelle Soprano pipistrelle	Heading eastwards along northern treeline in southern field	Commuting
22:00	Common pipistrelle	Repeated passes along central access track	Foraging
22:04	Common pipistrelle	Stop E – flew eastwards towards Spring Wood	Two bats foraging
22:04	BLE	Stop E – heard not seen	Commuting
22:04	Soprano pipistrelle	Stop E – heard not seen	Foraging
22:10	Noctule	Stop F – heard not seen	Two commuting passes
22:10	Common pipistrelle	Stop F – entered the Site from Spring Wood	Commuting
22:12	Noctule	Stop F - heard not seen	Foraging
22:12	Common pipistrelle	Stop F - heard not seen	Foraging, repeated passes
22:14	Soprano pipistrelle	Between stops F and G – flying south along woodland edge	Commuting
22:14	Noctule	Flew north over largest grassland field	Commuting
22:20	Noctule	Heard not seen between stops F and G	Commuting
22:23	Noctule	Stop G – Flew north off-Site	Commuting
22:23	Common pipistrelle	Stop G – circled hardstanding repeatedly	Three bats foraging
22:23	BLE	Stop G - Heard not seen	Foraging, repeated passes
22:23	Soprano pipistrelle	Stop G – flew over hardstanding along woodland edge	Commuting

22:25	Daubentons	Stop G – Flew along north-eastern vegetation off-Site	Commuting
22:27	Common pipistrelle	Stop G - heard not seen	Foraging
22:30	Common pipistrelle	Between stops G and H – flew around hedgerow	Foraging, two passes
22:33	Daubenton's	Heard not seen between stops G and H	Commuting
22:37	Noctule	Between stops G and H - Heard not seen	Commuting
22:38	Common pipistrelle	Between stops G and H – Heard not seen	Foraging
22:34	Common pipistrelle	Stop H - Heard not seen	Foraging
22:34	BLE	Stop H – Flew south-east through field	Commuting
22:50	Common pipistrelle Soprano pipistrelle	Heard not seen close to stop E	Foraging, both species repeated passes
23:51	Noctule	Heard not seen close to stop E	Commuting
23:53	BLE	Heard not seen close to stop E	Foraging
23:20	Common pipistrelle	Heard not seen along central track	Foraging, repeated passes

August 2018

Transect			
Time	**Species**	**Location**	**Activity/Comments**
20:50 *8 min after sunset*	Common pipistrelle Soprano pipistrelle	Along access track near stop A	Up to 5 bats, 1 soprano pipistrelle and 4 common pipistrelle foraging up and down track
20:59	Common pipistrelle	On the way to stop B – heard not see	Commuting
21:03	Common pipistrelle	Stop B – heard not seen	Commuting
21:03	Noctule	Stop B – heard not see	Commuting 2 passes
21:07	Common pipistrelle	On the way to stop C – heard not seen	Foraging
21:10	Common pipistrelle	Stop C – heard not seen near woodland edge	Foraging
21:12	Common pipistrelle	Between stops C and D flying northwards along boundary hedgerow	Foraging
21:15	Soprano pipistrelle	Between stops C and D flying northwards along boundary hedgerow	Foraging
21:17	Noctule	Stop D – heard not seen	Commuting
21:17	Common pipistrelle	Stop D – flying along streamside tree line	Foraging – 2 bats making repeated passes
21:25	Soprano pipistrelle	Between stops D and E – heard not seen	Foraging
21:27	Noctule	Stop E – heard not seen	Commuting 2 passes
21:32	Common pipistrelle	Stop F – heard not seen	Foraging
21:32	Noctule	Stop F – heard not seen	Foraging 2 passes
21:37	Common pipistrelle	Between stops F and G – heard not seen	Foraging
21:42	Soprano pipistrelle	Stop G – heard not seen	Foraging
21:44	Daubentons	Stop G – heard not seen	Foraging 3 passes
21:50	Noctule	Stop H – heard not seen	Commuting brief pass
21:51	Common pipistrelle	Stop H – heard not seen	Foraging
21:54	Noctule	Between stops H and I – heard not seen	Foraging
22:04	Soprano pipistrelle	Between stops I and A – heard not seen close to substation in south-eastern corner of the largest field	Foraging
22:13	Common pipistrelle	Between stops A and B – heard not seen	Foraging
22:16	Common pipistrelle	Stop B – heard not seen	Foraging 2 passes

22:18	Common pipistrelle	Stop B – heard not seen potentially over adjacent properties	Foraging
22:18	Soprano pipistrelle	Stop B – heard not seen potentially over adjacent properties	Foraging
22:21	Soprano pipistrelle	Stop C – heard not seen	Foraging
22:23	Common pipistrelle	Stop C – heard not seen	Foraging
22:25	Common pipistrelle	Between stops C and D – heard not seen	Foraging
22:27	Soprano pipistrelle	Between stops C and D – heard not seen	Foraging
22:28	Soprano pipistrelle	Stop D – heard not seen	Foraging
22:32	Soprano pipistrelle	Between stops D and E – heard not seen but around streamside trees	Foraging
22:35	Soprano pipistrelle	Between stops D and E – heard not seen but along central access track	Foraging
22:36	Soprano pipistrelle	Stop E – heard not seen	Foraging 2 passes
22:36	Common pipistrelle	Stop E – heard not seen	Foraging 3 passes

Appendix G – Summary of the Automated Bat Detector Survey

Summary of The Automated Bat Detector Surveys

Mean number of bat passes per night per month for each location. Values are rounded to the nearest whole number.

Location 1	July	August	Mean total/month
Common pipistrelle	67	16	42
Soprano pipistrelle	1	2	2
Noctule	6	7	7
Brown long-eared	10	0	5
Myotis	1	0	1
Total	85	25	57

Location 2	July	August	Mean total/month
Common pipistrelle	73	251	162
Soprano pipistrelle	5	1	3
Noctule	17	17	17
Brown long-eared	2	0	1
Myotis	5	0	3
Total	102	269	186

Appendix H – Native Floral Species to Plant for Wildlife Enhancement On-Site

Native Floral Species to Plant for Wildlife Enhancement On-Site

The following list gives good examples of plants for different conditions which have value for native fauna either as a food source or shelter. To maximise value for wildlife plants should ideally be native, not cultivars, and sourced locally where possible. Planting should look to provide food at all levels, with underplanting of trees with shrubs or species rich grassland to provide maximum value out of an area and add interest to planting schemes.

Note: it is currently generally not advised to plant ash because of ash die back. However, ash is a very valuable plant for wildlife especially as a semi-mature and mature tree. Therefore, if locally sourced trees or self-sets known to be free of the fungus are available then these should be incorporated. Additionally, trees not showing signs of being affected should be retained where possible.

Trees and Shrubs

Large trees

- Beech *Fagus sylvatica*;
- Bird cherry *Prunus padus*;
- Elm *Ulmus procera*;
- Oaks *Quercus robur* and *Q. petraea*;
- White willow *Salix alba*;
- Field maple *Acer campestre*;
- Silver birch *Betula pendula*;
- Rowan *Sorbus aucuparia*;
- Small-leaved lime *Tilia cordata*; and
- Walnut *Juglans regia*.

Medium/ Small Trees

- Alder *Alnus glutinosa*;
- Apples *Malus* spp. (local varieties can be found);
- Field maple *Acer campestre*;
- Holly *Ilex aquifolium*;
- Pears *Pyrus* spp.;
- Rowan *Sorbus aucuparia*;
- Silver birch *Betula pendula*;
- Yew *Taxus baccata*;
- Elder *Sambucus nigra*;
- Hazel *Corylus avellana*;
- Hawthorn *Crataegus monogyna*;
- Honeysuckle *Lonicera periclynemum*;
- Wild privet *Ligustrum vulgare*;
- Blackthorn *Prunus spinosa*; and
- Guelder-rose *Viburnum opulus*.

Plants for hedgerows and woodland understoreys

A combination of shrubs and climbers can make attractive hedges of great benefit for wildlife, as well as providing a functional boundary. Standard trees should be incorporated in hedgerows, with ash, oak and wayfarer tree three traditional choices, depending on the region. These should be marked so as not to be cut during management works. In addition, undersowing with a suitable shade tolerant wildflower mix is important to maximise value.

Trees and shrubs suitable for hedges and understorey planting

- Blackthorn *Prunus spinosa*;
- Buckthorn *Rhamnus catharticus*;
- Field maple *Acer campestre*;
- Holly *Ilex aquifolium*;
- Elder Sambucus nigra;
- Guelder rose *Viburnum opulus*;
- Hawthorn *Crataegus monogyna*;
- Hazel *Corylus avellana*;
- Privets, including wild privet *Ligustrum vulgare*; and
- Spindle *Euonymus europaeus*.

Climber and scramblers suitable for hedgerows and understorey planting

- Dog rose *Rosa canina*;
- Field rose *Rosa arvensis*;
- Ivy *Hedera helix*;
- Honeysuckle *Lonicera periclymenum*;
- Wild clematis/ old man's beard *Clematis vitalba*; and
- Hop *Humulus lupulus*.

Understorey flowering plants providing ground cover for shady areas

These species flower early before trees are in full leaf, and will do well in areas that become shady later in the year.

- Bluebell *Hyacinthoides non-scripta*;
- Bugle *Ajuga reptans*;
- Wild daffodil *Narcissus pseudonarcissus*;
- Foxglove *Digitalis purpurea*;
- Lords-and-ladies/ cuckoopint *Arum maculatum*;
- Primrose *Primula vulgaris*;
- Sweet violet *Viola odorata*; and
- Wood avens *Geum urbanum*.