LAND OFF HERMITAGE PARK, LEPTON

Ecological Impact Assessment (EcIA)

Prepared for: KCS Developments Limited

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1.0 Introduction

1.1 Background

SLR Consulting Ltd was commissioned by KCS Developments Ltd to produce an Ecological Impact Assessment (EcIA) of land off Hermitage Park, Lepton, Huddersfield, West Yorkshire, HD8 0JN (central OS grid reference SE 19275 14642) in order to inform a planning application for residential development and associated infrastructure.

The following ecological surveys were undertaken between February and October 2017 by SLR Consulting, to establish the baseline conditions for a wider site area, known as the 'full survey area':

- Desk Study;
- Extended Phase 1 habitat survey;
- White-clawed crayfish (*Austropotamobius pallipes*) survey;
- Great crested newt (*Triturus cristatus*) survey;
- Breeding bird survey;
- Bat surveys (including manual and automated activity surveys, and evening emergence/ dawn re-entry surveys of trees and adjacent houses);
- Water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) survey; and
- Badger (*Meles meles*) bait marking survey (information relating to badgers is contained within a separate confidential report, which is not to be released into the public domain).

The following supplementary ecological surveys were undertaken throughout August and September 2019, again, of the 'full survey area':

- Updated Desk Study;
- Updated Extended Phase 1 habitat survey;
- Updated badger survey (search for setts and other field signs); and
- Series of dusk emergence bat detector surveys of trees with bat roosting potential, which could be affected by the proposals.

Finally, an updated badger survey and detailed botanical survey of the grasslands, and a Hedgerow Regulations Assessment of hedgerows within the application site itself was carried out on the 27th of October 2021.

This report presents the findings of the above ecological surveys, assesses the ecological importance of the various receptors, and discusses the potential ecological impact upon them, along with proposed mitigation and/ or ecological enhancement measures.

1.2 Site Context

The application site (hereafter referred to as the 'Site') lies on the southern edge of Lepton, *circa* 4.5km to the south-east of the centre of Huddersfield. It consists predominantly of three large fields and one small field of poor semi-improved grassland, historically used to graze cattle.

The Site is bordered to the north-west and north by existing residential properties within Hermitage Park and along Rowley Lane; to the east and south-east by the extensive Lepton Great Wood, and to the south and south-west by further cattle-grazed fields of grassland.

The adjacent Lepton Great Wood contains ancient woodland and is a Local Wildlife Site (LWS) and Site of Scientific Interest (SSI), both of which are non-statutory designations, and supports a network of formal public footpaths, as well as informal pathways, some of which are relatively well-used, including by dog walkers and mountain bikers.

1.3 Details of the Proposed Development

Proposals involve the construction of up 80 residential units and associated infrastructure within a 6.20ha application site. Access would be achieved off Hermitage Park, located to the north-west (refer to Appendix 1).

The layout of the access roads and properties themselves has been sensitively designed to retain as many of the valuable trees and tree lines as possible. Large areas of Public Open Space (POS) shall also be created, containing footpath links which connect up with the existing footpath network within Lepton Great Wood, and the wider area.

Furthermore, proposals involve the planting of native species-rich scrub and trees, including oak trees grown from locally sourced acorns, to create habitat of value to a range of wildlife and to supplement existing wildlife corridors.

Proposals also include the creation of two seasonally-wet drainage attenuation basins, to be sown with a tussocky grassland flower mix, as well as the retention of a wide undeveloped buffer along the entire eastern and south-eastern site boundaries, thereby safeguarding Lepton Great Wood (refer to the Illustrative Landscape Masterplan provided as Appendix 2).

A further 0.20ha area of wildflower grassland and 0.43ha of scrub and scrubby woodland shall be created in the far western part of the Site, adjancent to Beldon Brook Green.

1.4 Purpose of this Report

The purpose of this report is to:

- Describe the baseline data collection and assessment methodologies used;
- Present the results of the Extended Phase 1 Habitat Survey, desk study and Phase 2 protected species surveys (including for the wider survey area, in addition to the application site area itself);
- Identify important ecological receptors, and describe potentially significant ecological effects upon these receptors, if relevant;
- Set out any mitigation measures and sensitive working practices to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects; and
- identify opportunities for ecological enhancement, including via a Metric 3.0 Biodiversity Net Gain assessment, describing how a 10% net gain shall be achieved.

2.0 Relevant Legislation & Planning Policy

2.1 Relevant Legislation[1]

2.1.1 Conservation of Habitats and Species Regulations 2017[2]

The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb [3]wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

From 1st January 2021, the 2017 Regulations are one of the pieces of domestic law that transposed the land and marine aspects of the Directive. Most of the changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales, all other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

2.1.2 Wildlife & Countryside Act 1981[4]

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000[5] and the Natural Environment and Rural Communities Act (NERC) 2006[6], consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive)[7], making it an offence to:

- intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act;
- intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;
- pick or uproot any wild plant listed under Schedule 8 of the Act; or
- Plant or cause to grow in the wild any plant species listed under Schedule 9 of the Act.

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[1] Please note that the summary of relevant legislation provided here is intended for general guidance only. The original legislation should be consulted for definitive information.
[2] http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1
[3] Disturbance, as defined by the Conservation of Habitats and Species Regulations 2010, includes in particular any action which impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant); or which affects significantly the local distribution or abundance of the species.
[4] www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1
[5] www.legislation.hmso.gov.uk/acts/acts2000/20000037
[6] http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1
[7] eur-lex.europa.eu/LexUriServ/site/en/consleg/1979/L/01979L0409-20070101-en

2.1.3 Protection of Badgers Act 1992[8]

The Protection of Badgers Act 1992 makes it illegal to kill, injure or take a badger or to intentionally or recklessly interfere with a badger sett. Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.

2.1.4 Natural Environment & Rural Communities (NERC) Act 2006[9]

The NERC Act 2006 places a duty on authorities to have due regard for biodiversity and nature conservation during the course of their operations.

Section 41 of the Act requires the publication of a list of habitats and species which are of principal importance for the purpose of conserving biodiversity. The Section 41 list (Section 42 in Wales) is used to guide authorities in implementing their duty to have regard to the conservation of biodiversity.

2.2 Relevant Planning Policy

2.2.1 National Planning Policy

The National Planning Policy Framework (NPPF, 2021)[10] sets out guidance for local planning authorities and decision-makers on how to apply planning policies when drawing up plans and making decisions about planning applications. Along with Government Circular 06/05[11], the broad policy objectives in relation to the protection of biodiversity and geological conservation in England through the planning system are set out.

Paragraph 174 d of the NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *Minimising impacts on, and providing net gains for, biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*

Furthermore, Paragraph 175 states that plans should:

"*…..take a strategic approach to minimising and enhancing networks of habitats and green infrastructure, and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries".*

Paragraph 179 states that:

"To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and

b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."

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[8] http://www.opsi.gov.uk/ACTS/acts1992/ukpga_19920051_en_1

[9] http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1

[10] Department for Communities and Local Government (July 2021) *National Planning Policy Framework*.

[11] Office of the Deputy Prime Minister. 2005. Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System. ODPM Circular 06/2005.

Paragraph 180 goes on to state:

"When determining planning applications, local planning authorities should apply the following principles:

a) 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;

b) 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;

c) 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 and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."

2.2.2 Local Planning Policy

The Kirklees Local Plan[12] was adopted in February 2019, and a summary of the relevant plans and policies is provided below.

Policy LP30: Biodiversity and Geodiversity

"The council will seek to protect and enhance the biodiversity and geodiversity in Kirklees, including the range of international, national and locally designated wildlife and geological sites, Habitats and Species of Principal Importance and the Kirklees Wildlife Habitat Network".

Policy LP30: Local Designated Sites and Important Local Ecological Features

"*Proposals having a direct or indirect adverse effect on a Local Wildlife Site, Ancient Woodland, Veteran or other important tree will not be permitted unless the benefits of the development can be clearly shown to outweigh the need to safeguard the local conservation value of the site or feature and there is no alternative means to deliver the proposal. In all cases, full compensatory measures would be required and secured in the long-term".*

Policy LP30: Habitats and Species of Principal Importance

"Proposals will be required to protect Habitats and Species of Principal Importance unless the benefits of the development clearly outweigh the importance of the biodiversity interest, in which case long=-term compensatory measures will need to be secured".

Policy LP30: Biodiversity and Development

"Development proposals will be required to:

- *a) result in no significant loss or harm to biodiversity in Kirklees through avoidance, adequate mitigation or, as a last resort, compensatory measures secured through the establishment of a legally binding agreement;*
- *b) minimise impact on biodiversity and provide net biodiversity gains through good design by incorporating*

[12] https://www.kirklees.gov.uk/beta/planning-policy/pdf/local-plan-strategy-and-policies.pdf

biodiversity enhancements and habitat creation where opportunities exist;

c) *safeguard and enhance the function and connectivity of the Kirklees Wildlife Habitat Network at a local and wider landscape-scale unless the loss of the site and its functional role within the network can be fully maintained or compensated for in the long term;*
d) *establish additional ecological links to the Kirklees Wildlife Habitat Network where opportunities exist; and*
e) *Incorporate biodiversity enhancement measures to reflect the priority habitats and species identified for the relevant Kirklees Biodiversity Opportunity Zone.*

Paragraph 13.19 of the Local Plan goes on to state:

"*All development in Kirklees, as set out in national policy and the policies described in this document, will be expected to not result in significant loss or harm to biodiversity through avoidance, mitigation and compensatory measures and seek opportunities to enhance biodiversity value and ecological links.*

Opportunities to achieve net gains in biodiversity within development proposals will be sought through good design, including specific habitat creation and biodiversity enhancements. Regard will need to be given to the relevant Biodiversity Opportunity Zone in which the proposed development is located and biodiversity enhancement measures will be sought which reflect the priority habitats and species identified for each zone.

The purpose of the Biodiversity Opportunity Zones and associated tables of species is to guide developers in providing appropriate compensation and enhancements of maximum benefit for nature conservation. In order to safeguard and enhance the function and connectivity of the Kirklees Wildlife Habitat Network, the council will also seek to ensure that development proposals do not result in the fragmentation of the network and provide improved ecological links, particularly to the Kirklees Wildlife Habitat Network, where opportunities exist".

Policy LP31: Strategic Green Infrastructure Network

"*Within the Strategic Green Infrastructure Network identified on the Policies Map, priority will be given to safeguarding and enhancing green infrastructure networks, green infrastructure assets and the range of functions they provide.*

Development proposals within and adjacent to the Strategic Green Infrastructure Network should ensure:

I. *The function and connectivity of green infrastructure networks and assets are retained or replaced;*
II. *New or enhanced green infrastructure is designed and integrated into the development scheme where appropriate, including natural greenspace, woodland and street trees;*
III. *The scheme integrates into existing and proposed cycling, bridleway and walking routes, particularly the Core Walking and Cycling Network, by providing new connecting links where opportunities exist; and*
IV. *The protection and enhancement of biodiversity and ecological links, particularly within and connecting to the Kirklees Wildlife Habitat Network.*

The council will support proposals for the creation of new or enhanced green infrastructure provided these do not conflict with other Local Plan policies".

Paragraph 13.26 states "*….the Council will seek to ensure that development proposals protect and enhance existing green infrastructure assets, minimise fragmentation of green infrastructure networks and maximise opportunities for new and improved green infrastructure and connecting links into the network where opportunities exist*".

Policy LP33: Trees

"The Council will not grant planning permission for development which directly or indirectly threaten trees or woodlands of significant amenity.

Proposals should normally retain any valuable or important trees where they make a contribution to public amenity, the distinctiveness of a specific location or contribute to the environment, including the Wildlife Habitat Network and green infrastructure networks.

Proposals will need to comply with relevant national standards regarding the protection of trees in relation to design, demolition and construction. Where tree loss is deemed to be acceptable, developers will be required to submit a detailed mitigation scheme".

Paragraph 13.36 states "…..*the Council will support the planting of new woodland in urban and rural areas where this is sympathetic to local topography, enhances ecology and contributes positively to landscape character*".

2.3 Pre-Application Consultation Response from Kirklees Council

A pre-application response was received from Kirklees Council on the 22nd of June 2021 (refer to Appendix 3).

This confirms that there are no objections from the council's arboricultural officer, and that an adequate buffer zone has been provided between the development and the ancient woodland of Lepton Great Wood. It also states that consideration needs to be given to enhancement planting within this buffer zone to benefit Ancient Woodland.

It goes on to state that the proposals would need to be supported by a detailed scheme of landscaping, to include new trees and street trees.

A request was also made to assess the value of the hedgerows within and bordering the application site.

Additional comment was provided separately by the local planning authority ecologist (also provided in Appendix 3). In summary, the ecologist recommended that additional consideration be given to the potential impacts upon barn owl. The ecologist also reaffirmed the need to gather more information on, and assess the impact upon, hedgerows.

The ecologist welcomed the proposed buffer alongside Lepton Great Wood, and stated that this buffer should contain woodland planting to provide higher benefits to the adjacent woodland and associated fauna than those offered by grassland alone.

The ecologist also suggested that a 10% increase in biodiversity net gain (BNG) should be delivered by the scheme.

3.0 Methodology

3.1 Scope and Approach

SLR Consulting Ltd was commissioned by KCS Developments Ltd to produce an Ecological Impact Assessment (EcIA) of land off Hermitage Park, Lepton, Huddersfield, West Yorkshire, HD8 0JN (central OS grid reference SE 19275 14642) in order to inform a planning application for residential development and associated infrastructure.

The following ecological surveys were undertaken between February and October 2017 by SLR Consulting, to establish the baseline conditions for a wider site area, known as the 'full survey area':

- Desk Study;
- Extended Phase 1 habitat survey;
- White-clawed crayfish (*Austropotamobius pallipes*) survey;
- Great crested newt (*Triturus cristatus*) survey;
- Breeding bird survey;
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- Water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) survey; and
- Badger (*Meles meles*) bait marking survey (information relating to badgers is contained within a separate confidential report, which is not to be released into the public domain).

The following supplementary ecological surveys were undertaken throughout August and September 2019, again, of the 'full survey area':

- Updated Desk Study;
- Updated Extended Phase 1 habitat survey;
- Updated badger survey (search for setts and other field signs); and
- Series of dusk emergence bat detector surveys of trees with bat roosting potential, which could be affected by the proposals.

Finally, an updated badger survey and detailed botanical survey of the grasslands, and a Hedgerow Regulations Assessment of hedgerows within the appreciably smaller application site boundary was carried out on the 27th of October 2021.

This was followed by a brief walkover on the 28th of March 2022, ostensibly to take photographs of specific habitats and features.

This report presents the findings of the above ecological surveys, assesses the ecological importance of the various receptors, and discusses the potential ecological impact upon them, along with proposed mitigation and/ or ecological enhancement measures.

3.2 Personnel and Quality Assurance

All surveyors follow the Chartered Institute's Code of Professional Conduct when undertaking ecological work. Survey work was undertaken by experienced surveyors with SLR Consulting who hold the relevant Natural England licences, where appropriate.

Survey work was led by Principal Ecologist Mr Gary Oliver MCIEEM, who has over 26 years' relevant experience within ecological consultancy, is a competent ornithologist and botanist, and holds a Class 2 survey licence for great crested newt (Class 2 licence number 2015-17733-CLS-CLS), bats (Class 2 bat licence number 2015-16056-CLS-CLS), and barn owl (licence number CL29/00027). Mr Oliver is also a Registered Consultant under the Natural England Low Impact Great Crested Newt Class Licence (licence GCN1RC071). Mr Oliver also has considerable experience of undertaking badger surveys, including bait-marking surveys.

Great crested newt surveys were undertaken by GCN licensed surveyors Mr Gary Oliver, Mr Andrew Hill ACIEEM (Licence number 2015-17575-CLS-CLS) and Ms Hazel Stanworth GradCIEEM (Licence number 2016-20414-CLS-CLS). The white-clawed crayfish survey, and most recent botanical survey, were undertaken by Mr Jim Flanagan ACIEEM, who holds a Natural England white-clawed crayfish survey licence (Licence number 2016-21108-CLS-CLS), with assistance from Mr Andrew Hill in the case of the crayfish survey.

The remaining surveys were undertaken by the above surveyors, with assistance from Mr Nick Bell, Ms Katie Smith, and Mr Gilbert Caswell, Assistant Ecologists with SLR Consulting at the time, where appropriate.

3.3 Desk Study

The West Yorkshire Ecology Service (WYES) was commissioned to undertake a search of non-statutory designated sites for nature conservation and protected/ notable species for the Site, and land within a 2 km radius of the centre of the Site, in February 2017 and again in August 2019.

Information on statutory designated sites for nature conservation and geological interest was also obtained from the MAGIC website managed by Natural England[13].

3.4 Field Survey

3.4.1 Extended Phase 1 Habitat Survey

The initial Extended Phase 1 habitat survey and mapping exercise was carried out on the 2nd February 2017 by Mr Gary Oliver, using standard Phase 1 Habitat survey methodology[14]. This was supplemented by additional surveys of the grassland on the 10th May 2017 by Gary Oliver and on the 16th June 2017 by Mr Jim Flanagan.
An update Extended Phase I Habitat Survey was undertaken by Mr Gary Oliver on the 19th August 2019 by Mr Oliver.

During the Extended Phase I habitat surveys, habitats and features with potential to support protected and/ or priority fauna, together with any field signs of such species, were searched for. This included the following:

[13] www.magic.gov.uk
[14] Joint Nature Conservation Committee (2010) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (Revised reprint). Joint Nature Conservancy Council, Peterborough.

- A search for badger setts and field signs, such as pathways, hairs on wire, snuffle holes, and dung pits/ latrines. Instances where badger paths led to rear gardens, where supplementary feeding was taking place, were also noted (information relating to badgers is contained within a confidential report);
- An assessment of trees to establish their potential for roosting bats - refer to Section 3.4.5;
- A Habitat Suitability Index (HSI) assessment of four waterbodies identified within a *circa* 500m radius of the Site to gauge their suitability to support GCN using standard methodology[15];
- An assessment of the suitability of Beldon Brook to support water vole, otter and/ or white-clawed crayfish;
- An assessment of the potential of the Site to support reptiles;
- An assessment of the potential of the Site to support an assemblage of breeding birds of nature conservation value; and
- An assessment of the likely importance of the Site for invertebrates.

Searches were also made for invasive species, listed on Schedule 9 of the Wildlife and Countryside Act 1981 such as Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*).

Survey dates, times and weather conditions are provided in Appendix 4.

3.4.2 White-Clawed Crayfish Survey

A white-clawed crayfish survey was undertaken of the Beldon Brook (which forms the southern boundary of the Site) and Pond P1, a large pond which has an overflow into the Beldon Brook (refer to Drawing 2), as records of the native white-clawed crayfish and the non-native signal crayfish (*Pacifastacus leniusculus*) exist for the Beldon Brook. The survey was undertaken on the 12th July 2017, within the optimum survey window for this species (of July to August)[20]. The survey covered the length of Beldon Brook where it abuts the Site, along with a 50m buffer upstream and downstream.

The method of survey involved turning boulders, rocks and bank-side features with potential to provide refugia for crayfish after dark; surveying upstream, so as to avoid creating turbid conditions. Large boulders and rocks were lifted and a small net was deployed to capture any animals present. The boulders and rocks were then returned to their original positions.

The stone turning exercise was supplemented by a torchlight survey, whereby the water bodies were carefully scanned after dark with a powerful Clulite torch to search for the presence of crayfish.

The survey methodology was based upon Peay (2003)[16]. To avoid the potential spread of crayfish plague between sites, all equipment was disinfected before and after use.

3.4.3 Great Crested Newt Presence/ Absence Survey

Four ponds (P1-P4) and one ditch (D1), shown in Drawing 3, were subject to a great crested newt (GCN) presence / absence survey.

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[15] Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000) *Evaluating the Suitability of Habitat for the Great Crested Newt* (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.
[16] Peay, S. (2003) Monitoring the white-clawed crayfish. English Nature, Peterborough.

The approach to GCN survey followed the survey methodology presented in The GCN Mitigation Guidelines[17] and updates published by Natural England and with reference to other relevant guidelines[18,19]. Each of the waterbodies were subject to torchlight, netting and egg search techniques, over the course of four survey sessions, undertaken on the 15th March, 21st April, 30th May and 19th June 2017. Survey work was carried out by Natural England GCN licensed ecologists.

Torchlight Counts

The surveyors walked slowly around the perimeter of each waterbody after dark and systematically scanned the water's edge with a one million candle light torch, searching for GCN (which tend to emerge from dense vegetation at night, and are more easily seen).

Netting

The surveyors carefully netted the margins of the waterbodies, and paid particular attention to patches of dense vegetation.

Egg Searching

The surveyors checked the leaves of water plants around the edge of the waterbodies, searching for GCN eggs (which can be distinguished from the eggs of other newt species by their size and colour).

3.4.4 Breeding Bird Survey

Breeding season bird surveys were undertaken on the 18th April, 10th May and 9th June 2017, and were based on the Common Bird Census (CBC) methodology, as described in Gilbert *et al*. (1998)[20]. During each survey, the observer walked the Site boundary, as well as the interior of the Site, recording territorial birds, and their activity codes. Bird registrations were recorded on field maps using British Trust for Ornithology (BTO) species codes (see Drawings 4a-4c).

Field signs characteristic of confirmed breeding were assessed to be:

- Nest building or excavation;
- Adult(s) carrying food;
- The presence of nestlings or newly fledged young;
- Adult(s) removing faecal matter; and
- Field signs characteristic of holding a territory including song and/ or territorial display or courtship.

Nocturnal birds, such as owls, were also noted when encountered during the various evening bat surveys.

3.4.5 Bat Survey

3.4.5.1 Assessment of the Potential of Trees for Roosting Bats

A preliminary roost assessment of all on-Site trees was undertaken on the 2nd February 2017, using criteria

[17] Foster, J. (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.
[18] Froglife (2001) *Advice Sheet 11: Surveying for (Great Crested) Newt Conservation*. Froglife, Halesworth.
[19] Gent, AH & Gibson, SD (eds.) (1998) *Herpetofauna Worker's Manual*. Peterborough: Joint Nature Conservation Committee.
[20] Gilbert G, Gibbons DW and Evans J (1998). *Bird Monitoring Methods: A manual of techniques for key UK species.* RSPB, Bedfordshire.

contained within current good practice guidelines[21], refer to Table 2-1 for a summary of assessment criteria used.

The aim of the survey was to establish whether any of the trees on Site have appreciable potential to support roosting bats, and therefore determine the need, or otherwise, for further survey (for example dusk/ dawn bat detector surveys).

Trees were inspected systematically from the ground, and, where possible, from all sides; binoculars and a powerful Clulite torch were used to scan for Potential Roosting Features (PRFs), such as:

- Woodpecker holes;
- Rot holes and knot holes;
- Hazard beams;
- Other vertical or horizontal cracks and splits in stems or branches;
- Partially detached platy bark;
- Man-made holes or cavities created by branches tearing out from parent stems;
- Cankers in which cavities have developed;
- Other hollows or cavities, including butt-rots;
- Double-leaders forming compression forks with included bark and potential cavities;
- Gaps between overlapping stems or branches;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bat and/ or bird boxes.

Table 2-1
Guidelines for Assessing the Potential of Trees for Roosting Bats

Potential	Description - Roosting habitats
Negligible	A structure or tree without features of obvious potential for roosting bats.
Low	A structure or tree with one or more Potential Roost Features (PRFs) that could be used by individual bats, perhaps opportunistically or intermittently. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/ or suitable surrounding habitat to be used in a regular basis by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or feature seen with only very limited roosting potential.
Moderate	A structure or tree with one or more PRSs that could be used by several bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type).

[21] Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists. Good Practice Guidelines* (3rd edition). The Bat Conservation Trust, London.

Potential	Description - Roosting habitats
High	A structure or tree with one or more PRFs that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

3.4.5.2 Evening Emergence and Dawn Re-entry Bat Surveys of Trees and Buildings (2017)

All trees with above Negligible potential to support roosting bats, were subject to at least one evening emergence or dawn re-entry bat detector survey during 2017, to ascertain the presence or likely absence of roosting bats. The following trees were surveyed (refer to Drawing 5 for tree locations), between the 10th May and 24th August 2017:

- T1, T5, T7, T9, T11, T12, T13, T14, T16, T17, T22, T25, T28, T29, T31 and T37.

In addition, a single dawn survey was undertaken of the line of residential houses to the north of the Site, abutting Field 1 (i.e. along Rowley Lane and Hermitage Park), on the 24th August 2017 (using two surveyors).

The dusk emergence surveys commenced 15 minutes before sunset and lasted for two hours, whilst the dawn re-entry surveys commenced 1.5 hours before sunrise and finished 15 minutes after sunrise, in line with current guidelines[22].

During each survey visit, all observed bat passes were recorded on a plan of the Site, noting the time, the location and, where possible, the direction of flight, species and behaviour of the bat (i.e. commuting, foraging, or social calling). Temperature, wind speed/ direction and cloud cover were recorded at the beginning and end of each survey, along with any significant weather changes during the survey (e.g. heavy showers), see Appendix 1.

Surveyors were equipped with both Batbox Duet (Batbox Ltd.) and Anabat Express (Titley Scientific) ultra-sonic bat detectors. Bat calls were recorded on Anabat Express units and where necessary subsequently analysed using Analook software to confirm species identification.

3.4.5.3. Update Evening Emergence Bat Surveys of Trees (2019)

An update survey of trees with above Negligible potential for roosting bats, with scope to be directly or indirectly affected by the proposals was carried out between the 22nd August and 9th September 2019.

Trees with Low potential for roosting bas (T1, T5, and T9) were subject to a single emergence survey; a single tree with Moderate potential for roosting bats (T29) was subject to two surveys, and those trees with High potential for roosting bats with scope to be affected by the proposals (T7, T11, T14, T16, T28 and T31) were subject to three evening emergence surveys[23]. As with the original surveys referred to above, survey commenced 15 minutes before sunset and finished 1.5 hours after sunset.

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[22] Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists. Good Practice Guidelines* (3rd edition). The Bat Conservation Trust, London.

[23] Dawn re-entry bat detector surveys were not undertaken during 2019 due to the presence of cows with calves and a bull within the fields containing the trees.

In addition, these update surveys were used to gather more information on bat foraging levels and species composition around the trees. Each of the dusk emergence surveys was therefore combined with a 1.75 hour bat activity survey, using an Anabat Express recording device.

3.4.5.4 Walked Bat Activity Transect Surveys

In order to determine the level of bat activity across the Site, the species of bat using the Site and its immediate surroundings, and to identify any areas which have particular importance to bats, bat activity transects were walked on the evenings of the 13th April, 21st June and 21st August 2017.

Following a walkover to scope the Site and immediately surrounding areas for habitats and specific landscape features which could be of importance to bats, a transect route was devised, which passed through the full range of habitats present on the Site and immediate surroundings, as shown on Drawing 6.

Survey commenced at sunset and lasted for two and a half to three hours, on each occasion. The surveyor walked along the transect route, stopping at 20 pre-defined sample points to record the number of bat passes for a strict five minute period. The surveyor recorded all observed bat passes on a detailed plan of the Site; noting the time, the location and, where possible, the direction of flight, species and behaviour of the bat (i.e. commuting, foraging, or social calling, where this was evident).

Temperature, wind speed/ direction and cloud cover were recorded at the beginning and end of the survey (see Appendix 4). The surveyor was equipped with a Duet (Batbox Ltd) combined heterodyne bat detector, and an Anabat Express (Titley Scientific) frequency division bat detector. Bat calls recorded using the Anabat Expresses were subsequently analysed using Analook software, to confirm species/ species group, where necessary.

3.4.5.5 Static Bat Detector Activity Surveys

The walked transect surveys described above were supplemented by static bat detector surveys, involving Anabat Express (Titley Scientific) detectors, which were deployed at five locations on the Site over the course of five nights in Spring (10th-15th May 2017), Summer (12-17th July 2017) and Autumn (18th-23rd September 2017). The static detector sample locations were carefully chosen to sample all main habitat types, as follows (refer to Drawing 6 for locations):

- Location A: on the margin of a narrow broad-leaved woodland plantation strip separating the two northern-most fields;
- Location B: at a drystone wall boundary of a semi-improved grassland field at the western end of the Site;
- Location C: on the edge of Lepton Great Wood on the eastern boundary of the Site;
- Location D: at a scrubby field boundary in the centre of the Site; and
- Location E: at Pond P1, immediately beyond the south-western Site boundary.

The bat species echolocation guide provided by Russ (2012)[24] was used to identify bat calls to species or species group (identifying bats to species level by call alone is not always possible, with a high degree of certainty). The guide, which is based on the frequency of the call containing maximum energy, was used in conjunction with other features, such as call shape and habitat (i.e. 'open' or 'cluttered'), to aid species identification.

[24] Russ, Jon (2012) British Bat Calls: A Guide to Species Identification, Pelagic Publishing, Exeter

3.4.6 Badger Survey

During each of the surveys searches were made for badger setts and other field signs, most recently in March 2022.

3.4.7 Riparian Mammal (Water Vole and Otter) Survey

The Beldon Brook and Pond P1, which flows into the brook, were assessed as having suitability for water vole and otter. As such, these were searched thoroughly for field signs of water vole and otter on the 10th May and 14th August 2017. Survey covered the margins of Pond P1 as well as the length of Beldon Brook where it abuts the Site to the south, plus a 50m buffer upstream and downstream, as shown on Drawing 2.

Survey followed standard methodologies[25,26] for these species.

A detailed inspection of the bank-side habitat, including a 2m margin on the bank top, was undertaken to search for field evidence.

The following water vole field evidence was searched for:

- Burrows dug into the bankside both above and below the water line;
- Runs, tracks or passageways through vegetation on the bankside and above ground 'nests';
- Droppings and latrines (consisting of a collection of droppings);
- Feeding signs, including cut lengths of grasses, reeds and sedges left in piles and 'grazed' lawns; and
- Footprints – often left in soft mud by the water's edge.

The following otter field evidence was searched for:

- Spraints;
- Tracks;
- Slides; and
- Holts and couches.

This survey was updated on the 19th August 2019, as part of the updated Extended Phase I Habitat Survey.

It should, however, be noted that the brook lies over 250 metres from the application site, and will not be affected by the proposals.

3.4.8 Hedgerow Regulations Assessment

Hedgerows within or bordering the application site (H1-H5 in Drawing 1) were surveyed in accordance with the Hedgerow Regulations (1997[27,28]) with the aim of determining if any met the criteria of importance, on wildlife or landscape grounds.

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[25] Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London.
[26] Chanin, P. (2003) Monitoring the Otter Lutra Lutra. Conserving 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough.
[27] Anon (1997). *The Hedgerows Regulations: Your questions answered*. Department of the Environment.
[28] Anon (1997). The Hedgerow Regulations 1997: A guide to the Law and Good Practice. Department of Environment, Transport and Regions.

Field work was undertaken on the 27th of October 2021 by Mr Jim Flanagan, Senior Field Ecologist with SLR Consulting.

The Hedgerow Regulations are contained in three schedules. The first schedule (Schedule 1) presents the interpretation of the features (Part I) and the criteria defining important hedgerows (Part II) for reasons of their archaeology and history (sub-paragraphs 1-5) and their wildlife and landscape value (sub-paragraphs 6-8)

The current study was restricted to determination of importance solely on the wildlife and landscape criteria.

Depending on the length of each hedgerow, a selected 30m section is subject to a survey where the number of woodland plant and woody species present are counted. Paragraph 7(3) and sub-paragraphs a-d provide details on how to identify the relevant hedgerow sections for survey. The woodland plant and woody species are defined by the Regulations in Schedules 2 and 3 respectively. A total of 57 woodland plant species are listed as being closely associated with ancient semi-natural woodland habitats. A total of 56 woody (tree and shrub) species are listed, excluding certain introduced species such as sycamore, planes and horse chestnut, as well as exotics, cultivars and also two of the three native conifers (Scot's pine and European larch).

Additional features are also taken into account such as whether the hedgerow is on a bank, contains a ditch or has one or more standard trees (paragraph as well as the presence of woodland species at any point within a metre of the outer edge of the hedgerow 7(4)). Connectivity is also an important feature for which a points system has been created. Points are awarded where the hedgerow connects to other hedgerows or to ponds and to woodlands that are predominantly broad-leaved. A minimum of four points are needed for a hedgerow to meet this criterion. There are further criteria contained in sub-paragraph 8 relating to bridleways and footpaths.

Full details of these additional features from paragraphs 7(4), 7(5) and 8 are given in Table 2.2 below.

Table 2-2
Wildlife and Landscape Criteria: Additional Features

Paragraph	Features
Paragraph 7(4)	a) a bank or wall which supports the hedgerow along at least one half of its length; b) gaps which in aggregate do not exceed 10% of the length of the hedgerow; c) where the length of the hedgerow does not exceed 50 metres, at least one standard tree; d) where the length of the hedgerow exceeds 50 metres but does not exceed 100 metres, at least two standard trees; e) where the length of the hedgerow exceeds 100 metres, such number of standard trees (within any part of its length) as would when averaged over its total length amount to at least one for each 50 metres; f) at least three woodland species within one metre, in any direction of the outermost edges of the hedgerow; g) a ditch along at least one half of the length of the hedgerow; h) connections scoring 4 points or more in accordance with sub-paragraph 7(5) i) a parallel hedge located within 15m of the hedgerow.
Paragraph 7(5)	For the purposes of sub-paragraph 7(4)h a connection with another hedgerow scores one point and a connection with a pond or woodland in which the majority of the trees are

Paragraph	Features
	broad-leaved scores two points; and a hedgerow is connected with something not only if it meets but also if it has a point within 10 metres of it and would meet if if the line if the hedgerow continued.

The criterion relating to woody species requires the surveyed section(s) to contain an overall minimum of seven woody species. Where the hedgerow is located in counties of the north (including West Yorkshire) the minimum is reduced to six. The hedgerow is also important if it has four woody species and has associated with it at least four of the additional features within paragraph 7(4)a-g.

The Hedgerow Regulations only apply to hedgerows that have been in existence for at least 30 years or more and have a minimum length of 20 metres or above.

3.5 Limitations

3.5.1 Desk Study

Desk study data is unlikely to be exhaustive, especially in respect of species, and is intended mainly to set a context for the study. It is therefore possible that species not identified during the data search do in fact occur within the vicinity of the Site. Interpretation of maps and aerial photography has been conducted in good faith, using recent imagery, but it has not been possible to verify the accuracy of any statements relating to land use and habitat context outside of the field study area.

3.5.2 Field Survey

Some of the protected species surveys were undertaken during 2017, however, the update Extended Phase I Habitat Survey carried out in August 2019, and again in October 2021 confirmed that the Site, and its setting, had not changed since 2017. Given this, the results of the protected species surveys are considered to be accurate and representative of current baseline conditions, and therefore do not form a limitation to this assessment.

There was some light rain at the end of bat surveys undertaken on the 14th August and 21st August 2017 (see Appendix 4 for a summary of the weather conditions that prevailed during the surveys), however bat activity was observed throughout surveys undertaken on these dates, and therefore this is not considered to be a significant constraint[29].

Pond P2 could not be surveyed on the fourth great crested newt survey visit, as this is located within the grounds of a private dwelling, and access was not granted after the third visit. However, this is not considered to be a constraint as no evidence of GCN was recorded in the first three survey sessions, and the pond has poor suitability for GCN (with high stone sides which are likely to block access by amphibians, the presence of carp, and a complete lack of aquatic vegetation).

[29] Anon (1997). The Hedgerow Regulations 1997: A guide to the Law and Good Practice. Department of Environment, Transport and Regions.

3.6 Assessment Approach

The ecological evaluation and impact assessment approach used in this report is based on Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland ("CIEEM guidelines") (CIEEM, 2018[30]).

3.6.1 Important Ecological Receptors

Ecological receptors can be important for a variety of reasons and the rationale used to identify them is explained here. Importance may relate, for example, to the quality or extent of the Site or habitats therein; habitat and/ or species rarity; the extent to which such habitats and/ or species are threatened throughout their range, or to their rate of decline.

Importance should be considered within a defined geographical context. The following frame of reference has been used in this case, relying on known/ published accounts of distribution and rarity where available, and professional experience:

- International;
- National (i.e. UK/ England);
- Regional (i.e. Yorkshire and the Humber);
- County (i.e. West Yorkshire); and
- Local (i.e. within 2km).

The importance of the various habitats has been measured against published selection criteria where available and relevant. Examples of relevant criteria include: descriptions of habitats listed on Annex 1 of the Habitats Directive; descriptions of habitats of principal importance for biodiversity under Section 41 of Natural Environment and Rural Communities (NERC) Act 2006; Local Wildlife Site Selection Criteria; and Habitat Action Plans (HAPs) contained within Local Biodiversity Action Plans.

In assigning a level of importance to a species, it is necessary to consider their distribution and status, including a consideration of trends where relevant. Reference has therefore been made to published lists and criteria where appropriate. Examples of relevant lists and criteria include: species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive or Annex 1 of the Birds Directive); species of principal importance for biodiversity under Section 41 of the NERC Act 2006 and Birds of Conservation Concern[31].

For the purposes of this report ecological features of local importance or greater and/ or subject to legal protection have been subject to detailed assessment. Effects on other ecological features are considered unlikely to be significant in legal or policy terms and have therefore been omitted from the assessment process.

3.6.2 Impact Assessment

The impact assessment process involves the following steps:

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[30] Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland, September 2018.

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

- identifying and characterising potential impacts;
- incorporating measures to avoid and mitigate these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects (if required); and
- identifying opportunities for ecological enhancement.

When describing impacts, consideration has been given to the following, as appropriate:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat occupied by a species during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process or feature, e.g. the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of wet grassland.

Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions, as well as its distribution and its typical species within a given geographical area; and
- Species - conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

3.6.3 Assessment of Significance

The concept of ecological significance is addressed in paragraphs 5.24 through to 5.28 of the CIEEM guidelines (2018). Significance is a concept related to the weight that should be attached to effects when decisions are made.

For the purpose of EcIA a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/ local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local and the scale of significance of an effect may or may not be the same as the geographic context in which the feature is considered important.

3.6.4 Avoidance, Mitigation, Compensation and Enhancement

When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population that is significant at a county scale should ensure no net loss of the population at a county scale.

The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

Where potentially significant effects have been identified, the mitigation hierarchy should be applied, as recommended in the CIEEM guidelines (2018). The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Efforts should then be made to explore opportunities for ecological enhancement.

It is important for the EcIA to clearly differentiate between avoidance mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g. through changes in scheme design;
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact *in situ*;
- Compensation describes measures taken to offset residual effects, i.e. where mitigation *in situ* is not possible; and
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

4.0 Baseline Ecological Conditions

4.1 Designated Wildlife Sites

Designated sites within 2km of the Site are shown in Appendix 5, as supplied by WYES; a summary is provided below. Appendix 5 also includes summary information (including species and habitats) provided by WYES.

4.1.1 Statutory Sites

The Site itself does not contain any statutory designated sites. The nearest Site of Special Scientific Interest (SSSI) is Honley Cutting SSSI, a geological designation, located 5km to the south-west of the Site. The nearest ecological SSSI is Denby Grange Colliery Ponds, located 7.5km to the east of the Site, which are reported to support the largest known colony of great crested newt in West Yorkshire, and the sixth largest colony in Great Britain. Castle Hill Local Nature Reserve (LNR) lies 3.6km to the west of the Site, Upper Park Wood LNR lies 4.7km to the south-west of the Site, and Dalton Bank LNR lies 3.9km to the north-west of the Site. No Natura 2000 Sites lie within a 5km radius of the Site.

Given this, no impact upon statutory protected areas is predicted, and this has been removed from further assessment.

4.1.2 Non-Statutory Sites

Although the Site itself does not contain any non-statutory sites, four Local Wildlife Sites (LWS), occur within the 2km radius of the centre of the Site, as summarised in Table 4-1 (refer also to Appendix 5).

Table 4-1
Local Wildlife Sites within 2km of the Site

Name of Non-Statutory Protected Area	Proximity to Site	Description
Lepton Great Wood LWS	Immediately to east	Contains areas of ancient semi-natural woodland and some dense bluebell (>20% cover). The woodland forms part of the Kirklees Wildlife Habitat Network.
Carr Wood LWS	1.1km to west	Acid replanted ancient woodland, with abundant pedunculate and sessile oak and occasional silver and downy birch. The understory contains abundant holly and occasional hazel and the ground flora bluebell (>20%), broad buckler-fern and scaly male fern, wood sedge, remote sedge, wood millet, wood speedwell, yellow pimpernel, hairy wood-rush, wood sorrel, dog's mercury and ramsons.
Almondbury Common LWS	1.3km to west	Supports ancient and semi-natural woodland and acidic ground flora.

Name of Non-Statutory Protected Area	Proximity to Site	Description
Gawthorpe Lower Wood LWS	1.5km to north	Regenerating sessile oak woodland, reported to have been felled around 50 years ago. Other species present include silver birch, sycamore, ash, hazel, holly, and wych elm, along with hawthorn, rowan and alder. The ground flora includes creeping soft grass, male fern, bramble, and bluebell (20-40% cover), dog's mercury, ramsons, yellow archangel, wood anemone, lords and ladies and lesser celandine occur on the eastern side.

Lepton Great Wood LWS, which abuts the Site immediately to the east, supports a range of habitat types, including areas of acid grassland; approximately 20% of the woodland floor is reported to support dense bluebell (*Hyacinthoides non-scripta*), with smaller patches of bluebell occur elsewhere. The north and south of Lepton Great Wood are characteristic of W10 (*Quercus robur-Pteridium aquilinum-Rubus fruticosus)* woodland, with abundant oak (Quercus sp.), and occasional sycamore (*Acer pseudoplatanus*), birch (*Betula* sp.), and beech (*Fagus sylvatica*). The understorey within these areas contains holly (*Ilex aquifolium*), hazel (*Corylus avellana*), and rowan (*Sorbus aucuparia*) as well as young oak, sycamore and beech. The ground flora within the W10 woodland supports locally abundant bluebell, ramson's (*Allium ursinum*), creeping soft-grass (*Holcus mollis*), and bramble (*Rubus fruticosus* agg), as well as occasional wood anemone (*Anemone nemorosa*); tufted hair-grass (*Deschampsia cespitosa*); wavy hair-grass (*Deschampsia fluxuosa*), broad buckler fern (*Dryopteris dilatata*), wood avens (*Geum urbanum*), and honeysuckle (*Lonicera periclymenum*).

The central part of the woodland comprises a mixture of W10 and W16 (*Quercus* spp-*Betula* spp-*Deschampsia flexuosa*) woodland, with abundant birch and occasional oak and beech, and abundant creeping soft-grass and bramble, along with occasional wavy hair-grass, bluebell and cypress-leaved plaitmoss (Hyp*num cupressiforme*).

The woodland is also reported to contain some variegated yellow archangel (*Lamiastrum galeobdolon* subsp *argentatum*), a garden escapee listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

The citation for the Lepton Great Wood LWS states that possible water vole burrows occur along the stream (Beldon Brook) to the south.

Lepton Great Wood will be readily accessible to residents associated with the proposed scheme, including via an existing footpath link which enters the wood via a proposed area of Public Open Space in the north of the Site, as well as via a number of informal links, including a relatively well-used walking route which enters the woodland at the southern end of the Site, beside the Beldon Brook.

Given its status as a LWS, and fact that is contains areas of Ancient Semi-Natural Woodland and forms part of the Kirklees Wildlife Habitat Network Lepton Great Wood is assessed as having Local importance, and has been subject to further assessment.

The remaining LWSs are considered to lie a sufficient distance from the Site (all over 1km away) such that the proposals will not affect them/ their qualifying criteria, and as such they will not be assessed further.

The Beldon Brook, which runs along the southern boundary of the Site, although not part of a LWS does form part of the Kirklees Wildlife Habitat network, as does a large pond located immediately to the north of the brook (referred to as Pond P1 in this report) along with a thin spur of scrubby woodland which extends northwards from the pond. Whilst the pond and adjoining land lie off-Site, they do abut the south-western boundary of the Site, and regard has therefore been given to the potential impact of the proposals upon the Kirklees Wildlife Habitat Network, which is itself assessed as being a receptor of Local importance.

4.2 Habitats

The results of the Extended Phase 1 habitat survey (using information gathered during 2017 as well as the update survey of 2019) and, in the case of the application site itself in October 2021, are illustrated in Drawing 1.

A description of each broad habitat type is provided in the following section of this report, and illustrated in the associated plates, which again include a mixture of plates taken during 2017 and 2019. The intrinsic ecological importance of each habitat type has then been categorised in accordance with Section 3.6.1.1 of this report.

4.2.1 Improved Grassland (Modified Grassland in Poor Condition)

A 0.044ha area of improved grassland in poor condition, dominated by perennial ryegrass (*Lolium perenne*) and subject to frequent mowing to maintain a short sward, occurs off Hermitage Park (Plate 1); this shall provide access into the Site, from the north-west.

This has less than local ecological importance, and has not been subject to further assessment.

Plate 1: *Strip of improved grassland separating the application site from Hermitage Way (March 2022)*

4.2.2 Amenity Grassland (Modified Grassland in Poor Condition)

A very small area (0.015ha) of amenity grassland, denoted in Metric 3.0 as modified grassland in poor condition, occurs to the south of a public footpath, beside Hermitage House, at the western edge of the application site (Plate 2). A second area of amenity grassland (0.02ha in extent, which can be seen beyond the short sectno of heddgerow in the distance, within Plate 2, lies directly to the west of this, north of Field 10.

Both areas of amenity grassland have less than local ecological importance, and has not been subject to further assessment.

Plate 2: *Small area of amenity grassland beside footpath (on right) immediately south of Hermitage House, with further small area of amenity grassland beyond ((March 2022)*

4.2.3 Poor Semi-Improved Grassland (Modified Grassland in Moderate Condition)

The majority of the application site (5.79ha), and indeed the wider area consists of semi-improved grassland, most of which is used to graze cattle historically (Plates 3-6). This is categorised as Modified Grassland in Moderate Condition in Metric 3.0.

The sward within these fields is dominated by common and widespread grasses, such as Yorkshire fog (*Holcus lanatus*); false oat grass (*Arrhenatherum elatius*)' cock's-foot (*Dactylis glomerata*); perennial ryegrass and red fescue (*Festuca rubra*).

The sward within Field 2 is slightly different, being relatively fine-leaved with common bent (*Agrostis capillaris*) being frequent; this field was also moss-rich in many parts, supporting springy turf-moss (*Rhytidiadelphus squarrosus*) and common feather-moss (*Kindbergia praelongum*). Nearer to the eastern boundary with the wood there was local frequent sheep's sorrel (*Rumex acetosella*) and occasional oak seedlings noted within Field 2.

These fields also contain variable amounts of sweet vernal-grass (*Anthroxanthum odoratum*), crested dog's-tail (*Cynosurus cristatus*), meadow foxtail (*Alopercurus pratensis*) and smooth meadow-grass (*Poa pratensis*).

Herb diversity varies across different parts of the fields, and between fields, but on the whole sward diversity is reasonably limited. Herbs recorded include creeping buttercup (*Ranunculus repens*); meadow buttercup (*Ranunculs acris*); white clover (*Trifolium* repens); common sorrel (*Rumex acetosa*); field mouse-ear (*Cerastium arvense*); dandelion (*Taraxacum officinale* agg.); broad-leaved dock (*Rumex obtusifolius*); ribwort plantain (*Plantago lanceolate*); and daisy (*Bellis perennis*). Common ragwort (*Jacobaea vulgaris*); red clover (*Trifolium arvense*); selfheal (*Prunella vulgaris*) and field forget-me-not (*Myosotis arvensis*) is also present in some fields.

Additional herbs such as cleavers (*Galium aparine*); cow parsley (*Anthriscus sylvestris*); hogweed (*Heracleum sphondylium*) and creeping thistle (*Cirsium arvense*) also occur, mainly around the field margins (typically beneath or on the far side of barbed wire fences) and at the base of hedgerows and enclosed blocks of woodland.

As these grasslands are species-poor and widespread, they are assessed as having less than Local ecological importance, and have not been assessed further within this report.

4.2.4 Semi-Improved Grassland (Other Neutral Grassland in Moderate Condition)

Two small areas in Fields 1 and 2 (G1 in Drawing 1), which have a combined area of 0.01ha, are more diverse than the remainder of the grassland within these fields, although the sward is still not exceptionally species-rich. These areas locally frequent yellow rattle (*Rhianthus minor*), a species which parasitizes grass and therefore can help to improve the diversity of swards by reducing the competition of more vigorous grass species; other species present here include foot trefoil (*Lotus corniculatus*), meadow vetchling (*Lathyrus pratensis*), tufted vetch (*Vicia cracca*), common cat's-ear (*Hypochaeris radicata*) and field wood-rush (*Luzula campestris*), along with compact rush (*Juncus conglomeratus*).

Due to their slightly higher species-richness when compared to the rest of the grassland on Site, areas G1 and G2 are considered to be of local ecological importance and have been subject to further assessment.

Plate 3: *View of Field 1, the extreme northern part of the Site, looking north towards houses along Rowley Lane; Lepton Great Wood can be seen on the right (May 2017).*

Plate 4: *View from the western boundary of Field 2, looking eastwards towards Lepton Great Wood (in the distance). The relatively well-used public footpath can be seen, which runs from a cutting beside Hermitage House in the west, into Lepton Great Wood through Field 2. The tree line on the right consists of ten semi-mature oak trees (T1-10 in Drawing 1). The more recently planted strip of woodland illustrated (H1) is on the left (Sept 2019).*

Plate 5: *View of Field 3 from close to its southern boundary, with Lepton Great Wood on the right (March 2022)*

Plate 5: *View of Field 8 from close to its southern boundary, looking towards Hermitage House (March 2022)*

4.2.5 Hedgerows and Tree Lines

A description of each of the hedgerows and tree lines, and an assessment of their importance under the ecological criteria contained within the Hedgerow Regulations is summarised in Table 4-2.

Table 4-2
Description of hedgerows/ tree lines and assessment of Importance under Hedgerow Regulations

Hedgerow Number and Length (in brackets)	Woody Species and other criteria met	Photograph (all October 2021)
H1 (160 metres) Native species-rich hedgerow with trees, up to 15 m tall Meets the criteria of importance under the Hedgerow Regulations	Eastern section: ash, hawthorn, holly, dog rose, sessile oak, small leaved lime and wild cherry Western section: ash, elder, hawthorn, holly, dog rose and wild cherry 7(4)b & 7(4)e and 7(5) Other species present include silver birch, hazel, sycamore and wych elm	

Hedgerow Number and Length (in brackets)	Woody Species and other criteria met	Photograph (all October 2021)
H2 (158 metres) Line of Trees along a weak hedgerow, up to 25m tall Does not meet criteria of importance	hawthorn, holly and sessile oak 7(4)e, 7(4)b and 7(5)	
H3 (85 metres long) Hedgerow Does not meet criteria of importance	elder, hawthorn, holly and dog rose 7(4)a and 7(5)	
H4 (60 metres) Hedgerow Does not meet criteria of importance	elder, hawthorn and holly 7(4)a, 7(4)b, 7(4)h and 7(5)	

Hedgerow Number and Length (in brackets)	Woody Species and other criteria met	Photograph (all October 2021)
H5 (70 metres) Species-Rich Hedgerow meets criteria of importance under the Hedgerow Regulations	ash, elder, hawthorn, holly, dog rose and rowan 7(4)a, b, d & h	

In addition to this, a relatively short (28 metre long) line of scrub/ hedgerow occurs within the extreme south-western corner of the Site, between Fields 5 and 6 (Plate 6), comprising holly, hawthorn, dog rose and bramble.

Plate 6: *28m long line of scrub/ hedgerow in the extreme south-western part of the application site (March 2022)*

From this it may be seen that the hedgerows/ tree lines within or bordering fields forming part of the application site contained the following species shrub species: hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), holly (*Ilex aquifolium*), hazel (*Corylus avellana*), wych elm (*Ulmus glabra*) and dog rose (*Rosa canina*); whilst some contained the following tree species: ash (*Fraxinus excelsior*), rowan (*Sorbus aucuparia*), small-leaved lime (*Tilia cordata*), wild cherry (*Prunus avium*) sycamore (*Acer pseudoplatanus*), pedunculate oak (*Quercus robur*) and sessile oak (*Quercus patrea*).

Of the hedgerows within the application site, or its boundary, Hedgerows H1 and H5 meet the ecological criteria of importance under the Hedgerow Regulations.

In addition to hedgerows marking certain field boundaries, a number of well-maintained garden hedgerows demarcate the back gardens of properties immediately abutting the application site, including along the B6433 Rowley Lane and Hermitage Park, including lines of low cypress; hawthorn and holly hedgerows, and a short section of beech (*Fagus sylvatica*) hedgerow (Plate 7).

Hedgerow is a Habitat of Principal Importance, and as such hedgerows have been assessed as having local intrinsic ecological importance and have been discussed further.

***Plate 7:** Hedgerows forming **b**oundary with Hermitage Park on western side of Field 1 (August 2019).*

4.2.6 Semi-Mature, Mature and Over-Mature Trees

The wider site contains a number of mature, over-mature and semi-mature trees, mostly pedunculate oak but also ash (*Fraxinus excelsior*); sycamore; crack willow (*Salix fragilis*) and alder (*Alnus glutinosa*) (refer to T1-37 in Drawings 1 and 5). However, other than the trees within linear feature H2, and oak trees T35, T36 and T37

(which lie within an area of proposed ecological enhancement) the application site itself does not contain any mature trees.

4.2.7 Lepton Great Wood

As stated in Section 4.1.2 of this report, Lepton Great Wood is a Local Wildlife Site, contains Ancient Semi-Natural Woodland and forms part of the Kirklees Wildlife Habitat Network. The north-western part of Lepton Great Wood which borders Fields 1-3 is fringed by mature and semi-mature oak trees (Plate 8), whilst further south it is characterised by younger, mixed silver birch and oak woodland within the wood although the western margin of the woodland is also dominated by semi-mature/ mature oak trees in places (Plate 9).

Bluebell (*Hyacinthoides non-scripta*) and ramsons (*Allium ursinum*) are widespread and dominate the ground flora in extensive patches (Plate 10), however, the wood also contains a network of formal public footpaths and informal tracks, which during the various ecological surveys were noted to be particularly well-used by dog walkers and mountain bikers. The most heavily-used of these tracks runs north-south through the western part of the woodland (Plate 11), joining up with a popular walk alongside the Beldon Brook, located at the southern end of Lepton Great Wood, and running along the southern boundary of the Site itself.

As stated previously, Lepton Great Wood is a receptor of local importance, which has been discussed further in this report.

***Plate 8**: Western edge of Lepton Great Wood as seen from Field 1, looking north (August 2019).*

***Plate 9**: Western edge of Lepton Great Wood as seen from Field 7, looking south towards the Beldon Brook (August 2019)*

***Plate 10**: Bluebell growing in a part of Lepton Great Wood which is dominated by birch woodland (May 2017).*

***Plate 11**: Well-used track extending along the western part of Lepton Great Wood (with Site boundary seen on right). This photograph was taken from a point to the east of Field 1, looking south (May 2017).*

4.3 Species

4.3.1 Plants

A number of records of flowering plants were provided by the WYES within 2km of the application site, most of which relate to bluebell, including several recent records for Lepton Great Wood (dating from 2015), which immediately abuts the eastern application site boundary. A single record of common centuary (*Centaurium erythraea*) was also provided for a location 1.6km to the south-west of the application site, for an unknown date. However, none of these records relate to the application site itself, and these species were not recorded during the field surveys (although bluebell were found within the adjacent Lepton Great Wood). Plant species within the application site itself were relatively common and widespread.

Records were also provided by the WYES for a number of Schedule 9 invasive non-native plant species, including Canadian waterweed (*Elodea canadensis*) 700m to the south-west of the application, dating from 2013; Himalayan balsam (*Impatiens glandulifera*) beside the Woodsome Beck, 450m to the west of the application site, dating from 2015; and rhododendron (*Rhododendron ponticum*), within Carr Wood Local Wildlife Site, 1.1km to the south-west of the application site. A record of variegated yellow archangel (*Lamiastrum galeobdolon* subsp. *argentatum*) was also provided for Lepton Great Wood, dating from 2015, however this variegated form of the plant is non-native, and listed on Schedule 9 of the Wildlife and Countryside Act.

No Schedule 9 invasive non-native species were recorded on the application site during the field surveys, although Himalayan balsam was present within the Beldon Brook.

Given the lack of rare or protected plant species within the Site itself, plants, as opposed to the habitats they form, are assessed as being of less than Local importance, and have been excluded from further assessment.

4.3.2 White-clawed crayfish

4.3.2.1 Desk Study Data

WYES provided 15 records of the non-native signal crayfish, including a record from the Beldon Brook (350m to the west of the application site) dating from 2008, and a number of records within the Fenay Beck 470m to the west of the application site, dating from 2008 and 1997. A single, relatively old (1997) record exists for the native white-clawed crayfish within the Woodsome Beck, 500m west of the application site.

4.3.2.2 Results of White-clawed Crayfish Survey

The Beldon Brook and Pond P1 (shown in Drawing 2) were surveyed for white-clawed crayfish during July 2017, however no white-clawed crayfish were recorded during the torchlight and stone-turning survey. However, twelve North American signal crayfish were recorded during the stone-turning exercise within the section of Beldon Brook s (Plate 12). A signal crayfish was also recorded in Pond P1 on the 15th March, 22nd May and the 19th June 2017, during the great crested newt presence/ absence surveys.

The presence of signal crayfish strongly suggests that white-clawed crayfish do not occur within and would be unlikely to colonise Beldon Brook or Pond P1. Signal crayfish can carry crayfish plague, an oomycete fungus (*Aphanomyces astaci*), which is lethal to white-clawed crayfish. Even in the absence of crayfish plague, evidence suggests that once a mixed population of signal crayfish and white-clawed crayfish occurs, the white-clawed crayfish population is progressively lost due to competition[32].

Given the absence of white-clawed crayfish, and the low likelihood that this species would colonise the watercourse or pond in the future, this species has not been discussed further.

***Plate 12**: Example of one of the adult signal crayfish recorded within Beldon Beck on the 12th July 2017.*

[32] Peay, S. (2003) Monitoring the white-clawed crayfish. English Nature, Peterborough.

4.3.3 Other Invertebrates

A number of Red Data Book, and nationally notable beetle records were provided by WYES, mostly for a location lying 1.5km to the south-west of the application site, for the following species: false darkling beetle (*Abdera flexuosa)*; a species of aquatic beetle (*Agabus biguttatus)*; a species of dung beetle (*Aphodius paykulli)*; *Atomaria diluta*; bast bark beetle (*Ernoporus tiliae*); *Mantura rustica*; a species of ground beetle (*Trechus subnotatus)*; and a species of weevil (*Tropiphorus terricola)*. However, no date was provided for any of these beetle records, and it is possible that these records are historical. An undated, and potentially old, record was also provided for the cobweb beetle (*Ctesias serra*), a nationally notable species, reported from land beside the Fenay Beck, approximately 530m to the west of the application site. Two further undated, and also potentially old, beetle records were provided for a location 960m to the south-west of the application site, relating to two species of water beetle (*Hydraena nigrita* and *Hydraena pygmaea*). No invertebrate records were provided for the application site itself.

The majority of the application site comprises habitat which is unlikely to support an important or notable invertebrate assemblage, comprising as it does of short and relatively species-poor pasture. The semi-mature and mature trees on the field boundaries are likely to have higher value for invertebrates, and the Beldon Brook may also support a number of aquatic invertebrates (crayfish are covered separately in Section 4.3.2).

Overall, given the nature of the application site, it is assessed as having less then local importance for invertebrates, and this group is not discussed further.

4.3.4 Amphibians

4.3.4.1 Desk Study Data

No great crested newt records were provided by WYES for the 2km radius search area, and only two amphibian records were supplied, both for common frog (*Rana temporaria*), the nearest of which lies *circa* 1.5km to the south-west of the application site, dating from 2013.

4.3.4.2 Results of Great Crested Newt (GCN) HSI Suitability Assessment and Presence/ Absence Survey

There are no ponds within the application site, however four ponds (P1-P4 in Drawing 3) and a ditch (D1) were identified within a *circa* 500m radius of the wider survey area.

The results of the GCN presence/ absence survey are provided in Table 4-3 overleaf. Table 4-3 also includes a brief description of each waterbody, and the results of the Habitat Suitability Index (HSI) assessment (HSI calculations are provided in Appendix 2).

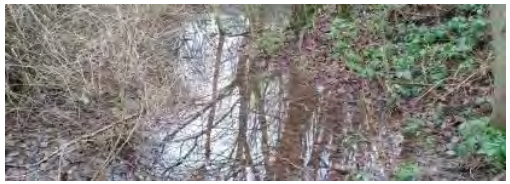
From Table 4-2 it can be seen that no GCN were recorded. Given that the application site has not changed appreciably since 2017, and no additional ponds with potential to support great crested newt occur within the vicinity, It is very unlikely that GCN would occur on the application site, and as such this species been excluded from further assessment.

Large numbers of common toad were recorded in Pond P1 (a peak count of 227 was recorded in March 2017). Pond P1 is of therefore of value to common toad, a Kirklees BAP and NERC Act 2006 Section 41 priority species.

However, as Pond P1 and the surrounding woodland strip (providing excellent terrestrial habitat for toads) lie well beyond the application site boundary and therefore would not be affected by the proposals, this species is not discussed further.

Table 4-3
Great Crested Newt Presence/ Absence Survey Results (2017)

Pond (Drawing 3)	Description	HSI score & GCN suitability	Turbidity	Veg. Cover (%)	Fauna Recorded			
					Visit 1	Visit 2	Visit 3	Visit 4
P1	Immediately beyond southwest Site boundary; 50 x 30m in size; surrounded by woodland; overflows into Beldon Brook. 	0.68 Average	Low	1- 70	227 x adult toad 2 x frogspawn clumps 1 x signal crayfish	c.50 x toad/ frog tadpoles many small fish	c.500 toad/ frog tadpoles many small fish 1 x signal crayfish	c.50 x toad/ frog tadpoles
P2	20m beyond western Site boundary; raised small (c.2.5 x 2.5m) circular garden pond with high stone sides. 	0.48 Poor	High	<1	Nil	Nil	Carp	Access to survey denied

Pond (Drawing 3)	Description	HSI score & GCN suitability	Turbidity	Veg. Cover (%)	Fauna Recorded			
					Visit 1	Visit 2	Visit 3	Visit 4
P3	130m to north-east of Site; 15 x 3m damp depression in Lepton Great Wood; seasonally wet. 	0.41 Poor	N/A	N/A	-	-	Dry	Dry
P4	250m west of Site; c. 20 x 5m pond in woodland by viaduct; seasonally wet. 	0.51 Below average	Low	0	5 x frogspawn clumps	Dry	Dry	Dry
D1	Immediately beyond southern Site boundary; section of ditch c.2m wide x 30m long; shaded by trees; seasonally wet. 	0.62 Average	Medium	0	2 x frogspawn clumps	Much reduced in size (no frogspawn evident)	Dry	Dry

4.3.5 Reptiles

Three reptile records were provided by WYES within a 2km radius of the application site, two for viviparous lizard (*Zootoca vivipara*) and one for grass snake (*Natrix helvetica*). However, all three reptile records date from 1914, and are therefore too old to be relevant. No reptiles were recorded incidentally, whilst undertaking other fieldwork, throughout 2017 or 2019.

The core of the application site is considered unlikely to support reptiles, as it is in use by cattle, and the fields of semi-improved grassland are well compacted, furthermore, the vegetation within them is short-sward in character providing relatively little shelter or cover. Land immediately beside the Beldon Brook, and the adjacent Pond P1 is assessed as having limited potential to support grass snake, which often use waterways as a means of moving around the landscape, and ponds as foraging habitat. However, grass snake, if present, are likely to be restricted to the extreme southern end of the Site, beside the Beldon Brook and Pond P1.

As neither the Beldon Brook nor Pond P1 would be affected by the development reptiles are therefore not discussed further within this assessment.

4.3.6 Breeding Birds

4.3.6.1 Desk Study

A number of bird records were provided by WYES within 2km of the application site, in total covering 35 species (multiple records were provided for most of these species). Although a small number of these records were provided for 2015, the majority date from the year 2000 or earlier; in fact many records have been provided for the period 1970-1988. Furthermore, none of the bird records relate to the application site itself, or its immediate surroundings. Nevertheless, records of note include a kingfisher (*Aledo atthis*) nest on the Woodsome Beck, over 1km to the south-west of the Site, dating from 2001; and an old (1970-1988) record of lesser spotted woodpecker (*Dendrocopus minor*) for the tetrad SE1814. An historical record (1970-1988) was also provided for willow tit (*Poecile montanus*), however, this record relates to land over 1.5km from the Site boundary.

4.3.6.2 Results of CBC Breeding Bird Survey

Drawings 4a-4c illustrate the results of the three CBC breeding bird surveys carried out during 2017, and Table 4-4 lists the birds of conservation concern[33] recorded on Site or areas during these surveys, and the likely breeding status of the species concerned within the site survey site. A full list of all bird species recorded is provided in Appendix 7.

From this it may be seen that a total of 36 bird species were recorded during the surveys, most of which are common and widespread, although a small number of species of conservation concern[32] were also recorded, including a number of 'farmland species'.

Four Red List species were recorded within the wider survey site, namely linnet, mistle thrush, song thrush and yellowhammer, and it is possible (but unconfirmed) that these species bred within scrub, hedgerow or tree habitat on the Site. A further three Red List species, house sparrow, starling and grey wagtail, were recorded within the immediate surroundings of the wider survey site.

[33] Including Red and Amber Listed Birds of Conservation Concern Species (Eaton *et al*., 2015), Wildlife and Countryside Act 1981 (as amended) Schedule 1 Species, NERC Act 2006 Section 41 Species and Kirklees Biodiversity Action Plan Priority Species.

Table 4-4
Species of Conservation Concern recorded during CBC surveys and their likely breeding status (2017)

Species	Conservation Status	Summary of Records	Likely Breeding Status
Dunnock (*Troglodytes troglodytes*)	Amber; S41; LBAP	Recorded regularly singing from vegetation in the interior of the Site and along Site boundaries. Peak of four recorded in May and June.	Probable
Grey wagtail (*Motacilla cinerea*)	Red	Recorded by Pond P1 (off-Site) in May	Possible (off-Site)
House sparrow (*Passer domesticus*)	Red; S41; LBAP	Recorded off-Site only, in gardens to the north of the Site. Peak of six recorded in May.	Probable (off-Site)
Kestrel (*Falco tinnunculus*)	Amber	Individual hunting in Field 5 in June	Possible
Kingfisher (*Alcedo atthis*)	Amber; S1	Individual recorded at Pond P1 (off-Site) in April	Possible (off-Site)
Linnet (*Linaria cannabina*)	Red; S41; LBAP	Two recorded flying across Fields 2 and 3 in April, and individual recorded singing from boundary vegetation in Field 1 in May.	Possible
Mallard (*Anas platyrhynchos*)	Amber	Between one and four mallards recorded in and around Pond P1 (off-Site) during each surveyor recorded here in June; a male and female recorded in Field 6 in April.	Possible
Mistle thrush (*Turdus viscivorous*)	Red	Two observed in aggressive encounter with a sparrowhawk in Lepton Great Wood in April.	Possible
Song thrush (*Turdus philomelos*)	Red; S41; LBAP	Individual singing from scrub in south-west corner of Site in April; two recorded off-Site near Pond P1 in May and June.	Possible
Starling (*Sturnus vulgaris*)	Red; S41; LBAP	Three recorded in field immediately south of Field 4 (off-Site) in June.	Unlikely (off-Site)
Swift (*Apus apus*)	Amber	Two flying across Field 5 in May; one feeding over Field 4 and Field 1 in June.	Non-breeding
Teal (*Anas crecca*)	Amber	Individual recorded on Pond P1 (off-Site) in May	Unlikely (off-Site)
Yellowhammer (*Emberiza citrinella*)	Red; S41; LBAP	Individual singing from hawthorn scrub in centre of Field 1 in April.	Possible

Table key: Red = Red Listed Birds of Conservation Concern Species,[34] Amber = Amber Listed Birds of Conservation Concern Species,[23] Sec 41= NERC Act 2006 Section 41 Species,[23] S1 = Wildlife and Countryside Act 1981 (as amended) Schedule 1 Species, LBAP = priority species listed on Kirklees Biodiversity Action Plan.

[34] Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stround DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 108, pp 708 -746.

Swift, an Amber List species, was recorded feeding across the fields within the application site, although there is no suitable breeding habitat for this species within the Site. Kestrel, also an Amber species, was observed using the fields for hunting. Mallards were recorded on several occasions, particularly around Pond P1, but no evidence of breeding was recorded.

Kingfisher, an Amber List and Schedule 1 species, was recorded on a single occasion feeding within Pond P1. Some sections of the Beldon Brook were found to have suitable nesting habitat for this species, with exposed steep muddy banks, however no kingfisher nests were found during 2017 or 2019.

Within the wider survey site itself, many of the birds were associated with the scrub, hedgerows and trees along the field margins. However, off-Site areas, specifically Lepton Great Wood to the east and the area of woodland around Pond P1 and Beldon Brook, to the south-west, appear to be of higher value to a range of species. Few birds were recorded within the open semi-improved grassland fields, and no evidence of breeding, or territorial behaviour, by ground-nesting birds, such as lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*) or meadow pipit (*Anthus pratensis*) was recorded, and the application site does not appear suitable for these species in its current state.

Tawny owl (*Strix aluco*) was heard calling from Lepton Great Wood and woodland beside the Beldon Brook frequently during the 2017 and 2019 bat surveys, and occasionally tawny owl were observed within the wider survey site, flying into trees or from trees into Lepton Great Wood. None of the trees within the wider survey were found to contain evidence of breeding tawny owl.

On the evening of 28th August 2019 a barn owl (*Tyto alba*) was recorded on Site, briefly. This bird was seen flying from Field 5 eastwards towards Lepton Great Wood at 20.48 hrs, before heading northwards at 20.55hrs. The barn owl appeared to continue north, towards Rowley Lane, and out of view. Barn owl was not recorded on any other occasions, and the grassland is considered too short to offer suitable foraging conditions for this species.

The bird species recorded on the wider survey site represent a reasonably typical but non-notable farmland/ urban fringe bird assemblage. Overall, given the relatively low occurrence and density of species of conservation concern within the site, the assemblage is considered to be of less than Local importance for birds.

However, as active bird nests (i.e. nests containing eggs or young, or in the process of being built) are protected under the Wildlife and Countryside Act 1981 (as amended) they have been discussed further within this report.

4.3.7 Bats

4.3.7.1 Desk Study

A total of 46 bat records were provided by the WYES for the 2km radius search area.

Of these, 22 relate to common pipistrelle (*Pipistrellus pipistrellus*); two to soprano pipistrelle (*Pipistrellus pygmaeus*); one to pipistrelle sp.; two to Leisler's (*Nyctalus leisleri*); two to noctule (*Nyctalus noctula*); four to brown long-eared bat (*Plecotus auritus*); one to brandt's bat (*Myotis brandtii*) and one to whiskered bat (*Myotis mystacinus*). A further record relates to Myotis sp., and ten were not specified to species or genus level (i.e. vespertillionidae).

Many of these records relate to foraging bats, or bats in flight (i.e. 'field records'), and none of these records were provided for the application site itself.

Bat roost records were provided for common pipistrelle 800m to the south-west of the application site (dating from September 2015), 1.5km to the south-east of the application site (August 2008), 0.9km to the south of the Site (February 2007), and Fenay Brdige, circa 550 metres to the north of the application site (August 2018). Roosting records for brown long-eared bat were provided for a site located c.1km to the south-east of the application site (dating from September 2010, June 2011, and the winter of 2009).

A record was provided for a Brandt's and whiskered bat maternity roost (although it is unlikely that both species use the same roost), for a location situated approximately 940 metres to the south-west of the application site boundary, dating from May/ June 2019. A record of 12 common pipistrelles was also provided for this site, again, dating from May/ June 2019.

Details of two roosts (dating from July 2001 and July 2003) were provided 1.6km and 1.7km to the north-west of the application site, which supported 30 and 40 bats respectively (not identified to species-level in the data supplied by the WYES). A record for a maternity roost of an unspecified species of bat was provided 670m to the north-west of the application site (July 2012).

Further roosts/ possible roosts of unspecified species of bat were provided for sites located 1.6km to the north of the application site (April 2010); 1.5km to the south of the application site (June 2005); 0.9km to the south of the application site(dating from 2007); 1.3km to the south-east of the application site (January 2006); and 0.9km to the north-east of the application site in 1999.

A further roost, of an unspecified species of bat, was provided for a property within Hermitage Park, located immediately adjacent to the north-western application site boundary (dating from August 2000). This record relates to a count of one bat, but no further details were supplied.

4.3.7.2 Results of Preliminary Roost Assessment of Trees for Roosting Bats (2017)

The application site does not contain any buildings. However, a total of 37 semi-mature and mature trees within the wider survey area (T1-T37 in Drawing 5) were assessed for their potential to support roosting bats. The results are provided in Table 4-5 and illustrated in Drawing 5. From this it may be seen that 21 trees were assessed as having Negligible potential for roosting bats; five were assessed as having Low potential; three as having Moderate potential; and eight as having High potential.

Those trees with above Negligible potential for roosting bats were therefore subject to dusk/ dawn bat detector surveys during 2017. This was updated by further surveys during August and September 2019, which focussed on those trees with greater than Negligible potential for roosting bats which are likely to be affected by the scheme.

Table 4-5
Assessment of the potential of Trees T1-T37 to support roosting bats

Tree (see Drawing 5)	Description	Potential for Roosting Bats
T1	Medium-sized pedunculate oak; 15-20 metres tall, with a tear on the north-facing side	Low
T2	Medium-sized pedunculate oak, 15-20 metres tall	Negligible
T3	Medium-sized pedunculate oak, 15-20 metres tall	Negligible

Tree (see Drawing 5)	Description	Potential for Roosting Bats
T4	Medium-sized pedunculate oak with double-trunk; 15-20 metres tall	Negligible
T5	Medium-sized pedunculate oak; small cavity in horizontal branch 4 metres high on north-facing side; Shallow cavity in trunk on west facing side 3 metres high	Low
T6	Medium-sized pedunculate oak with double-trunk; 15-20 metres tall	Negligible
T7	Mature pedunculate oak, with wide girth to trunk; 2 split branches 2 metres high; cavity on angled branch facing north-west 4-5 metres high; several other splits and cracks	High
T8	Medium-sized pedunculate oak with two planks nailed to branches, creating some kind of basic'tree house'	Negligible
T9	Medium-sized pedunculate oak with double-trunk; two branches have fused together on northern side, 2.5 metres high; 2 cracked branches on south-facing side 3 m high.	Low
T10	Medium-sized pedunculate oak with double-trunk; 20 metres tall	Negligible
T11	Mature pedunculate oak; large split where north-facing horizontal branch has snapped off and is hanging 3-4 metres high; another split is developing on a thinner branch 4 metres up on the north-facing side; and there is a rot hole on the west-facing side 3 metres high	High
T12	Mature hawthorn bush, with cavity and hollow section of trunk, 1 metre high on north-facing side	Moderate
T13	Mature pedunculate oak 20 metres tall; large split 8-10 metres high on north-western side	Moderate
T14	Medium-sized pedunculate oak, 15 metres tall, with large hollow section on main trunk, facing north, 2-4 metres high, which appears to extend up into the main trunk;	High
T15	Medium-sized pedunculate oak, 20 metres tall	Negligible
T16	Medium-sized pedunculate oak, 20 metres tall with dead central section fused to main trunk; also cavity on main trunk 2 metres high; and snapped off branch 6 metres high on south-eastern side	High
T17	Medium-sized pedunculate oak, deep hole 4 metres high on west-facing side; damage to main trunk on eastern side	High

Tree (see Drawing 5)	Description	Potential for Roosting Bats
T18	Medium-sized alder with snapped off branch, but no depth to cavity	Negligible
T19	Semi-mature pedunculate oak with barbed wire cutting into trunk, low down, from fence beside Beldon Brook	Negligible
T20	20 metre tall crack willow with double-trunk	Negligible
T21	Medium-sized pedunculate oak, 20 metres tall	Negligible
T22	Medium-sized pedunculate oak, 20 metres tall, leaning away from Pond P1; rot hole 3 metres high on western side	Low
T23	Medium-sized pedunculate oak, 20 metres tall	Negligible
T24	Relatively young, yet 20 metres tall, sycamore	Negligible
T25	Medium-sized alder with hole in main trunk, 4 metres high on western side	Low
T26	Medium-sized alder with few side-branches, and squirrel drey at top; 20 metres tall	Negligible
T27	Medium-sized sycamore with double-trunk; a crack willow on the far side of the brook (off-Site) has fallen and got caught on T27	Negligible
T28	Medium-sized pedunculate oak, 15 metres tall; large split and much decay on eastern side, 5 metres high	High
T29	Medium-sized pedunculate oak; hollow dead branch snagged and resting up against main trunk 5 metres high; split horizontal branch 3 metres high on west facing side	Moderate
T30	Medium-sized ash, 20 metres tall	Negligible
T31	Medium-sized pedunculate oak with very large cavity on eastern side, 7 metres up, appearing to lead into section of hollow trunk	High
T32	Medium-sized ash, 15 metres tall	Negligible
T33	Medium-sized pedunculate oak, 20 metres tall	Negligible
T34	Medium-sized pedunculate oak, 15 metres tall, with spreading canopy	Negligible
T35	Medium-sized pedunculate oak, 20 metres tall	Negligible
T36	Medium-sized pedunculate oak with a few shallow rot holes, but none with sufficient depth to support roosting bats; 20 metres tall	Negligible

Tree (see Drawing 5)	Description	Potential for Roosting Bats
T37	Mature pedunculate oak growing along line of drystone wall; woodpecker hole 8 metres high on south-facing side; large split limb 3 metres high on south facing side	High

4.3.7.3 Results of Evening Emergence and Dawn Re-entry Surveys during 2017

Trees with Low, Moderate or High potential to support roosting bats were subject to at least one evening emergence or dawn re-entry survey during August 2017. In addition, a single dawn survey was undertaken on the line of residential houses abutting the Site to the north. The results are presented in Table 4-6.

From this it may be seen that no bats were confirmed as emerging from or re-entering roosts within any of the trees or off-Site residential area surveyed. There was some uncertainty about whether a common pipistrelle bat emerged from tree T37 on the 9th August 2017, as the surveyor was not able to determine the location of a bat which was heard on the bat detector 24 minutes after sunset. Therefore, the tree was subject to a second survey on the 14th August 2017, and no roosting bats were recorded. It is considered more likely that the common pipistrelle recorded 24 minutes after sunset on the 9th August passed behind the surveyor and did not emerge from the tree. Furthermore Tree T37 is due to be retained, and lies on the edge of a 0.83ha of land outside of the application site itself, that is due to be enhanced ecologically.

Levels of bat activity were generally high, particularly along the margin of Lepton Great Wood and along internal vegetated field boundaries.

Table 4-6
Results of evening emergence and dawn re-entry surveys of trees (August 2017)

Ref. (see Drawing 5)	Date	Bat Roost	Bat Activity Summary
T1 – T9	14th August 2017 (Dusk)	None	Very regular common pipistrelle foraging activity recorded along the tree line containing T1 and in Field 3 to the south. Up to three common pipistrelle bats recorded at any one time. Single noctule pass recorded at 21:00 and single Myotis sp. pass recorded at 21:37.
T1 – T9	22nd August 2017 (Dawn)	None	Common pipistrelle recorded occasionally flying along the tree line or along the hedgerow to the west. Two noctules observed flying northwards from Field 3.
T11	22nd August 2017 (Dusk)	None	High levels of foraging activity throughout survey, particularly along the line of scrub either side of T11, but also in the open Field 3 to the north. Common pipistrelle was most commonly recorded, with occasional Myotis sp. also recorded. A distant noctule pass was also recorded on a single occasion.
T12 & T13	21st August 2017 (Dusk)	None	Bats recorded frequently foraging along the tree and scrub line, and occasionally flying across Field 7 to the south. Common pipistrelle most commonly recorded, with Myotis sp., soprano

Ref. (see Drawing 5)	Date	Bat Roost	Bat Activity Summary
			pipistrelle and brown long-eared also recorded but very occasionally. Up to three bats seen at any one time.
T12 & T13	23rd August 2017 (Dusk)	None	Activity levels were moderate. Common pipistrelle was recorded occasionally foraging along the northern edge of the tree line and along the margin of Lepton Great Wood. Common pipistrelle also recorded flying to the south of the tree line into Lepton Great Wood. Myotis sp. recorded on two occasions.
T14, T15 & T16	23rd August 2017 (Dawn)	None	Moderate levels of foraging activity by common pipistrelle, mostly along the tree line. Two common pipistrelle bats showed some interest in T16 between 5:18 and 5:22, but then flew off to the north. A single faint noctule pass was also recorded.
T17	10th May 2017 (Dusk)	None	High levels of foraging activity recorded. Noctule recorded flying along the tree line to the north on two occasions; common pipistrelle recorded regularly foraging along the tree line in both directions. Brown long-eared observed flying along the tree line to the north at 21:29.
T22	21st August 2017 (Dusk)	None	Constant common pipistrelle and Myotis sp. foraging activity over Pond P1 throughout survey.
T25	23rd August 2017 (Dusk)	None	Almost constant foraging loops by common pipistrelle along the Beldon Brook involving up to three bats at any one time. Noctule recorded entering Lepton Great Wood at 20:33.
T28	22nd August 2017 (Dusk)	None	Brief pipistrelle sp. foraging was recorded on several occasions within close proximity to T28, as well as in Field 5 to the west and Field 6 to the east. Noctule observed flying across Field 5 towards Beldon Brook to the south on a single occasion.
T29 & T31	23rd August 2017 (Dawn)	None	Bat activity levels were moderate. Common pipistrelle was recorded foraging along the tree line on several occasions, and observed flying across Field 5 in a northerly direction. Noctule was also recorded flying eastwards across the tree line towards Lepton Great Wood.
T37	9th August 2017 (Dusk)	None confirmed	The first common pipistrelle pass was recorded at 21:13 (24 mins after sunset), however the bat was not seen by the surveyor, and it was not possible to confirm whether the bat emerged from the tree or not. The emergence survey was therefore repeated on the 14th Occasional foraging passes of common pipistrelle recorded throughout the remainder of the survey.
T37	14th August 2017 (Dusk)	None	Moderate levels of pipistrelle sp. foraging recorded, concentrated over the field to the south-east and south-west of

Ref. (see Drawing 5)	Date	Bat Roost	Bat Activity Summary
			T37, mostly of one bat which was occasionally joined by a second bat.
Row of houses to north of Site (abutting Field 1)	24th August 2017 (Dawn)	None	Common pipistrelles were recorded frequently foraging in the north-east corner of Field 1 close to Lepton Great Wood. Several individuals were seen to fly northwards from Lepton Great Wood over the line of houses abutting the Site towards further houses beyond.

4.3.7.4 Results of Evening Emergence Surveys during 2019

In order to update the surveys carried out in 2017, those trees with above Negligible potential to support roosting bats, with scope to be affected by the proposals, either directly (for example, loss of the tree) or indirectly (for example by removal of other trees around them) were subject to at least one evening emergence survey during August and September 2017.

Those trees with Low potential have been subject to a single dusk survey in August; those with Moderate potential received two dusk surveys (one in August and one in September); and those with High potential were subject to three emergence surveys (two in August and one in September). Survey commenced 15 minutes before sunset and finished 1.5 hours after sunset. Bat recordings were made using an Anabat Express frequency division bat detector and subsequently analysed using Analook to confirm identification; in this way levels of bat activity around each tree were also gathered. The weather conditions experienced during each survey are detailed within Appendix 4. The results are presented in Table 4-7.

Table 4-7
Results of evening emergence surveys of trees (August and September 2019)

Ref. (see Drawing 5)	Date	Bat Roost	Bat Activity Summary bat passes during period from 15 mins before sunset to 1.5 hrs after sunset)				
			Pp	Ppyg	Nn	Myo	Pa
T1	20th August	None	8		1		
T5	27th August	None	6		3	1	
T7	19th August	None	7				
	27th August	None	4		5	2	1
	9th September	None	35		2		
T9	29th August	None	2				2
T11	19th August	None	49		3		
	25th August	None	12		1		
	6th September	None	44	2	1	1	

Ref. (see Drawing 5)	Date	Bat Roost	Bat Activity Summary bat passes during period from 15 mins before sunset to 1.5 hrs after sunset)				
T14	19th August	None	20	4	2	4	
	24th August	None	2		5	2	
	9th September	None	58		2	1	
T16	24th August	YES[1]	29		9	1	13
	28th August	None	12		9	1	
	5th September	None	47		1	2	
T28	23rd August	None	16		11		
	28th August	None	5				
	5th September	None	8				
T29	23rd August	None	7		6	1	
	8th September	None	6				
T31	25th August	None	3		6		
	29th August	None	11			1	
	8th September	None	9		4		
Totals			**400**	**6**	**71**	**17**	**16**

[1] 2 x brown long-eared bats emerged from Tree T16 on the 24th August 2019. No emergence was noted in this tree during the other two surveys, and no roosts were recorded in the other trees during any of the surveys.
[Key: Pp = common pipistrelle; Ppgy = soprano pipistrelle; Nn = Noctule; Myo = Myotis sp.; Pa = brown long-eared]

From this it may be seen that a single tree (T16, which, along with the tree line in which it sits, lies outside of the application site boundary) was found to support a bat roost; two brown long-eared bats were recorded emerging from this tree on the evening of 24th August 2019 (Plate 13).

In terms of the levels of bat activity recorded during the surveys, the majority of the bat passes (78%) relate to common pipistrelle, whilst noctule accounted for 14%; Myotis sp. and brown long-eared bat 3% each, and soprano pipistrelle approximately 1%.

Levels of bat activity were generally higher around Tree T11, which is located between Fields 3 and 6, and along the line of trees containing T14 and T16.

***Plate 13**: Tree T16, found to contain a small roost of brown long-eared bats during August 2019; this tree, and the tree line in which it sits, lie outside of the application site boundary*

4.3.7.5 Results of Walked Bat Activity Transect Surveys (2017)

The results of the evening walked bat transect surveys undertaken on three occasions during 2017 are illustrated in Drawing 6 and summarised in Figure 4-1. The results are also provided in tabular form in Appendix 4.

From this it may be seen that four bat species/ species groups were recorded during the walked transects. Common pipistrelle was the most commonly recorded species, accounting for 89 % of all activity; brown long-eared bat was the second most common species recorded, accounting for 6 % of all activity recorded, followed by Myotis sp. (accounting for 4 % of activity), and noctule (accounting for 1 % of activity).

The highest levels of activity were recorded at sample point 17, located within woodland by Pond P1 and the Beldon Brook, immediately to the south-west of the survey site itself, where an average of 26 passes per five minute sampling period were recorded. Activity levels were also high at sample point 5, on the northern boundary of the Site next to a strip of broad-leaved plantation woodland, where an average of 18 bat passes per five minutes was recorded. High levels of activity were also recorded at sample point 1, on the northern boundary of the Site, adjacent to Lepton Great Wood, as well as sample point 19, and on the eastern boundary also adjacent to Lepton Great Wood, where 11 bat passes per five minutes were recorded on average.

Elsewhere, bat activity levels were low to moderate, with an average of six bat passes or less recorded at each of the remaining sample points.

Common pipistrelle was recorded at almost all sample points, whereas brown long-eared was only recorded at eight of the 22 points, mostly at woodland edges or close to boundary vegetation (such as scrub, trees and woodland strips). Noctule was only recorded at two sample locations, in an open field location near trees (point 10) and close to boundary scrub (point 13). Myotis sp. was most frequently recorded by Pond P1, where bats

were observed foraging over the pond, and occasionally in the eastern half of the Site within close proximity to Lepton Great Wood.

4.3.7.6 Results of Static Bat Detector Activity Surveys (2017)

The results of the static bat detector surveys are illustrated in Drawing 7 and presented in Figure 4-2, whilst tabulated results are also provided in Appendix 8.

At least six species of bat were recorded (and possibly more as some calls could not be identified to species level), namely common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), Myotis sp., noctule, noctule/ Leisler's and brown long-eared bat.

As with the walked bat transects, common pipistrelle was the most commonly recorded species of bat during the static bat detector surveys, accounting for 67.9 % of bat passes. This species was present at all locations sampled, but was most frequently at Location C, on the eastern Site boundary with Lepton Great Wood, and at Location E, in woodland by Pond P1 (immediately to the south-west of the Site).

Myotis sp. accounted for 30.0% of bat calls recorded, and most passes were recorded at Location E, by Pond P1 (which heavily influenced the results), with occasional passes also recorded at Location C (at the margin of Lepton Great Wood), and very occasional passes at the remainder of the sample locations.

Noctule accounted for 1% of the total activity and was recorded at low frequency at all sample locations. Soprano pipistrelle, brown long-eared and noctule/ Leisler's accounted for less than 1% of the bat passes recorded in total and were each recorded at low frequency at all of the sample locations. A single Nathusius' pipistrelle pass was recorded at Location B (by a dry stone wall in the north-western part of the Site) in May. Nathusius' pipistrelle is a rare but widespread species[35]. The fact that just a single pass was recorded suggests that the bat was just passing through the Site, rather than using the Site for prolonged foraging, and that the Site is not of importance to this species. This species was not recorded during any of the other bat surveys carried out in 2017 or 2019.

The overall level of bat activity was high at Location E (by Pond P1), where an average of 53 bat passes per hour were recorded, indicating that this wooded pond is a particularly important foraging area for bats, particularly common pipistrelle and Myotis sp. The margin of Lepton Great Wood was also found to be an important feature for bats (an average of 29 bat passes per hour were recorded at Location C). Moderate levels of bat activity were recorded at Locations A and D, along vegetated field boundaries in the interior of the Site. Activity levels were the lowest at Location B (by a drystone wall in the north-western portion of the Site), although an average of more than two bat passes per hour was still recorded here.

Bat activity levels were broadly comparable across the May and July survey sessions, but were appreciably lower in the September survey session.

Based on the assemblage of bats present, and the relatively high levels of bat activity recorded either on the Site or immediately beyond the boundary, the Site is assessed as being of Local importance for foraging/ commuting bats and the potential impact upon bats has been discussed further.

The Site is not considered to have high value to roosting bats; a small roost (two brown long-eared bats) was recorded in one of the trees (T16) during 2019, however this tree, and the tree line in which it sits, shall be retained. No roosts were found in any of the other trees, either during 2017 or 2019, and the Site itself does

[35] http://www.bats.org.uk/pages/nathusius_pipistrelle.html

not contain any buildings or other structures of potential value to roosting bats, therefore there will be no impact upon roosting bats, and this has been excluded from further assessment.

4.3.8 Badger

No badger setts were found within 30 metres of the application site boundary, and although badgers are known to occur within the general vicinity of the Site they are not considered likely to be affected by the current proposals; this species has therefore been excluded from further assessment.

4.3.9 Riparian Mammals – Otter and Water Vole

Two otter records were provided by WYES for the 2km search area, both relating to the Woodsome Beck. The nearest relates to a 'field record' 1km to the south-west of the application, dating from August 2015, and the other to an otter spraint found 1.1km to the south-west of the application site, in 2006. Two water vole records were also provided, the nearest relating to a possible burrow recorded on the Beldon Brook, 350m to the south of the application soite, dating from April 2015, and the second relating to some water vole droppings on the Woodsome Beck, 1.1km to the south-west of the Site, dating from 2001. Six records were also provided for American mink (*Neovision vision*) (a non-native species which heavily predates water vole), all dating from 2001, the nearest of which relates to the Fenay Brook.

Given that no habitats with potential to affect either species will be affected by the proposals, both are excluded from further assessment.

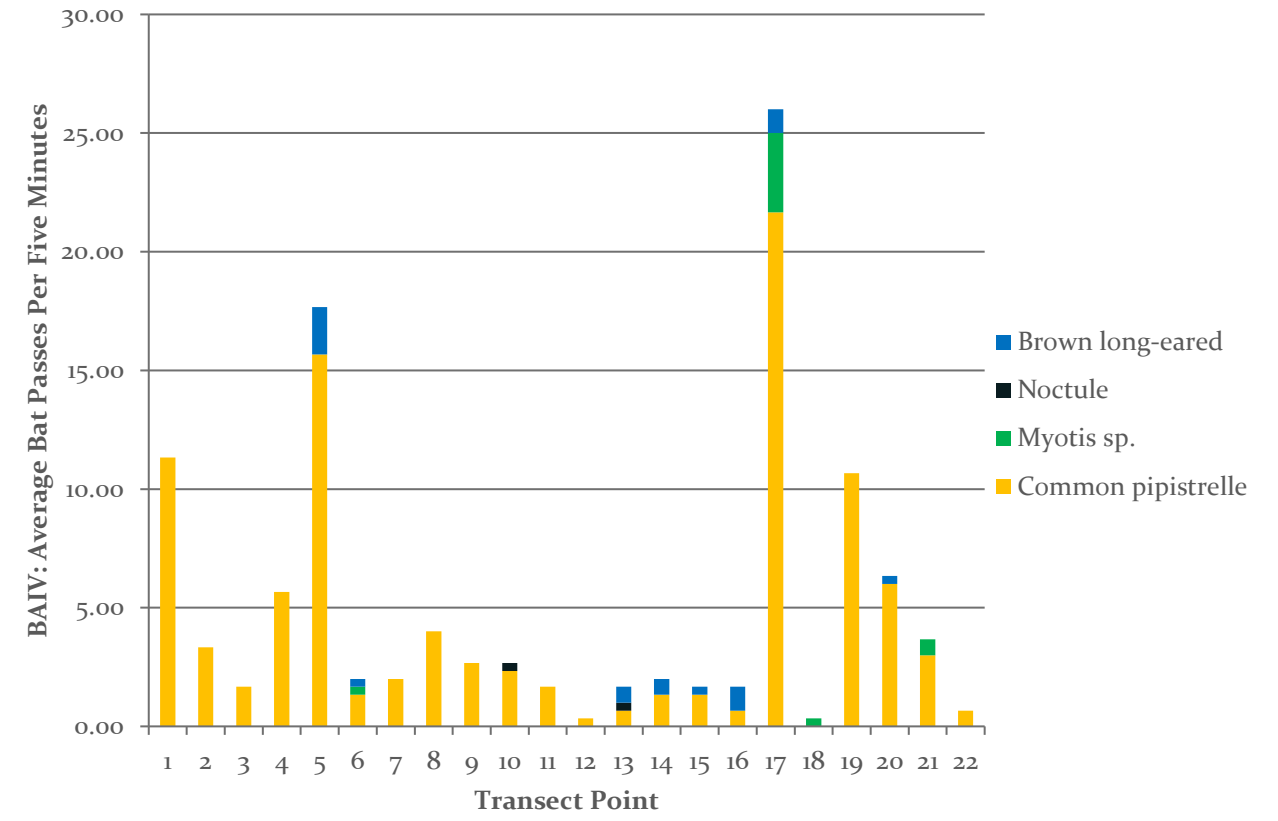
4.3.10 Other Mammals

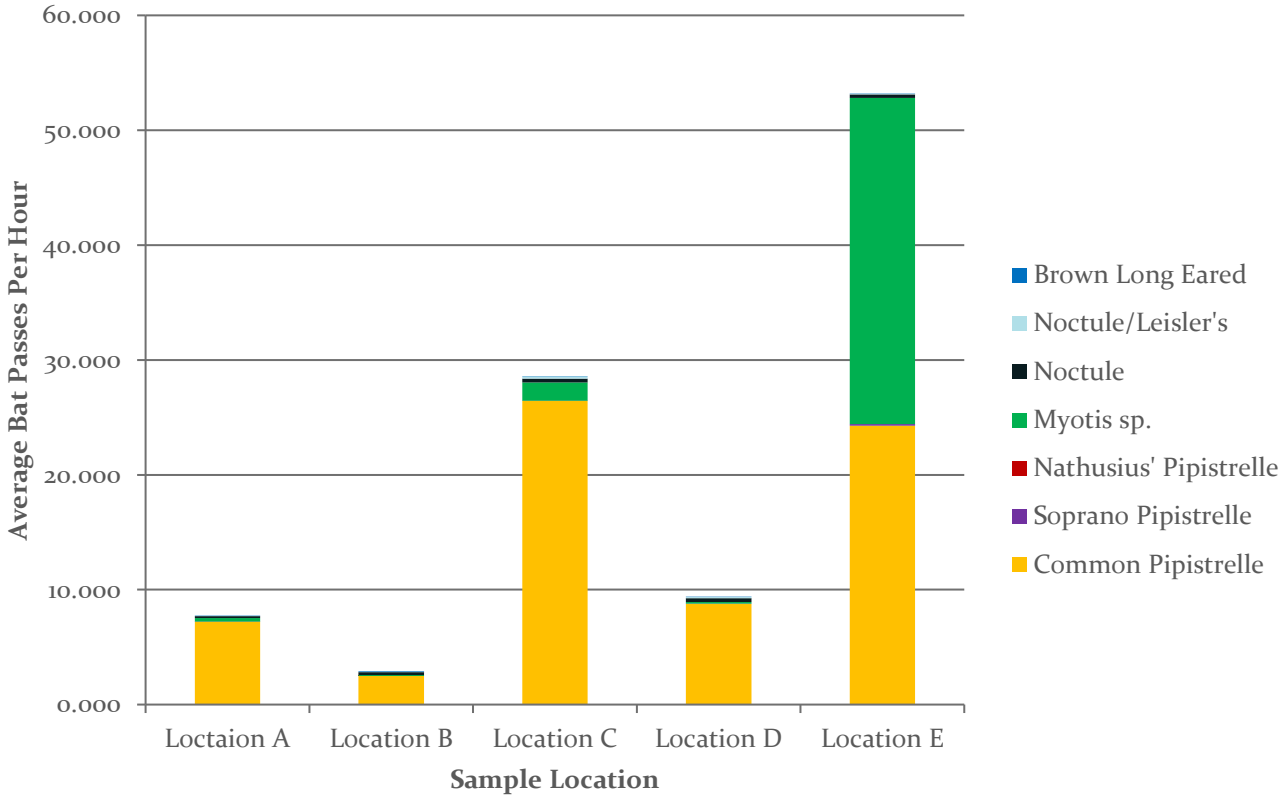
Two brown hare (*Lepus europaeus*) records were provided by the WYES, dating from 1986 and 2015, neither of which refer to the application site or its immediate surroundings. Two grey squirrel records (*Sciurus carolinensis*) were also provided.

No brown hares were noted on application site during any of the survey visits. Grey squirrel was observed frequently within and around the larger trees, and rabbits (*Oryctolagus cuniculus*) were often seen grazing around the edges of the fields, particularly in the southern part of the site. Red fox (*Vulpes Vulpes*) were also seen, though not frequently, and most often crossing the site from the west, heading towards Lepton Great Wood. Hedgehog (*Erinaceus europaeus*) was not observed within the site itself, however, a single hedgehog was seen on Rowley Lane, a short distance to the north of the site on one occasion in August 2019; this animal was picked up and placed within one of the nearby gardens.

The application site is not considered to be important for these additional species, and they have been excluded from further assessment.

Figure 4-1 and 4-2
Results of walked bat transects (above) and static bat detector surveys (below) during 2017)





4.4 Summary of Important Ecological Receptors

Ecological receptors assessed as having local importance or greater, and which could potentially be affected by an unmitigated scheme are summarised in Table 4-8.

Where a receptor has been omitted from detailed assessment (due to no potential impacts arising or it having less than local ecological importance), a rationale has been provided earlier within this report.

Protected species recorded on the Site that could be affected by the proposed development, for example, active bird nests, are also included on the list regardless of their ecological importance.

Table 4-8
Summary of Important Ecological Receptors Subject to Detailed Assessment

Important Ecological Receptor	Scale at which Receptor is Important	Rationale/ Further Information
Lepton Great Wood	Local	Lepton Great Wood abuts the application site to the east, and will be readily acceptable to new residents. It currently contains a well-established and interconnected network of public footpaths and other informal tracks. As well as being a Local Wildlife Site, it also contains Ancient Semi-Natural Woodland, supports >20% bluebell cover, and forms part of the Kirklees Wildlife Habitat Network.
Semi-Improved Neutral Grassland (G1 and G2 in Drawing 1)	Local	G1 and G2 are more diverse than the grassland in other parts of the Site.
Hedgerows, Tree Lines and Mature Trees	Local	Of intrinsic value; some forming habitat links between Lepton Great Wood and the application site itself
Bats (Foraging/ Commuting)	Local	All bat species and their roosts are protected under the Habitats Directive and The Wildlife and Countryside Act 1981 (as amended). At least six species of bat were recorded, with very high levels of activity recorded around Pond P1 (several hundred metres from the application site) and high levels on the eastern Site boundary by Lepton Great Wood. Bats were also found to forage alongside trees, and scrubby field boundaries across the wider survey site in moderate numbers, and to a lesser extent the open grassland. A small brown long-eared bat roost was recorded within a tree occurs beyond the application site boundary.
Breeding Birds	Less than Local	Active nests are protected under the Wildlife and Countryside Act 1981 (as amended).

5.0 Assessment of Effects including Mitigation and Enhancement

This section discusses the potential ecological impacts that could arise upon important ecological features (sites, habitats and species) as a result of developing the application site. It takes into account the measures which are proposed to mitigate adverse impacts, as well as proposals to enhance the Site ecologically.

The assessment takes account of the proposed Illustrative Masterplan (Appendix 2), which has been produced in collaboration with the project Ecologist.

5.1 Non-Statutory Wildlife Sites

5.1.1 Lepton Great Wood

The application site borders Lepton Great Wood LWS to the west, although none of the designation falls within the application site itself. A suitable buffer (free of access roads, drives, buildings and gardens) shall be created along the edge of the wood to create a development-free zone beside the wood. Of this, 0.55ha of existing grassland (currently short-sward and grazed) within this buffer shall be allowed to grow tall and species-rich, whilst 0.35ha shall be planted with native shrubs (including hawthorn, hazel and blackthorn) and a further 0.1ha shall be planted with native trees (comprising locally sourced oak trees).

This shall result in a natural interface between the development and the woodland edge; furthermore, an informal mown path shall be created within this buffer, to create an alternative walking route to Lepton Great Wood itself.

During construction, this buffer zone shall be fenced off using Heras fencing or similar to protect both the trees and safeguard their associated Root Protection Areas.

A substantial area of Public Open Space shall be created through the centre of the site, containing walkways which connect up with public footpaths and other informal tracks to the west and east of the Site. The POS will contain open areas for informal play and dog walking. Furthermore, Lepton Great Wood is already well-used, including by dog walkers and mountain bikers, and has a well-developed network of footpaths and informal tracks running through it. It is expected that the majority of the additional recreational use arising from the scheme would be restricted to the existing network of pathways, and as such the majority of the wood shall remain unaffected.

Overall it is anticipated that development of the Site would not impact upon the integrity of the Lepton Great Wood LWS designation, and as a result No Net Change is predicted.

5.2 Habitats

5.2.1 Semi-Improved Neutral Grassland (G1 and G2)

Grassland areas G1 and G2 (Drawing 1) occur within the eastern part of the Site, close to Lepton Great Wood, and shall be retained as part of the buffer strip along the eastern site boundary. This buffer shall support approximately 0.1ha of woodland, 0.35ha of scrub, and 0.55ha of grassland, the grassland being subject to minimal management, other than a narrow mown path.

In addition, two attenuation basins (Basin 1 and Basin 2 with the Landscape Masterplan), which shall remain dry for much of the time, and area of POS between them, shall be sown with a tussocky grassland mix, such as

Emorsgate Seeds EM10[36] or similar, to be mown once every three years, in the autumn, creating a further 0.7ha area of valuable grassland habitat. In addition to this 0.13ha of grassland within Field 9 and the western part of Field 4 (refer to Drawing 1), which lies beyond the application site boundary, shall be allowed to grow tall and tussocky and more species-rich, enhancing its ecological value.

As a result of this, the overall amount of semi-improved grassland (excluding poor semi-improved grassland) shall increase, resulting in a net positive impact upon this habitat type, even though the total area of grassland overall (all types) shall fall.

5.2.2 Hedgerows, Tree Lines and Mature Trees

The majority of the existing hedgerows, shall be retained, as shall trees T35-T37, although sections of H1 and H2 will need to be removed to create an access road into the site, and a section of H4 will need to be removed to create an access road to the pumping station; the footprint of the pumping station itself will also result in the loss of a short line of scrub.

The loss of these trees will be mitigated for by a comprehensive programme of tree and scrub planting across the Site and in particular within the areas of POS, around the attenuation basins and alongside Lepton Great Wood.

Furthermore 0.85ha of additional native species-rich scrub and scrubby woodland planting shall take place within Field 9 and the western part of Field 4, as part of a wider programme of ecological enhancement works.

The Illustrative Landscape Masterplan (Appendix 2) shows the extent of the tree and shrub planting that is proposed, involving the use of a wide range of native species, namely: oak; field maple (*Acer campestre*); alder (*Alnus glutinosa*); silver birch; and beech. The tree planting will be supplemented by the introduction of native shrubs, namely dogwood (*Cornus sanguinea*); hawthorn; holly; field rose (*Rosa arvensis*); goat willow (*Salix caprea*); blackthorn, hazel and elder. In addition, many of the existing hedgerows will be gapped up, widened or otherwise enhanced.

An estimated 110 or so 'street trees' shall also be planted within the scheme, equating to a combined area of circa 0.45ha, once mature.

As shown within the Landscape Masterplan (Appendix 2), a new species-rich native hedgerow shall be planted between the built form and the majority of the buffer which separates proposed housing from Lepton Great Wood, as well as alongside the road to the pumping station, beside the access route into the site from Hermitage Park, and within parts of the central POS. In total, approximately 600m of new species-rich native hedgerow shall be planted, this shall be arranged in a double-staggered row, and will be an average of 4m wide (canopy spread) once matures.

In addition, some retained hedgerows shall be enhanced by additional planting, including under-planting beneath and between trees for H2, leading to further ecological gains.

Therefore, the overall net impact upon hedgerows, trees and other 'scrubby' habitat shall be positive and locally significant.

[36] https://wildseed.co.uk/mixtures/view/10

5.3 Species

5.3.1 Bats

None of the trees to be removed have been found to support roosting bats during surveys undertaken to date, however, as a precaution any trees assessed as having above Negligible potential for roosting bats that are due to be felled shall be subject to a precautionary climb-and-inspect survey or a further dusk/ dusk bat detector, immediately prior to their removal.

The planting of large numbers of trees and shrubs throughout the site, particularly within the central area of POS, in the strip alongside Lepton Great Wood, around the attenuation basins and within Field 9 and the western part of Field 4, as well as the creation of the attenuation basins themselves, will provide enhanced opportunities for bats. Overall, the net impact upon bats is predicted to be positive.

5.3.2 Nesting Birds

The Site was found to support a reasonably typical but non-notable assemblage of breeding birds, particularly associated with the trees and scrub along the field margins.

If unmitigated, scrub and tree removal has the potential to cause injury or mortality to breeding birds, and damage or destruction of eggs or nests. Therefore where vegetation removal is required this shall, if possible, be undertaken outside of the main bird breeding season (March to August inclusive). If this is not feasible, a check for nesting birds will be undertaken by a suitably experienced ecologist immediately prior to vegetation removal. Should nesting birds be encountered, an exclusion zone shall be established around active nests in order to prevent damage to the nests and/ or injury to the young birds, until they have fledged.

No evidence of use of the fields by ground-nesting birds (such as lapwing, skylark or meadow pipit) was recorded, and therefore loss of the grassland field habitat is unlikely to significantly impact upon birds, although some species (for example kestrel and, on one occasion barn owl) were noted to use these fields occasionally for hunting.

Furthermore, the majority of the boundary vegetation (i.e. trees, hedgerow, scrub and the woodland plantation strip) shall be retained, to minimise breeding bird habitat loss. Any loss of such habitats shall be more than compensated for by replacement planting.

Furthermore, trees and shrubs are likely to be planted within a number of private gardens by the new residents, and once these mature a limited range of urban and sub-urban bird species are likely to use them for feeding and/ or breeding. Some of the new residents may also erect bird nest boxes on their properties, or in their gardens, and/ or put out bird feeders, and this may also benefit certain species, albeit the majority of these are likely be common and widespread urban/ sub-urban species.

Based on this, it is anticipated that development of the Site is unlikely to significantly impact upon breeding birds, though it is acknowledged that some species will benefit and others are likely to be adversely affected.

5.4 Biodiversity Net Gain

As detailed within the Metric 3.0 spreadsheet provided as Appendix 9., the application site itself is calculated to have a baseline value of 26.17 biodiversity units and 5.68 hedgerow units. Post-development, it is predicted to support 28.87 biodiversity units and 8.44 hedgerow units, equating to a 10.33% overall BNG and 48.65% net gain in hedgerow units.

This is significant and positive.

5.5 Summary of Net Impact upon Receptors of Ecological Importance

Based upon the Proposed Planning Layout and the Landscape Masterplan (provided in Appendix 2), the overall net impact of the proposals upon receptors of ecological importance is described in the table below.

Table 5-1
Summary of Net Impact of Proposals upon Important Ecological Receptors

Important Ecological Receptor	Scale at which Receptor is Important	Summary of Mitigation/ Enhancement and Overall Net Impact
Lepton Great Wood	Local	Trees within Lepton Great Wood will be protected during site clearance works and development, using Heras fence, or similar, where required. Provision of substantial buffer alongside Lepton Great Wood, containing trees and shrubs, as well as retained grassland, absorbing much of the additional recreational pressure. Lepton Great Wood also contains an existing network of paths and tracks upon which additional recreational use is likely to be focussed/ restricted. No Net Change predicted.
Semi-Improved Neutral Grassland (G1 and G2)	Local	Loss of existing semi-improved grassland will be mitigated for by the improved management of G1 and G2 and the remaining grassland elsewhere, which, it is anticipated, will develop a more species-rich sward and more valuable structure. Positive impact upon this category of grassland, even though there will be an overall reduction in grassland (of all types) overall.
Hedgerows, Tree Lines and Mature Trees	Local	Overall net increase in trees, scrub, scrubby woodland and hedgerows as illustrated in the Landscape Masterplan. Positive and significant impact overall.

Important Ecological Receptor	Scale at which Receptor is Important	Summary of Mitigation/ Enhancement and Overall Net Impact
Bats (Foraging/ Commuting)	Local	The increase in tree, hedgerow and scrub/ scrubby woodland cover, as well as the two water attenuation basins, is predicted to improve conditions for foraging and commuting bats overall. Positive impact predicted.
Breeding Birds	Less than Local	Avoidance of vegetation removal during bird nesting season or pre-commence nest checks carried out. No breach of wildlife legislation is predicted.
Biodiversity Net Gain	N/A	10.33% overall net gain in biodiversity predicted, along with a predicted 48.65% increase in hedgerow units, which exceeds that requested by the Local Planning Authority.

DRAWINGS

Drawing 1: Extended Phase 1 Habitat Plan

Drawing 2: Locations of Waterbodies subject to White-Clawed Crayfish, Otter and Water Vole Survey

Drawing 3: Locations of Waterbodies Subject to Great Crested Newt Survey

Drawing 4a: Results of Breeding Bird Survey (18.4.17)

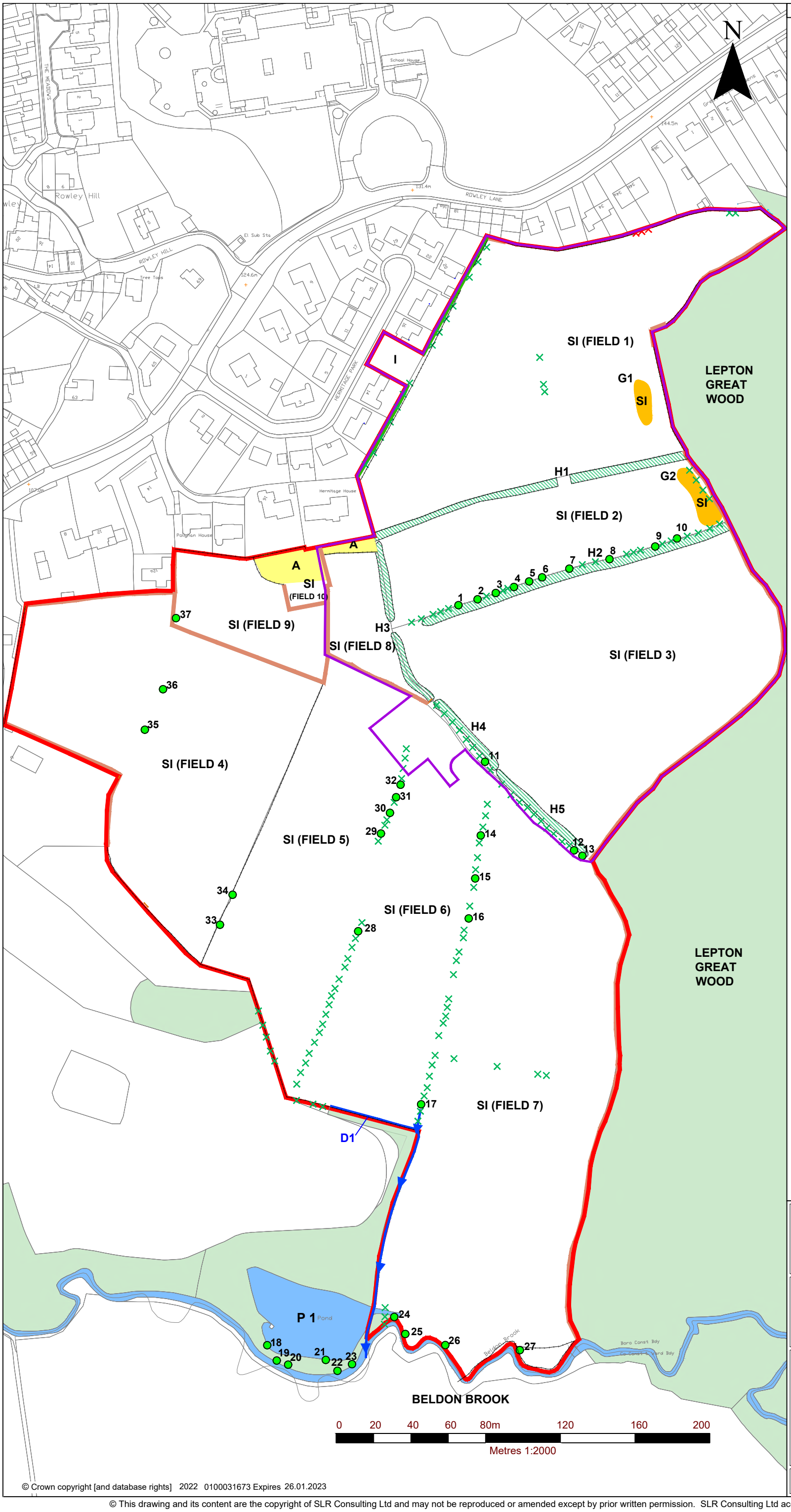
Drawing 4b: Results of Breeding Bird Survey (10.5.17)

Drawing 4c: Results of Breeding Bird Survey (9.6.17)

Drawing 5: Potential of Trees to Support Roosting Bats

Drawing 6: Results of Walked Bat Activity Transect Survey

Drawing 7: Results of Static Bat Detector Survey



LEGEND

- APPLICATION SITE BOUNDARY
- FULL SURVEY AREA BOUNDARY
- LOW WALL/DRYSTONE WALL (INCLUDING COLLAPSED)
- FENCE
- SCRUB/OVERGROWN HEDGEROW
- INTRODUCED SCRUB ON BOUNDARY WITH PROPERTY
- BROAD-LEAVED WOODLAND
- BELDON BROOK
- SMALL SPRING/ SEEPAGE
- I — IMPROVED GRASSLAND
- SI — POOR SEMI-IMPROVED GRASSLAND
- 1 — MATURE/SEMI-MATURE TREE T1-T37
- A — AMENITY GRASSLAND
- SI — SEMI-IMPROVED NEUTRAL GRASSLAND
- H1 — HEDGE

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LAND OFF HERMITAGE PARK

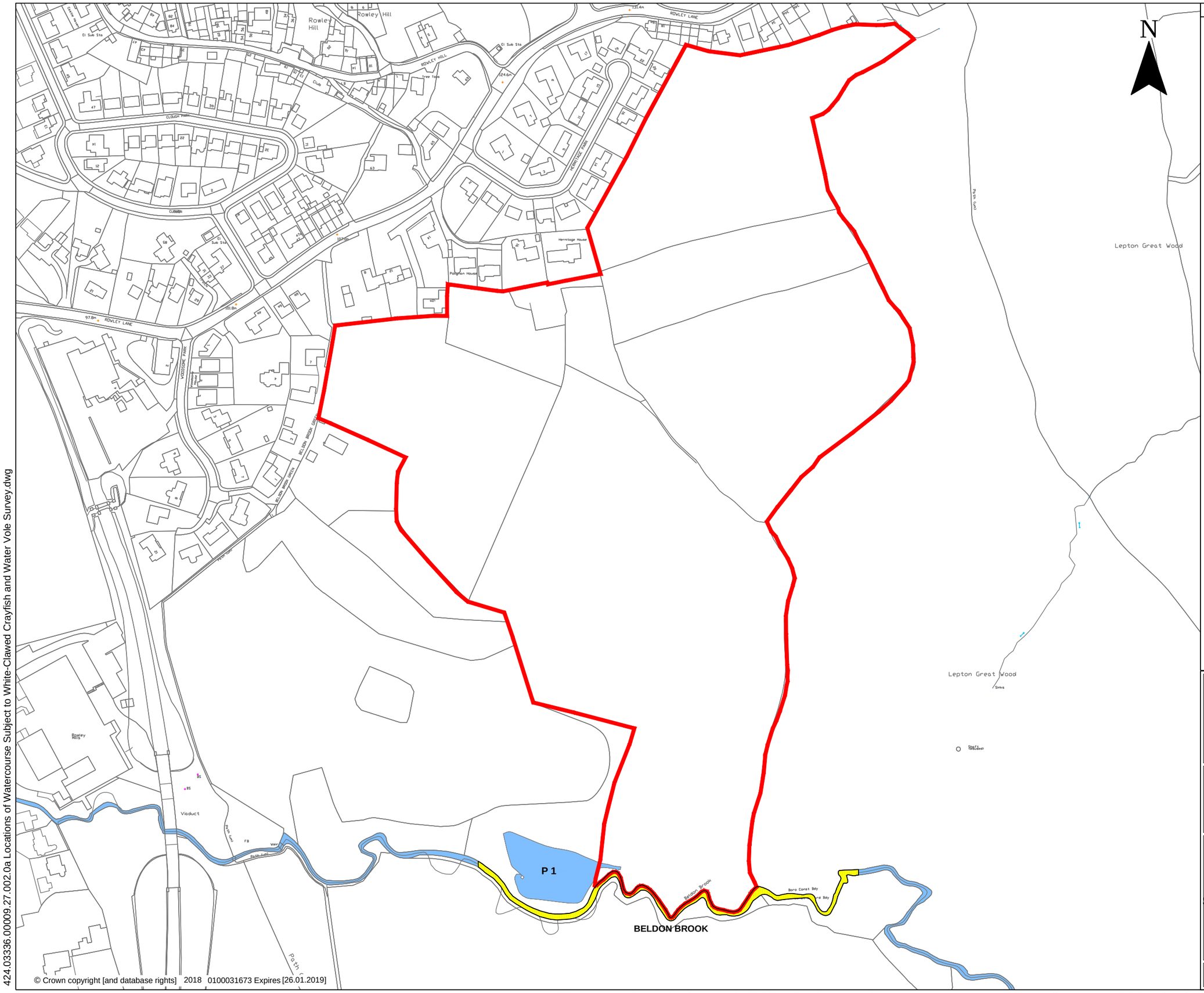
LEPTON

RESULTS OF EXTENDED PHASE 1 HABITAT SURVEY

DRAWING 1

Scale	Date
1:2000 @ A3	MARCH 2022

424.10429.00001.27.001.0_Phase_1_Habitat_Plan.dwg



LEGEND

- SITE BOUNDARY
- POND P1
- EXTENT OF BELDON BROOK SURVEYED

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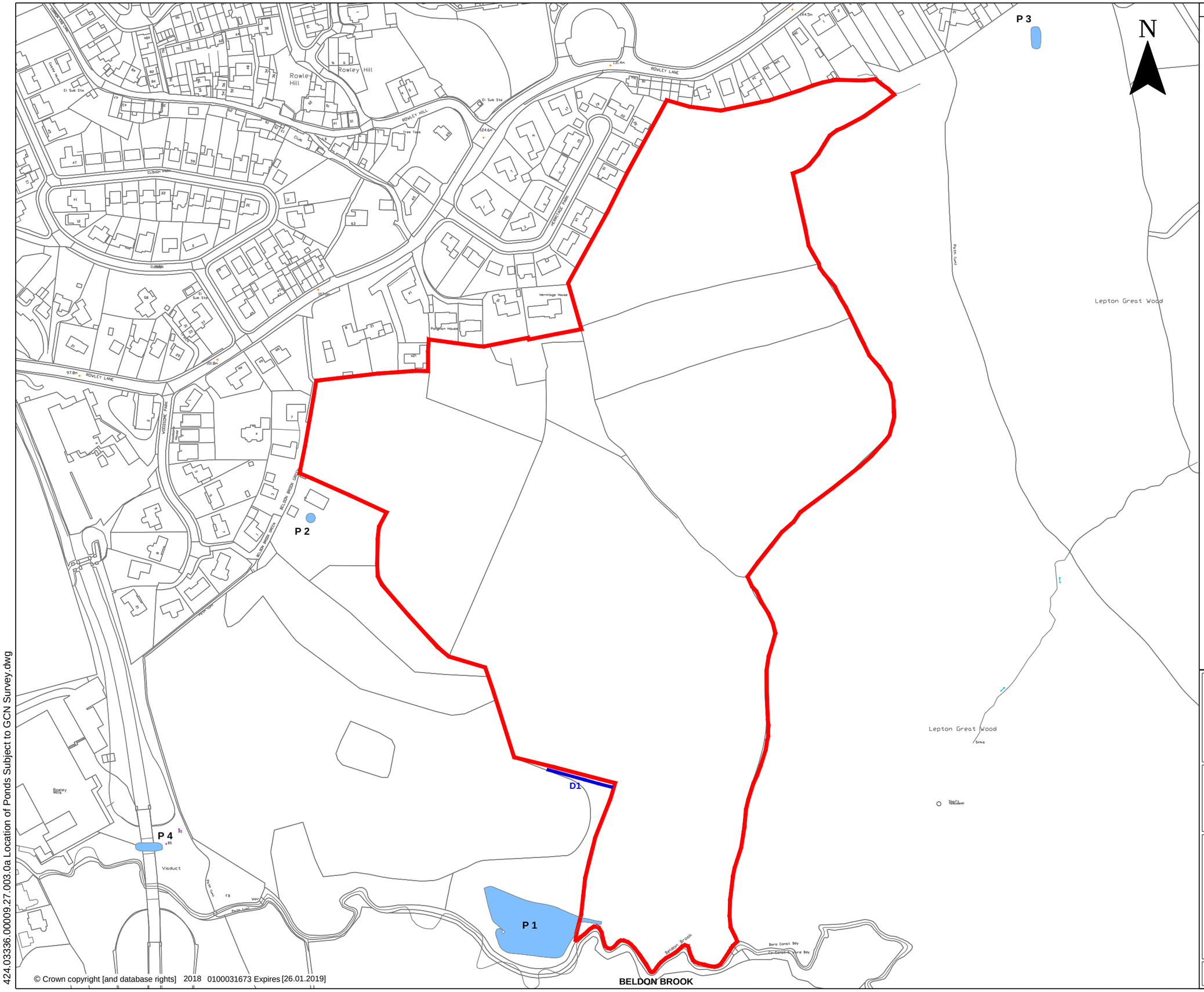
ECOLOGICAL BASELINE & PEA

LOCATIONS OF WATERBODIES SUBJECT TO WHITE-CLAWED CRAYFISH, OTTER AND WATER VOLE SURVEY

DRAWING 2

Scale	Date
1:2500 @ A3	FEBRUARY 2018

424.03336.00009.27.002.0a Locations of Watercourse Subject to White-Clawed Crayfish and Water Vole Survey.dwg



LEGEND

- SITE BOUNDARY
- PONDS P1 - P4
- DITCH D1

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ROWLEY LANE, LEPTON

ECOLOGICAL BASELINE & PEA

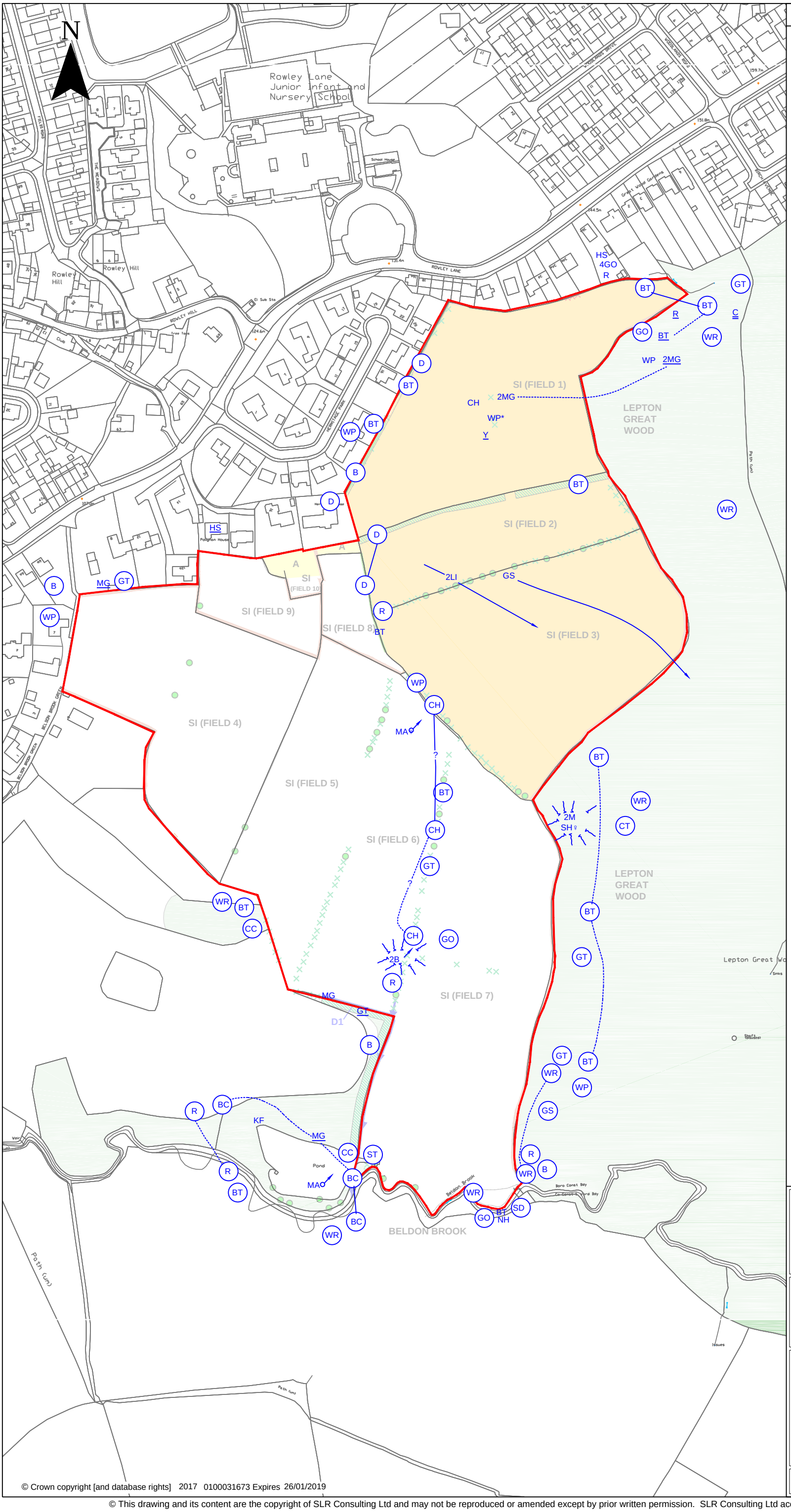
LOCATION OF PONDS & DITCH SUBJECT TO GREAT CRESTED NEWT SURVEY

DRAWING 3

Scale 1:2500 @ A3

Date FEBRUARY 2018

424.03336.00009.27.003.0a Location of Ponds Subject to GCN Survey.dwg



LEGEND

R	A CALLING BIRD
R	A BIRD REPEATEDLY GIVING ALARMS WITH STRONG TERRITORIAL SIGNIFICANCE
R	BIRD IN SONG
2R	AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
R*	BIRD ON A NEST
♂	MALE BIRD
♀	FEMALE BIRD
♀	PAIR OF BIRDS
R fam.	BIRD WITH FAMILY

MOVEMENT OF BIRDS

R →	A CALLING BIRD FLYING OVER (SEEN ONLY IN FLIGHT)
	DOTTED LINE INDICATES A SIMULTANEOUS REGISTRATION (DIFFERENT BIRDS)
	SOLID LINE INDICATES DEFINITELY THE SAME BIRD
R →	A PERCHED BIRD, THEN FLYING AWAY

B	Blackbird
BC	Blackcap
BT	Blue tit
BZ	Buzzard
C	Carrion crow
CH	Chaffinch
CC	Chiffchaff
CT	Coal tit
D	Dunnock
GC	Goldcrest
GO	Goldfinch
GS	Great spotted woodpecker
GT	Great tit
H	Grey Heron
GL	Grey Wagtail
HS	House sparrow
JD	Jackdaw
K	Kestrel
KF	Kingfisher
LI	Linnet
LT	Long-tailed tit
MG	Magpie
MA	Mallard
M	Mistle thrush
NH	Nuthatch
R	Robin
ST	Song thrush
SH	Sparrowhawk
SG	Starling
SL	Swallow
SI	Swift
T	Teal
WW	Willow warbler
WP	Woodpigeon
WR	Wren
Y	Yellowhammer

REDROW HOMES AND PORTMAN LAND

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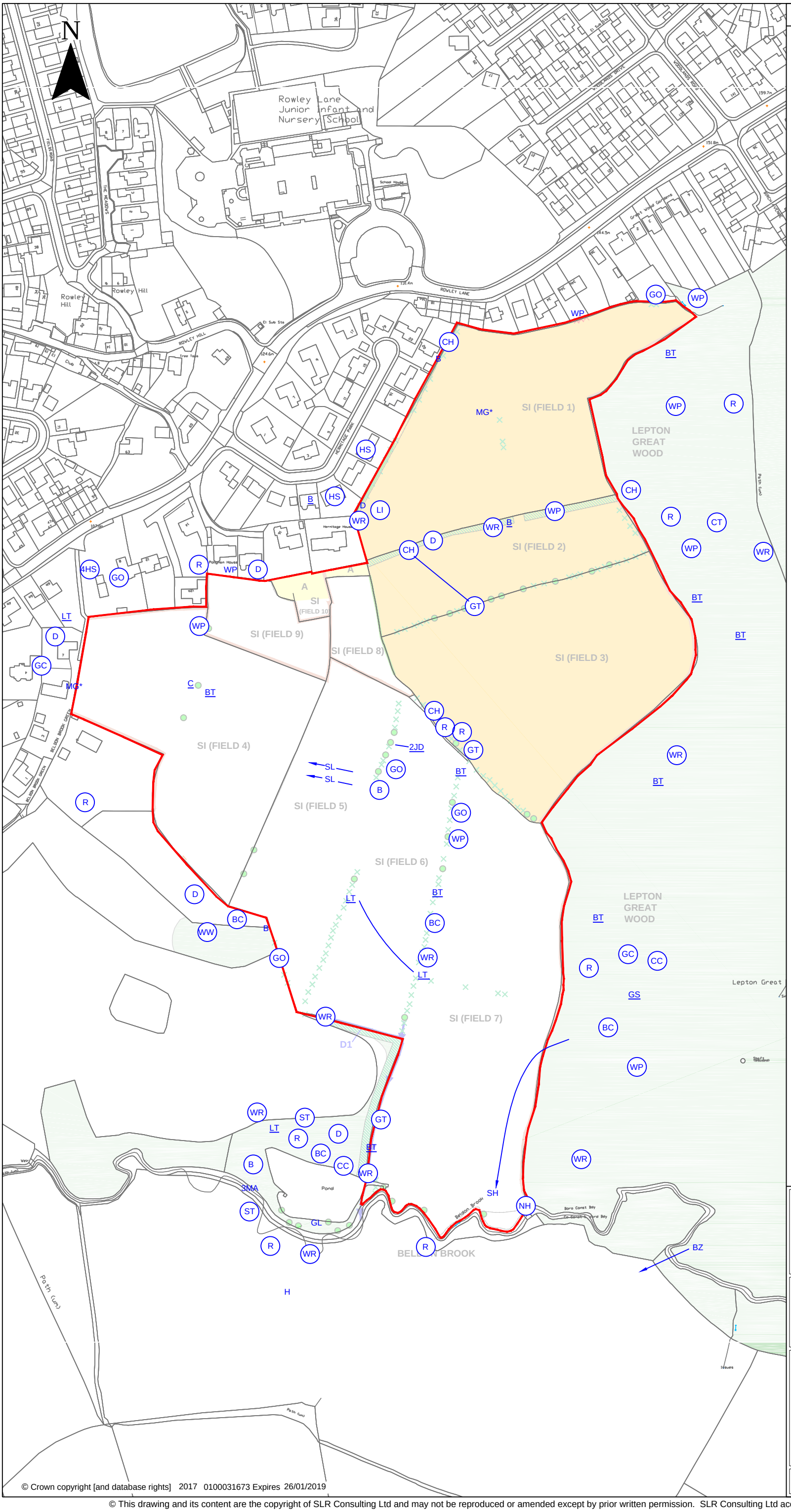
ECOLOGICAL BASELINE & PEA

RESULTS OF BREEDING BIRD SURVEY - 18.04.2017

DRAWING 4A

Scale	Date
1:2500 @ A3	FEBRUARY 2018

424.03336.00009.27.004A-C.0a Results of Breeding Bird Survey.dwg



LEGEND

R	A CALLING BIRD
R	A BIRD REPEATEDLY GIVING ALARMS WITH STRONG TERRITORIAL SIGNIFICANCE
R	BIRD IN SONG
2R	AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
R*	BIRD ON A NEST
	MALE BIRD
♀	FEMALE BIRD
♀	PAIR OF BIRDS
R fam.	BIRD WITH FAMILY

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WR	Wren
Y	Yellowhammer

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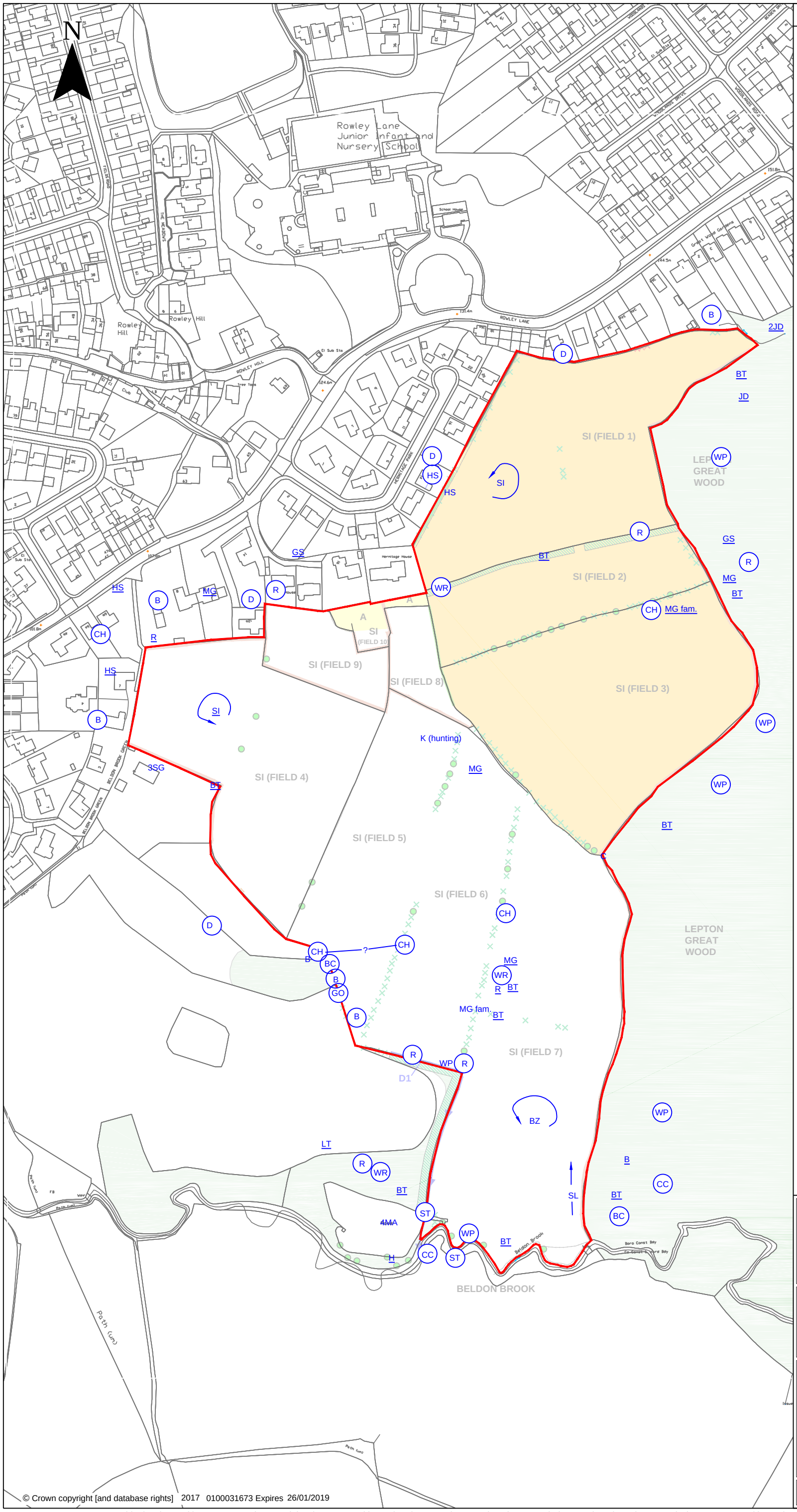
ECOLOGICAL BASELINE & PEA

RESULTS OF BREEDING BIRD SURVEY - 10.05.2017

DRAWING 4B

Scale	Date
1:2500 @ A3	FEBRUARY 2018

424.03336.00009.27.004A-C.0a Results of Breeding Bird Survey.dwg



LEGEND

R	A CALLING BIRD
R	A BIRD REPEATEDLY GIVING ALARMS WITH STRONG TERRITORIAL SIGNIFICANCE
R	BIRD IN SONG
2R	AGGRESSIVE ENCOUNTER BETWEEN TWO BIRDS
R*	BIRD ON A NEST
♂	MALE BIRD
♀	FEMALE BIRD
♀	PAIR OF BIRDS
R fam.	BIRD WITH FAMILY

MOVEMENT OF BIRDS

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GT	Great tit
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GL	Grey Wagtail
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KF	Kingfisher
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LT	Long-tailed tit
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MA	Mallard
M	Mistle thrush
NH	Nuthatch
R	Robin
ST	Song thrush
SH	Sparrowhawk
SG	Starling
SL	Swallow
SI	Swift
T	Teal
WW	Willow warbler
WP	Woodpigeon
WR	Wren
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ECOLOGICAL BASELINE & PEA

RESULTS OF BREEDING BIRD SURVEY - 09.06.2017

DRAWING 4C

Scale	Date
1:2500 @ A3	FEBRUARY 2018

424.03336.00009.27.004A-C.0a Results of Breeding Bird Survey.dwg

N

Rowley Hill

ROWLEY LANE

ROWLEY HILL

HERMITAGE PARK

School House

Great Wood Gardens

Tree Tops

Hermitage House

Polignan House

El Sub Sta

131.4m

144.5m

124.6m

107.0m

SI (FIELD 1)

SI (FIELD 2)

SI (FIELD 3)

SI (FIELD 4)

SI (FIELD 5)

SI (FIELD 6)

SI (FIELD 7)

SI (FIELD 8)

SI (FIELD 9)

SI (FIELD 10)

A

LEPTON GREAT WOOD

LEPTON GREAT WOOD

BELDON BROOK

P 1 Pond

D1

1 2 3 4 5 6 7 8 9 10

11 12 13 14 15 16

17 18 19 20 21 22 23 24 25 26 27

28 29 30 31 32 33 34 35 36 37

LEGEND

- SITE BOUNDARY
- LOW WALL/DRYSTONE WALL (INCLUDING COLLAPSED)
- FENCE
- SCRUB/OVERGROWN HEDGEROW
- INTRODUCED SCRUB ON BOUNDARY OF WITH PROPERTY
- SEMI - NATURAL BROAD - LEAVED WOODLAND
- BELDON BROOK
- SMALL SPRING/ SEEPAGE
- SI — POOR SEMI-IMPROVED GRASSLAND
- 1 — MATURE/SEMI-MATURE TREE T1-T37
- 1 — TARGET NOTE LOCATION
- A — AMENITY GRASSLAND
- SI — SEMI-IMPROVED NEUTRAL GRASSLAND
- SPECIES-POOR HEDGE

POTENTIAL OF TREES TO SUPPORT ROOSTING BATS

- 1 — TREE WITH HIGH POTENTIAL
- 1 — TREE WITH MODERATE POTENTIAL
- 1 — TREE WITH LOW POTENTIAL
- 1 — TREE WITH NEGLIGIBLE POTENTIAL

REDROW HOMES

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ECOLOGICAL BASELINE & PEA

POTENTIAL OF TREES TO SUPPORT ROOSTING BATS

DRAWING 5

Scale 1:2000 @ A3

Date FEBRUARY 2018

424.03336.00009.27.005.0a Potential of Trees to Support Rooting Bats.dwg