

ROWLEY LANE, LEPTON

Preliminary Ecological Appraisal of Proposed Housing Development

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1.0 INTRODUCTION

1.1 Terms of Reference

SLR Consulting Ltd was commissioned by Redrow Homes Limited and Portman Land Limited, to undertake a Preliminary Ecological Appraisal (PEA) of site which lies off Rowley Lane, Lepton, Huddersfield, West Yorkshire, HD8 0JU (central OS grid reference SE 1920 1457). This comprised an Extended Phase I Habitat Survey, undertaken in early February 2017, and a desk study (obtaining and collating information from the West Yorkshire Ecology Service).

This site is being promoted by Redrow Homes and Portman Land for residential development (in the order of 300 dwellings).

This report provides a preliminary baseline, and makes recommendations for further, more detailed, ecological surveys, which will be used to inform the scheme design.

1.2 The Site and Surrounding Areas

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 seven fields of poor semi-improved grassland, used to graze cattle during the summer, which are divided mostly by post and wire fences, some of which also support mature hawthorn bushes, young woodland, and scattered mature/ semi-mature trees.

The Site is bordered to the north by existing residential properties, including those located off the B6433 Rowley Lane, Beldon Brook Green, and Hermitage Park; to the east by the extensive Lepton Great Wood, to the south by a water course known as the Beldon Brook, and to the west by a large field of rough grassland which is also being promoted for residential development by a third party.

The adjacent Lepton Great Wood (which is a Local Wildlife Site and Site of Scientific Interest, which are non-statutory designations), supports a network of public footpaths, and informal pathways, many of which are heavily used, particularly by dog walkers.

2.0 METHODOLOGY

2.1 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.

Information on statutory designated sites for nature conservation interest was also obtained from the MAGIC website managed by Natural England www.magic.org.uk.

2.2 Field Survey

2.2.1 *Extended Phase 1 Habitat Survey*

2.3 Limitations

2.3.1 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 protected species not identified during the data search do in fact occur within the vicinity of the Site.

2.3.2 Fieldwork

The ecological surveys (carried out in February 2017) were undertaken outside of the optimum botanical survey window. However, given the character of the Site (poor semi-improved grassland), this is not considered to be a significant survey constraint. Furthermore, a suite of surveys, including update botanical surveys, will be undertaken during the spring and summer, to augment these initial findings.

2.4 Quality Assurance and Environmental Management

The surveyor, Mr Gary Oliver, who a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) follows the Code of Professional Conduct set out by CIEEM the when undertaking ecological work.

3.0 RESULTS

3.1 Results of Desk Study

Relevant information available on www.magic.org.uk, and desk study data provided by the local ecological records centre (WYES) is contained in Appendix A, and summarised below.

3.1.1 Statutory Designated Sites

The Site itself does not contain any statutory designated sites. The nearest Site of Special Scientific Interest, 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 (*Triturus cristatus*) 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.

3.1.2 Non-Statutory Designated Sites

Although the Site itself does not contain any non-statutory sites, five Local Wildlife Sites (LWS), and three Sites of Wildlife Significance (SWS), one of which is also a LWS, occur within the 2km radius of the centre of the Site, as described in Table 1 below. Lepton Great Wood is a Site of Scientific Interest (SSI) as well as a Local Wildlife Site.

The West Yorkshire Ecology Service is in the process of merging second and third tier sites into a single Local Wildlife Site designation, LWSs and SSIs are therefore equivalent, and both of county value. SWS are site of local or district-wide importance for the enjoyment, study or conservation of wildlife, geological features or landform, but there is seldom detailed ecological information on record for them.

**Table 1:
Local Wildlife Sites within a 2km radius of the centre of the Site**

Name of Non-Statutory Protected Area	Distance & direction from Site	Description
Lepton Great Wood SSI and LWS	Immediately abuts the eastern Site boundary	Ancient semi-natural acid woodland, reported to be plantation in north. The northern part of the wood is typical of NVC community W10, with a canopy of pedunculate oak, silver birch, and downy birch, locally abundant sycamore, and occasional rowan. These species and holly, elder, hazel and hawthorn form a shrub layer. The herb layer is typical of the W10a sub-

Name of Non-Statutory Protected Area	Distance & direction from Site	Description
		community, being dominated by a uniform sward of creeping soft-grass, bluebell, bramble, and, in places, bracken. Yellow archangel, wood anemone, giant fescue, wood sorrel, wood melick and goldenrod also occur as sub-community W10e. The eastern part of the wood is damper, and also supports wych elm and ash, along with dog's mercury, ramsons, false brome, and dog violet (W8 community). Woodland on the more sloping ground consists of sessile oak, rowan, holly and beech, with a poor herb layer (W16a sub-community). Woodland beside the Beldon Brook also supports goat willow and grey willow.
Almondbury Common LWS	1.3km to west	Mixture of Wd1 and Wd3 ancient and semi-natural woodland.
Arkenley Lane LWS	2km to west	Mixture of Gr3 species-rich acid and neutral grassland and Gr5 moderately species-rich grassland.
Carr Wood LWS	1.1km to west	W10 acid replanted ancient woodland, with abundant pedunculate and sessile oak and occasional silver and downy birch. Patches have been planted with beech and larch. The understory contains these species, as well as locally abundant holly and occasional hazel. The ground flora includes bluebell (20% of ground cover), 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.
Gawthorpe Lower Wood LWS and SWS	1.5km to north	Regenerating sessile oak woodland, understood 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.

Name of Non-Statutory Protected Area	Distance & direction from Site	Description
Dogley SWS	650 metres to SW	No detailed information available
Woodsome Lees SWS	1.2km to SW	No detailed information available

According to information provided by the WYES, the Site does not lie within the Kirklees Wildlife Habitat Network.

3.1.3 Species Records

Bats

A total of 35 bat records were provided by the WYES for the 2km radius search area.

Of these, 15 relate to common pipistrelle (*Pipistrellus pipistrellus*); one to soprano pipistrelle (*Pipistrellus pygmaeus*); one to pipistrelle sp.; two to Leisler's (*Nyctalus leisleri*); one to noctule (*Nyctalus noctula*); four to brown long-eared bat (*Plecotus auritus*); one to Myotis sp.; and ten were not specified to species or genus level (i.e. vespertilionidae).

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 Site itself, or its immediate area.

Bat roost records were provided for common pipistrelle 580 metres to the south-west of the Site (dating from September 2015), 1.5km to the south-east of the Site (August 2008), and 0.9km to the south of the Site (February 2007). Roosting records for brown long-eared bat were provided for a site located c1km to the south-east of the Site (dating from September 2010, June 2011, and the winter of 2009).

Details of two roosts (dating from July 2001 and July 2003) were provided 1.6km and 1.7km to the north-west of the 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 670 metres to the north-west of the Site (July 2012).

Further roosts/ possible roosts of unspecified species of bat were provided for sites located 1.6km to the north of the Site (April 2010); 1.3km to the south of the Site (June 2005); 0.9km to the south of the Site (dating from 2007); 1.3km to the south-east of the Site (January 2006); and 0.9km to the north-east of the 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 Site boundary (dating from August 2000). This record relates to a count of one bat, but no further details were supplied.

Reptiles and Amphibians

No great crested newt (*Triturus cristatus*) records were provided for the 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 Site, and dates from 2013.

Three reptile records were provided, two for viviparous lizard (*Zootoca vivipara*) and one for grass snake (*Natrix natrix*). However, as all three reptile records date from 1914, and are therefore too old to be relevant.

Birds

A number of bird records were provided for the search area, 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 Site itself, or its immediate surroundings.

Nevertheless, records of note include a kingfisher (*Alcedo atthis*) nest on the Woodsome Beck, 900 metres 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.

Riparian mammals

Two otter (*Lutra lutra*) records were provided, both relating to the Woodsome Beck. The nearest relates to a 'field record' 650 metres to the south-west of the Site, dating from August 2015, and the other to an otter spraint found 800 metres to the south-west of the Site, in 2006.

Two water vole records were also provided, the nearest relating to a burrow recorded on the Beldon Brook, immediately adjacent to the south-eastern corner of the Site, dating from April 2015, and the second relating to some water vole droppings on the Woodsome Beck, 800 metres to the south-west of the Site, dating from 2001. Six records were also provided for the non-native American mink (*Neovision vision*), all dating from 2001, the nearest of which relates to the Fenay Brook, 450 metres to the west of the Site.

Other Mammal Records

A single record of brown hare (*Lepus europaeus*) was provided for tetrad SE2114, dating from 1986, and three records were provided for grey squirrel (*Sciurus carolinensis*), including for Lepton Great Wood, which lies immediately to the east of the Site (dating from 2015).

Invertebrates

Of the invertebrate records provided by the WYES, 15 relate to the non-native signal crayfish (*Pacifastacus leniusculus*), including a record from the Beldon Brook (350 metres to the west of the Site) dating from 2008, and a number of records within the Fenay Beck, 470 metres to the west of the Site, dating from 2008 and 1997. A single, relatively old (1997) record exists for the native white-clawed crayfish (*Austropotamobius pallipes*), within the Woodsome Beck, 500 metres west of the Site.

A number of Red Data Book, and Notable B beetle records were provided by WYES, mostly for a location lying 1.5km to the south-west of the 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, and not relevant.

An undated, and potentially old, record was also provided for the cobweb beetle (*Ctesias serra*), a Notable B species, reported from land beside the Fenay Beck, approximately 530 metres to the west of the Site.

Two further undated, and also potentially old, beetle records were provided for a location 960 metres to the south-west of the Site, relating to two species of water beetle (*Hydraena nigrita* and *Hydraena pygmaea*).

Flowering Plants

A number of records of flowering plants were provided by the WYES, most of which relate to bluebell (*Hyacinthoides non-scripta*), including several recent records for Lepton Great Wood (dating from 2015), which immediately abuts the eastern Site boundary. .

A single record of common centuary (*Centaureum erythraea*) was also provided for location 1.6km to the south-west of the Site, for an unknown date.

Records were also provided for a number of Schedule 9 plant species, including Canadian waterweed (*Elodea canadensis*) 700 metres to the south-west of the Site, dating from 2013; Himalayan balsam (*Impatiens glandulifera*) beside the Woodsome Beck, 450 metres to the west of the Site, dating from 2015; and rhododendron (*Rhododendron ponticum*), within Carr Wood Local Wildlife Site, 850 metres to the south-west of the Site.

A record of yellow archangel (*Lamium 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.

3.2 Results of Fieldwork: Habitats

The results of the Extended Phase 1 Habitat Survey are illustrated in map form (Drawing 1).

3.2.1 Poor Semi-Improved Grassland

The majority of the Site consists of seven fields of poor semi-improved grassland, which are used to graze cattle during the summer (Plates 1-7, and Fields 1-7 on Drawing 1).

The sward within these fields is dominated by grasses, such as Yorkshire fog (*Holcus lanatus*); false oat grass (*Arrhenatherum elatius*); cock's-foot (*Dactylis glomerata*); and red fescue (*Festuca rubra*). Herbs within the sward appeared limited, but include creeping buttercup (*Ranunculus repens*); meadow buttercup (*Ranunculus acris*); clover (*Trifolium* sp.); common sorrel (*Rumex acetosa*); field mouse-ear (*Cerastium arvense*); dandelion (*Taraxacum officinale* agg.); broad-leaved dock (*Rumex obtusifolius*); ribwort plantain (*Plantago lanceolata*); and daisy (*Bellis perennis*).

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 (beneath or on the far side of barbed wire fences) and at the base of hedgerows and enclosed blocks of woodland.

In addition, a series of smaller fields, also containing poor semi-improved grassland, enclosed mainly by low drystone walls, are located close to the northern boundary, in the central part of the Site.



Plate 1: View of Field 1, the extreme northern part of the Site, looking south-west.



Plate 2: View of Field 2, as seen from the western side looking east towards Lepton Great Wood.



Plate 3: View of Field 3, as seen from the western side, looking east towards Lepton Great Wood.



Plate 4: View of Field 4, as seen from close to the southern boundary with Field 5, looking north towards Trees T35 to T37.



Plate 5: View of Field 5 (and of Field 4 beyond), looking north in the direction of Trees T33 and T34.



Plate 6: View of Field 6 from close to boundary with Field 7, looking west (with Tree T28 on the right).



Plate 7: View of Field 7, looking north, with Lepton Great Wood on the right. The well-worn path has been made by cattle, and leads down to the Beldon Brook.

3.2.2 Amenity Grassland

Two small areas of short-sward amenity grassland (lawn) occur in the north of the central part of the Site, associated with properties immediately beyond the Site boundary.

3.2.3 Schedule 9 plants

No Schedule 9 plants were found on Site.

3.2.4 Scrub, Defunct Hedgerows and Young Plantation Woodland

Several of the fields are separated by low post and wire fences, however, most of the field boundaries also support scattered mature hawthorn (*Crataegus monogyna*) bushes or other scrub forming defunct, gappy hedgerows, or recently planted tree belts/ young woodland (fenced off to protect them from cattle).

Where the northern Site boundary abuts the rear gardens of residential properties, including those located along the B6433 Rowley Lane, Beldon Brook Green, and Hermitage Park, the boundary is marked by a mixture of post-and-wire and post-and-rail fences, wall (including drystone wall), short sections of maintained hedgerow, and shrubs, both native and 'introduced', including lines of low cypress; hawthorn and holly (*Ilex aquifolium*) hedgerows, and a short section of beech (*Fagus sylvatica*) hedgerow (refer to Plate 8).

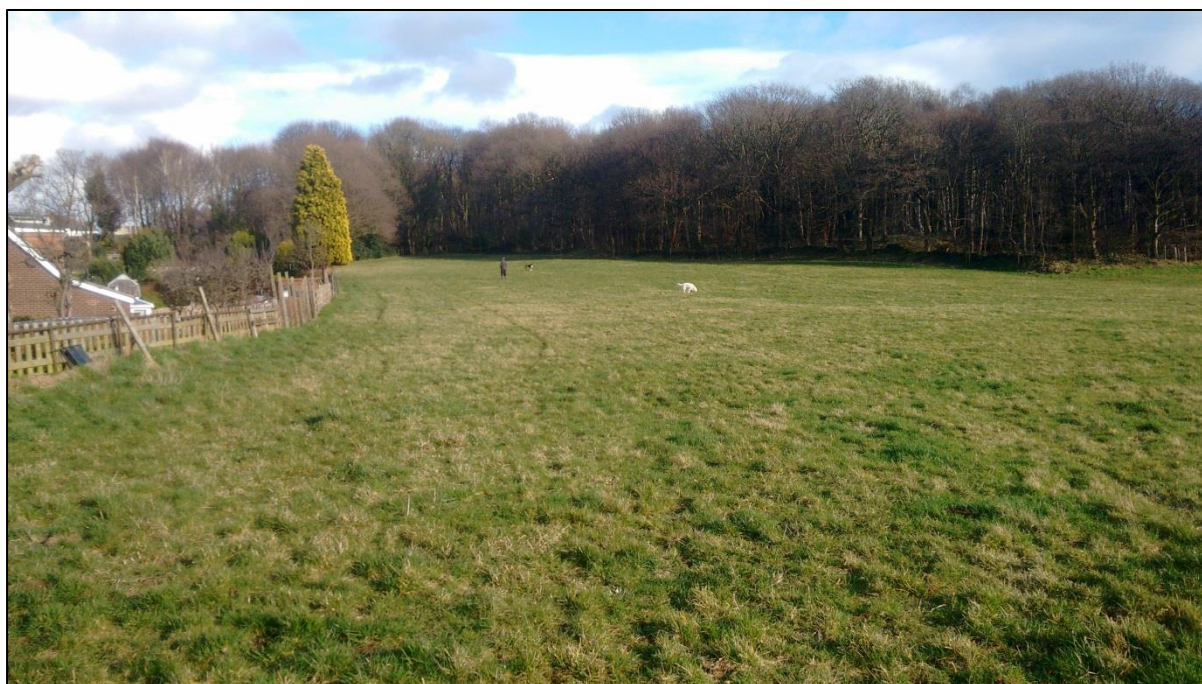


Plate 8: View of boundary with properties off the B6433 Rowley Lane, located along northern side of Field 1, with Lepton Great Wood in the background (refer also to Plate 1).

Elsewhere, the scrub along field boundaries is generally more mature and mostly dominated by hawthorn and, to a lesser extent, holly, such as along the boundary which separates Fields 3 and 5 (Plate 9); Fields 5 and 6 (Plate 10), and Fields 6 and 7 (Plate 11).



Plate 9: Boundary which separates Fields 3 and 6 (as seen from the northern part of Field 6, looking south-east).



Plate 10: Part of the gappy, defunct hawthorn hedgerow, which separates Fields 5 and 6, as seen here from the southern part of Field 5, looking north-east.



Plate 11: Boundary which separates Fields 6 and 7, as seen from Field 7, looking north-west.

Fields 1 and 2 are separated by a belt of 8-15 metre high, 5-6 metre wide young woodland, containing silver birch (*Betula pendula*); hazel (*Corylus avellana*); holly; hawthorn; young pedunculate oak (*Quercus robur*); cherry (*Prunus* sp.); sycamore (*Acer pseudoplatanus*), some which is possibly self-seeded; and wych elm (*Ulmus glabra*), as illustrated in Plate 12. This woodland has been fenced off to protect the trees against damage by cattle.



Plate 12: View of the northern part of the strip of young planted woodland (looking south), which separates Fields 1 and 2.

The western part of this boundary is lower, and characterised by a 3-4 metre tall hawthorn-dominated hedgerow, with lesser amounts of holly and occasional elder (*Sambucus nigra*) as well as some taller cherry trees; at its extreme western end, the hedgerow here is no more than 1 metre tall, with scattered cherry trees on the southern side (Plate 13).



Plate 13: View of the extreme western end of boundary which separates Fields 1 and 2, looking east towards Lepton Great Wood (which can be seen in the distance).

3.2.5 Semi-Mature and Mature Trees

The Site contains a number of semi-mature and 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 2).

The boundary between Fields 2 and 3 contains ten semi-mature pedunculate oak trees (Trees T1-T10; Plate 14). Elsewhere, the trees tend to be more scattered along field boundaries, and in the case of Trees T35 and T36 along a former field boundary, which has since been removed, with only the trees remaining.

A number of trees, mostly semi-mature specimens, occur along the Beldon Brook, at the extreme southern end of the Site (Plate 15), as well as around a large pond (Pond 1) which lies immediately beyond the south-western Site boundary; species here include sycamore; pedunculate oak; crack willow, and alder.

The eastern Site boundary immediately abuts Lepton Great Wood Local Wildlife Site and Site of Scientific Interest (equivalent, non-statutory designations). Several of the trees in this woodland are mature, including a number of very large beech trees. The Site is separated from Lepton Great Wood by a low drystone wall and a low barbed wire fence.

The potential of each of these trees to support roosting bats is summarised in Section 3.3 of this report, and illustrated in Drawing 2.



Plate 14: Part of the boundary between Fields 2 and 3, which contains ten semi-mature pedunculate oak trees, as viewed here from the western end, looking east towards Lepton Great Wood.



Plate 15: View of the tree-lined Beldon Brook (looking east towards Lepton Great Wood), at the southern end of the Site; trees line both sides of the brook.

3.2.6 Water Courses

The Site itself does not contain any water courses or ditches, however, the Beldon Brook lies immediately beyond the southern Site boundary, where it flows in a westerly direction, to the south of Pond 1. The channel of the brook here is approximately 2 metres wide, and steeply cut (with near vertical banks) in places, for example, immediately to the south of Pond 1; elsewhere the profile of the banks is shallow, as it is where it abuts the southern Site boundary (Plate 16). Water within the channel was typically 10-40cm deep during February 2017; there was evidence of cattle poaching (churning up the ground) in places.



Plate 16: *Beldon Brook, as viewed from extreme south-western Site boundary, looking east.*

A number of burrows were noted to be present in the banks of the brook during February 2017; information received from the WYES indicates that there is a record of a water vole burrow within the brook, dating from 2015. There are also records of the non-native signal crayfish within the brook, dating from 2008.

A small spring (creating a flow of water which is *circa* 5-10 cm wide and only 1-2cm deep) rises towards the south-western corner of the Site, and flows southwards, into the Beldon Brook (Target Note 1 in Drawing 1).

3.2.7 Water bodies

The Site itself does not contain any water bodies, however, three ponds (including what appears to be a seasonally wet depression within Lepton Great Wood) were noted to occur within close proximity to the Site boundary.

Pond 1 (Plate 17) immediately abuts the south-western Site boundary; this large water body, measuring approximately 50 metres x 30 metres, lies very close to the Beldon Brook, and there is an overflow into the brook, at the western end of this pond. At the time of the visit in

February 2017, Pond 1 supported four mallard (*Anas platyrhynchos*), and is suspected to contain fish (although this remains unconfirmed at the current time).



Plate 17: Pond 1, as viewed from its eastern bank, looking west; the Beldon Brook lies just beyond the trees on the far side of the pond.

Pond 2 (Plate 18) is a small, circular ornamental pond within a driveway of a property off Beldon Brook Green located 20 metres beyond the western Site boundary. This pond has a diameter of approximately 2.5 metres, contains a water feature, and is raised (with vertical stone sides).



Plate 18: Pond 2, located approximately 20 metres to the west of the Site, within the driveway of a large detached property.

A damp depression at the base of a wooded slope, referred to in this report as Pond 3, lies within Lepton Great Wood, approximately 130 metres to the north-east of the Site boundary (at grid reference SE 19511 14848).

At the time of the survey, the damp depression measured 15 metres long and 3 metres wide (Plate 19). It was, however, shallow (maximum depth of 10cm) and contained a large number of leaves; it appears ephemeral, and is considered likely to dry out during the summer, in most years.



Plate 19: Damp depression referred to as Pond 3, located 130 metres from the Site boundary, within Lepton Great Wood (at OS grid reference SE 19511 14848).

The potential of each of these ponds/ ephemeral ponds, to support great crested newt was assessed using the Habitat Suitability Index (HSI) assessment methodology as further described in Section 3.4 of this report¹.

3.3 Results of Fieldwork: Bats

The Site does not contain any buildings, however, it contains a total of 37 semi-mature/ mature trees which were individually assessed in order to gauge their potential for roosting bats (refer to Table 2 overleaf).

From this it may be seen that of the 37 trees surveyed, 21 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, as illustrated in Drawing 2.

¹ The HSI assessment of Pond 2 contained certain assumptions, for example, on water quality and the presence, or otherwise, of fish, as it was not possible to inspect the pond closely

The majority of the Site is open, consisting of large fields of semi-improved grassland, and is likely to be of Low value for foraging bats.

In contrast, some of the more substantial tree lines within the Site (such as the boundaries separating Fields 1 and 2, and 2 and 3), and in particular the eastern Site boundary, which abuts Lepton Great Wood, and the southern boundary which abuts the Beldon Brook and Pond 1, are likely to receive substantially higher levels of bat foraging activity.

**Table 2:
Assessment of the potential of Trees T1-T37 to support roosting bats**

Tree	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
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 pedunculated 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	High

Tree	Description	Potential for Roosting Bats
	west-facing side 3 metres 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
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 1; 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

Tree	Description	Potential for Roosting Bats
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
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

3.4 Results of Fieldwork: Amphibians and Reptiles

The core of the Site is considered unlikely to support reptiles, as it is in active use, and the fields of semi-improved grassland are level and 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 1 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 brook, and this habitat is due to be retained.

The Site itself does not contain any water bodies, however, three (Ponds 1-3) were noted to occur in close proximity to the Site boundary, as described in Section 3.2.6 of this report.

Each of these was subject to a Habitat Suitability Index (HSI) assessment, to gauge its potential for great crested newt, the results of which are summarised in Table 3 overleaf (refer to Appendix C for the full HSI assessment forms).

Table 3:
Habitat Suitability Index (HSI) assessments of Ponds 1-3

Pond	Description	HSI Score	Potential for GCN ²
1	Large pond located immediately adjacent to south-western Site boundary	0.74	Good
2	Small, circular raised pond within driveway of adjacent property, 20 metres from western Site boundary	0.48	Poor
3	Damp depression within Lepton Great Wood, 130 metres to the east of the Site boundary	0.41	Poor

3.5 Birds

A limited range of farmland/ urban-fringe bird species were recorded during the Extended Phase I Habitat Survey, undertaken on the 2nd of February 2017, namely blue tit (*Cyanistes caeruleus*); great tit (*Parus major*); robin (*Erithacus rubecula*); blackbird (*Turdus merula*); woodpigeon (*Columba palumbus*); greenfinch (*Carduelis chloris*); long-tailed tit (*Aegithalos caudatus*); redwing (*Turdus iliacus*); and magpie (*Pica pica*). The majority of these species (excluding redwing) has potential to breed on Site, within trees and scrub.

A pair of buzzard (*Buteo buteo*) were seen flying above Lepton Great Wood, and occasional lesser redpoll (*Acanthis cabaret*) were heard over-flying the Site, in the direction of the Beldon Brook.

At one point during the day a local resident placed a large amount of bread in Field 1, which attracted a flock of 80 black-headed gull (*Chroicocephalus ridibundus*); three common gulls (*Larus canus*), and two rooks (*Corvus frugilegus*).

² Based on Amphibian and Reptile Groups of the United Kingdom Advice Note 5: Great Crested Newt Habitat Suitability Index (May 2010)

3.6

3.8 Riparian Mammals, Kingfisher, and White-Clawed Crayfish

The section of the Beldon Brook located immediately adjacent to the Site, and to the South of Pond 1 was searched for evidence of water vole and otter, and assessed to gauge its potential for white-clawed crayfish and nesting kingfisher.

No evidence was found to indicate that any of these species were present, although a number of burrows were present in the brook, which could be used by water vole, and it is noted that data received from the WYES contains a record for a water vole burrow along the brook, dating from 2015.

The brook has limited potential to support otter, and no otter field signs were noted. However, otters may conceivably use the brook to access Pond 1, perhaps at certain times of year. Information from the WYES indicates that otter occur nearby; there is a 2015 record of otter within the Woodsome Beck, 650 metres to the west of the Site boundary.

The Beldon Brook, superficially at least, has potential to support white-clawed crayfish; an old (1997) record was provided by the WYES for a section of the Woodsome Beck, which lies *circa* 500 metres from the Site boundary, which suggests that this species was once present in the area. However, there are 15 records of the non-native signal crayfish within the area, including a recent (2008) record from the Beldon Brook itself. The presence of signal crayfish within the brook greatly reduces the likelihood of white-clawed crayfish being present, to the completion between the two species and crayfish plague, which is carried by signal crayfish.

Sections of the Beldon Brook south of Pond 1 are sufficiently steep to potentially provide suitable nesting sites for kingfisher; however, no potential kingfisher nesting tunnels were noted, and the site is possibly too disturbed by walkers to provide optimum nesting conditions for this species.

4.0 RECOMMENDATIONS FOR FURTHER SURVEY

4.1 Foraging/ Commuting and Roosting Bats

4.1.1 Foraging and Commuting Bats

In order to establish the value of the Site for commuting and foraging bats, it is recommended that a combination of walked bat transects and static bat detector surveys are carried out, within the period April to September inclusive. It is proposed that the surveys alternate between months such that a walked transect survey would take place in April, June and August, and static detector surveys would be undertaken in May, July, and September.

The walked transects shall involve a 3-5km long transect route, incorporating *circa* 20 sampling points, each of which shall be sampled for a five minute period, during each transect survey. The methodology will involve counting the number of bat passes at each sampling point; the calls will be recorded and, where necessary, analysed using specialist software to confirm the species of bat concerned. The transect survey will commence at sunset, and last for approximately three hours; the route shall form a loop, and the start and finish points shall be reversed and/ or rotated, to reduce bias. It may be necessary to alter the precise route of the transects, to take account of the distribution of cattle within the fields, if they appear to pose a health and safety risk.

The static bat detector surveys shall involve the deployment of recording devices (such as Anabats, Anabat Expresses, or SM2s) at five locations, with data being collected over the course of five consecutive nights at each location. A range of open field and 'field edge' locations would be selected, including the southern boundary with the Beldon Brook/ Pond 1, and the boundary with Lepton Great Wood. This will allow comparisons to be made between open field locations (likely to be affected by development proposals) and the edges of the Site, which will remain largely unaffected, and potentially augmented by additional planting.

If there are instances of detectors being stolen, or interfered with, certain locations will be altered. If theft or interference is persistent it may be necessary to discontinue the static surveys, and replace this method of survey with additional walked transect surveys.

The results of these surveys will be used to identify those parts of the Site are heavily used by bats, as well as those areas which are used less often. Key strategic foraging areas, and important bat commuting routes will therefore be identified.

The assemblage of bat species occurring on Site will also be established.

4.1.2 Roosting Bats

The Site does not contain any buildings, however, 37 mature or semi-mature trees occur on Site, five of which have Low potential; three Moderate potential; and eight High potential, as illustrated in Drawing 2.

At this stage a detailed scheme design has not been produced, however, an illustrative masterplan has been developed which indicates that many of the mature/ semi-mature trees have scope to be retained within the development footprint. Notwithstanding this, a number

of these trees are damaged and may be structurally unsafe, so it may not be possible to retain them in their current state.

Therefore, each of the trees assessed as having above Negligible potential for roosting bats will be subject to a dusk or dawn bat detector survey within the optimum survey window of May to August inclusive. Where several trees with bat roosting potential occur in close proximity to one another, it will be possible to survey more than one tree per survey, particularly during dawn re-entry bat detector surveys.

During these dusk/ dawn bat detector surveys additional information will be gathered on foraging and/ or commuting bat activity.

4.2 Amphibians and Reptiles

4.2.1 Reptiles

The Site is assessed as having very limited potential for reptiles; it is considered that grass snake may occur at the southern end of the Site beside the Beldon Brook and/ or Pond 1, which will not be substantially affected by the proposals. Therefore, no further survey for reptiles is considered necessary.

4.2.2 Amphibians

Great crested newt presence/ absence surveys will be undertaken on Ponds 1 and 3, and if access can be granted, Pond 2 (which lies within the driveway of an adjacent property). Three of the four following methodologies shall be used within the survey window of mid-March to mid-June: torch-light; egg search; netting and bottle trapping.

Should great crested newt be found in any of these ponds, two further survey visits would be carried out, prior to mid-June, to establish the population size class of the population concerned.

4.3 Breeding Birds

In order to gather information on the breeding bird assemblage present on Site, three surveys shall be undertaken within the mid-April to mid-June optimum survey window. Survey visits would be spaced roughly a month apart and shall involve the mapping of territorial birds, as well as the recording of evidence of nesting/ confirmed breeding, such as recently-fledged young, parents carrying food or nesting material towards suitable nesting habitat, or faecal sacs or egg shells away from suitable nesting habitat, as well as birds exhibiting aggression or clear agitation, or discovering nests in active use. This survey would include a search for ground-nesting birds, such as lapwing (*Vanellus vanellus*); skylark (*Alauda arvensis*); and meadow pipit (*Anthus pratensis*).

The survey would also involve a search of the section of the Beldon Brook which lies immediately to the south of the Site boundary, for signs of breeding kingfisher, and Pond 1 would also be surveyed to establish its breeding bird assemblage.

4.4

4.5 Surveys of the Beldon Brook

4.5.1 *Otter and Water Vole*

Two otter and water vole surveys will be carried out in that section of the Beldon Brook which abuts the southern Site boundary, and which lies immediately south of Pond 1; Pond 1 itself shall also be surveyed. The first survey shall be carried out in the Spring (mid-April to June) and the second during the Summer or early Autumn (July to September), in accordance with best practice (Strachan *et al*, 2011). This shall involve a search for burrows, and other field signs such as latrines, lawns, and feeding stations. This search will also record evidence of brown rat (*Rattus norvegicus*) or mink.

4.5.2 *White-Clawed Crayfish*

White clawed-crayfish survey of the Beldon Brook, and Pond P1 will be undertaken during the optimum survey window of July and August. This would involve a stone-turning exercise and evening torchlight survey, undertaken by an appropriately qualified ecologist holding a Natural England survey licence.

4.6 Update Botanical Survey

In order to augment the results of the February 2017 survey, further botanical surveys shall be undertaken within the April to June survey window. This will allow the status, and ecological value, of the fields within the Site to be established in detail.

4.7 Summary of Further Surveys

Species	March	April	May	June	July	August	Sep
Great crested newt (Ponds 1 and 3, and Pond 2 if access permission is granted) (four visits between mid-March and mid-June)	■						
Breeding bird surveys (three visits between mid-April and mid-June)		■					
Bat foraging transect (approximately 3-5 km long and lasting 3 hrs, with 20 sampling points; start and end points to be rotated)		■		■		■	
Static bat detector survey (approximately 3-5 km long and lasting 3 hrs, with 20 sampling points; start and end points to be rotated)			■		■		■
Bat dusk/ dawn surveys of trees with roost potential (one survey of each tree with above Negligible potential for roosting bats (refer to Drawing 2))			■				
Water vole and otter survey of Beldon Brook (two surveys, the first in mid-April to June, and the second in July to September)		■					
White-clawed crayfish survey of Beldon Brook (stone turning and torchlight survey by suitably qualified ecologist holding a white-clawed crayfish survey licence)					■		
Update Botanical Surveys (to augment the results of the earlier survey)		■					

5.0 REFERENCES & BIBLIOGRAPHY

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Joint Nature Conservation Committee (2010) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (Revised reprint). Joint Nature Conservancy Council, Peterborough.

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.

Strachan, R (ed.) (2011). *Water Vole Conservation Handbook* (3rd edition). Wildlife Conservation Research Unit, University of Oxford.

6.0 CLOSURE

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

DRAWING 1

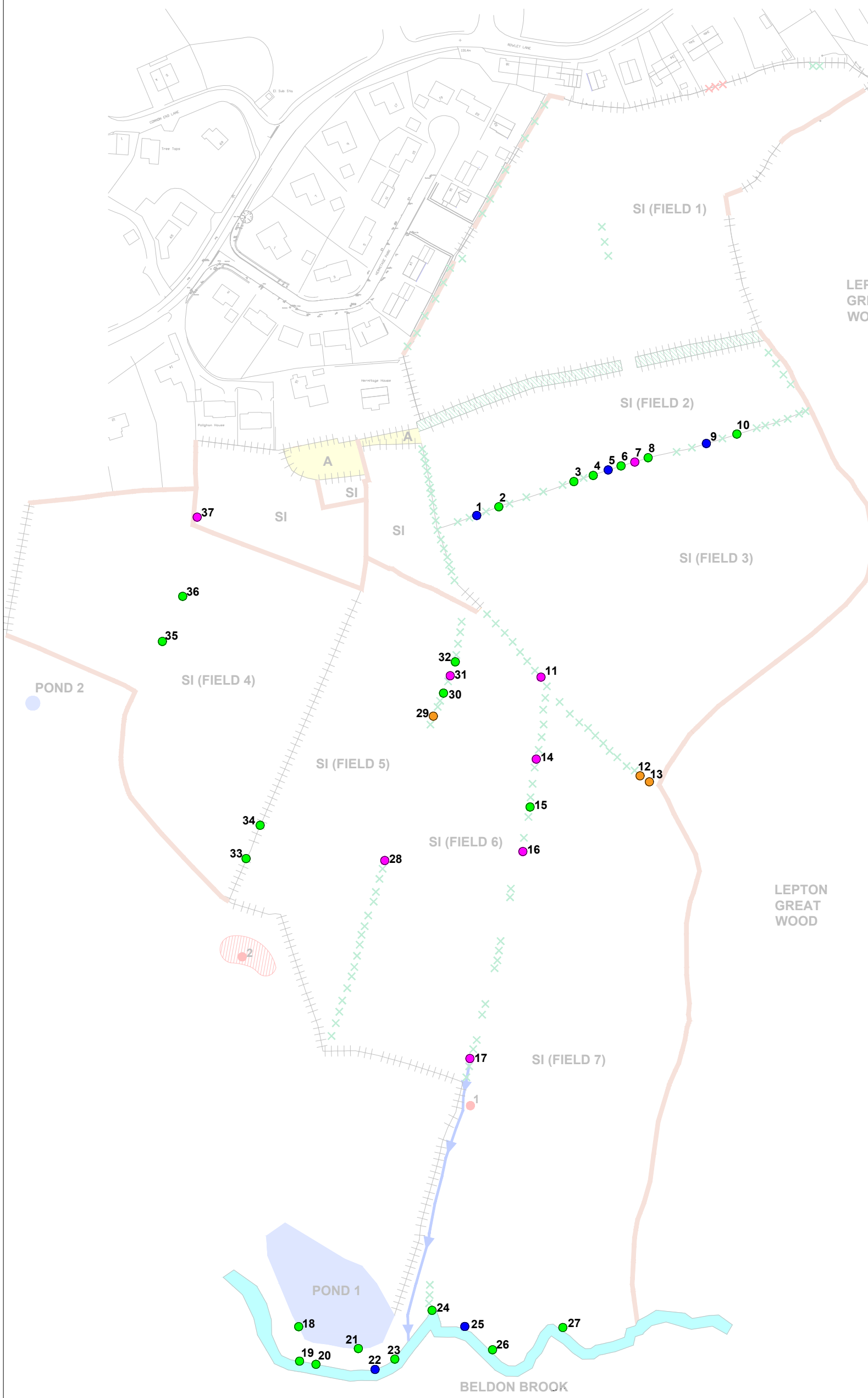
RESULTS OF EXTENDED PHASE 1 HABITAT SURVEY

DRAWING 2

POTENTIAL OF TREES TO SUPPORT ROOSTING BATS



POND 3
130 METERS FROM
SITE BOUNDARY



LEGEND	
	TREE WITH HIGH POTENTIAL
	TREE WITH MODERATE POTENTIAL
	TREE WITH LOW POTENTIAL
	TREE WITH NEGLIGIBLE POTENTIAL

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ROWLEY LANE, LEPTON

POTENTIAL OF TREES TO SUPPORT ROOSTING BATS

002

Scale 1:2000 @ A3

Date FEBRUARY 2017

424.03336.00009 - Rowley Lane, Lepton.dwg

DRAWING 3

APPENDIX A

DESK STUDY DATA FROM WEST YORKSHIRE ECOLOGY SERVICES (WYES)



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ECOLOGICAL RECORDS SEARCH

FOR

LEPTON

Ref No:- 20170203 K1008 LP

Date: 15/02/2017

Prepared For Gary Oliver

SLR Consulting Ltd

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3.3 LOCALLY

Figure 1 – Species and Designated Sites

West Yorkshire Joint Services are provided by a Joint Committee of the Metropolitan Districts of Bradford, Calderdale, Kirklees, Leeds and Wakefield.



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Appendix B. Designated Site Citations

Appendix C. Species Records

West Yorkshire Joint Services are provided by a Joint Committee of the Metropolitan Districts of Bradford, Calderdale, Kirklees, Leeds and Wakefield.



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APPENDIX C

HABITAT SUITABILITY INDEX (HSI) ASSESSMENT FOR PONDS 1-3

Pond number	Pond 1		
OS Grid reference	SE 19141 14216		
Location details	Large pond immediately adjacent to south-western Site boundary		
Habitat Suitability Index			
SI1. Map location	A/B/C	A	SI value 1.00
SI2. Surface area	rectangle/ellipse/irregular length (m) width (m) OR estimate (m ²) if irregular	ellipse	0.92
		50	
		30	
		OR estimate (m ²) if irregular	
		area (m ²) = 1177.5	
SI3. Dessication rate	never/rarely/sometimes/frequently	never	0.90
SI4. Water quality	good/moderate/poor/bad	moderate	0.67
SI5. Shade	% of margin shaded 1m from bank	90	0.40
SI6. Waterfowl	absent/major/minor	minor	0.67
SI7. Fish population	absent/possible/minor/major	possible	0.67
SI8. Pond density	number of ponds within 1km	4	1.00
SI9. Terrestrial habitat	good/moderate/poor/isolated	good	1.00
SI10. Macrophyte cover	%	10	0.51
HSI =			0.74
provisional			0.59
HSI =			0.59
<i>Use provisional HSI value if above 0.75</i>			

Pond number	Pond 2		
OS Grid reference	SE 19003 14498		
Location details	Small circular pond (raised), in driveway of adjacent property		
Habitat Suitability Index			
SI1. Map location	A/B/C	A	SI value 1.00
SI2. Surface area	rectangle/ellipse/irregular length (m) width (m) OR estimate (m ²) if irregular	ellipse	0.01
		2.5	
		2.5	
		OR estimate (m ²) if irregular	
		area (m ²) = 4.90625	
SI3. Dessication rate	never/rarely/sometimes/frequently	never	0.90
SI4. Water quality	good/moderate/poor/bad	moderate	0.67
SI5. Shade	% of margin shaded 1m from bank	0	1.00
SI6. Waterfowl	absent/major/minor	absent	1.00
SI7. Fish population	absent/possible/minor/major	absent	1.00
SI8. Pond density	number of ponds within 1km	4	1.00
SI9. Terrestrial habitat	good/moderate/poor/isolated	poor	0.33
SI10. Macrophyte cover	%	0	0.31
HSI =			0.48
provisional			0.44
HSI =			0.44
<i>Use provisional HSI value if above 0.75</i>			

Pond number	Pond 3		
OS Grid reference	SE 19511 14848		
Location details	Damp depression in Lepton Great Wood, 180 metres from the Site		
Habitat Suitability Index			
			SI value
SI1. Map location	A/B/C	A	1.00
SI2. Surface area	rectangle/ellipse/irregular	ellipse	
	length (m)	15	
	width (m)	3	
	OR estimate (m ²) if irregular		
	<i>area (m²) =</i>	35.325	0.07
SI3. Dessication rate	never/rarely/sometimes/frequently	frequently	0.10
SI4. Water quality	good/moderate/poor/bad	poor	0.33
SI5. Shade	% of margin shaded 1m from bank	100	0.20
SI6. Waterfowl	absent/major/minor	absent	1.00
SI7. Fish population	absent/possible/minor/major	absent	1.00
SI8. Pond density	number of ponds within 1km	2	0.84
SI9. Terrestrial habitat	good/moderate/poor/isolated	good	1.00
SI10. Macrophyte cover	%	0	0.31
		HSI =	0.41
		provisional HSI =	0.37
<i>Use provisional HSI value if above 0.75</i>			

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