absolute ecology LLP wildlife surveys

Preliminary Ecological Appraisal

Land at Rivendell, Leek, ST13 5RH

February 2017

Author: Matthew James Haydock

Notice to readers

This report has been prepared by Absolute Ecology with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site, and during the production of the report were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management (www.cieem.org.uk).

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The results of the survey and assessment work undertaken by Absolute Ecology are representative at the time of surveying.

Every endeavour has been made to identify the presence of protected species on site, where this falls within the agreed scope of works.

The flora and fauna detailed within this report are those noted during the field survey and from anecdotal evidence. It should not be viewed as a complete list of flora and fauna species that may frequent or exist on site at other times of the year.

Up to date standard methodologies have been used, which are accepted by Natural England and other statutory conservation bodies. No responsibility will be accepted where these methodologies fail to identify all species on-site.

Absolute Ecology cannot take responsibility where Government, national bodies or industry subsequently modify standards.

Absolute Ecology cannot accept responsibility for data collected from third parties.

Reference to sections or particular paragraphs of this document taken out of context may lead to misrepresentation.

Non-technical summary

Absolute Ecology LLP were commissioned to undertake a Preliminary Ecological Appraisal of land at, land at Rivendell, Leek, ST13 5RH, Staffordshire Grid reference: SJ 98853 54757. The Preliminary Ecological Appraisal was undertaken February 9th 2017 by an experienced and licensed ecologist who is a full member of the Chartered Institute of Ecology & Environmental Management (CIEEM).

The site consists of improved grassland, introduced shrub, tree line with mixed native and non-native tree species with areas of erosion.

The site itself sits within a housing estate which consist on all angles dwellings, gardens and minor roads. The wider landscape consists of Leek golf club 150 meter to the west, woodlands, water courses, residential properties and agricultural land.

Botanically, the site itself does not appear to have any rare species and it is not particularly diverse.

It is recommended that

Birds

1. Where possible, habitats suitable for nesting and foraging birds should be retained, enhanced or created within any new development. The tree, hedgerow & Scrub habitats within the site are likely to be the most valuable to nesting birds, and should be retained as far as possible.
   Nesting birds may be present in the tree, hedgerow & Scrub during the bird breeding season (February/March to August inclusive). If vegetation removal is planned during these months, a prior check and onsite supervision during vegetation removal for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.
   It would be of conservation benefit to install a variety of nesting boxes for different bird species within the site in future (buildings and trees where suitable) to enhance the site for nesting birds and encourage bird diversity. Enhancing existing hedgerows or planting new hedgerows and shrubs within any new development can benefit birds if a wide range of native species are used.

Bats

2. It is recommended that the use of artificial lighting follows the protocols outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Artificial Lighting and Wildlife Interim Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting” (2014) to minimise disturbance and sky-glow across the site. If this were not possible, then bat activity surveys would be required; however given the small scale of the proposed development, this should not be an issue. If the local planning authority is minded to grant planning consent, then implementation of these protocols should be a condition of that consent.

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1.0 Introduction

Background

1.1 Absolute Ecology LLP was commissioned to undertake a Preliminary Ecological Assessment of a site known as land at Rivendell, Leek, ST13 5RH, Staffordshire Grid reference: SJ 98853 54757

1.2 It is proposed that the land will be used to construct new dwellings.



Figure 1: Showing proposed development

1.3 The Assessment was undertaken on the February 9th 2017 by Matthew James Haydock an experienced ecologist who is a full member of the Chartered Institute of Ecology & Environmental Management (CIEEM) whom has been involved in many projects including designing and undertaking ecological habitat surveys and site nature conservation evaluations; writing and implementing site management plans; acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures; protected species surveys under Natural England licence for survey and development; undertaking ecological impact assessment, appropriate assessment. Matthew has a National Diploma in ecology and Landscape studies and holds higher National Diploma in Environmental Management.

1.4 The scope of this appraisal has been determined in line with the proportional approach to ecological survey, assessment and subsequent recommendations for avoidance and mitigation of impacts, which is encouraged in the emerging 'BS 42020: Biodiversity – Code of practice for planning and development'. This report has been prepared with du consideration for various best-practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012)1 and the emerging BS 42020.

1.5 The objective of this report is to provide the client with information on any known or potential protected or rare species that may be using the site, and to outline recommendations on how to proceed with the works in a legal and ecologically sensitive manner.

1.6 Unless the client indicates to the contrary, information on the species found to be present on the site will be passed to the county biological records centre to update records held for the area.

Site Description

1.7 The site consists of primarily of semi improved grassland, introduced shrubs, semi-mature native and non-native tree species with small areas of ground disturbance.

1.8 The site itself sits within a housing estate which consist on all angles dwellings, gardens and minor roads the wider landscape consists of Leek golf club 150 meter to the west, woodlands, water courses, residential properties and agricultural land.



Figure 2: Showing site location indicated by yellow pin

2.0 Methodology

Desk Study

2.1 In order to compile background information on the site and immediate surroundings the Staffordshire Ecological Record (SER) was contacted.

2.2 Information requested was as follows:-

- Records of protected species within the 2 km of the site.
- Records of rare or notable species within the 2 km of the site.
- Non-statutory site designations on or within 2 km of the site.

2.3 Additionally, MAGIC (Multi-Agency Geographic Information for the Countryside, 2010) was used to establish whether any of the following were present:-

- Statutory site designations on or within 1 km of the site.
- Statutory sites designated for bats within 5 km of the site.

Habitat Survey

2.4 The site was visited on the February 9th 2017 and was surveyed in accordance with the Joint Nature Conservation Committee (JNCC) Phase I Habitat Survey methodology (JNCC, 2007). This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential that might warrant further study.

2.5 The observable higher plant species in each habitat type within the site, and their abundance, were recorded using the DAFOR scale:

D Dominant

A Abundant

F Frequent

O Occasional

R Rare

Fauna

2.6 Habitats present on the site were searched for obvious signs of faunal activity, *e.g.* presence of badger setts, mammal tracks or herpetofauna under refugia. Any buildings and mature trees on site were visually examined from the ground to identify features with the potential to support roosting bats.

Valuation of Ecological Features

2.7 The value of areas of habitat and plant communities has been measured against published criteria where available. Biodiversity Action Plans (BAPs) have been searched to identify whether action has been taken to protect all areas of a particular habitat and to identify current factors causing loss and

decline of particular habitats. The presence of injurious and legally controlled weeds has also been taken into account.

2.8 When assigning a level of value to a species, its distribution and status (including a consideration of trends based on available historic records) has been taken into account. Other factors influencing the value of a species are: legal protection, rarity and Species Action Plans (SAPs). Guidance, where it is available, for the identification of populations of sufficient size for them to be considered of national or international importance has also been taken into account.

Survey Constraints

2.9 Data Search

Desk study data provides information on recorded species in the area and can be helpful for targeting survey. However, it is possible that protected species that have not been identified within the data search may occur on or adjacent to the site.

2.10 Field survey

Habitats within 30 m of the site boundary were inspected as far as access allowed. Ponds up to 500m from the site were viewed where there was public access.

Fauna species present may not always leave field signs and in addition, species may take up residence on site subsequent to the survey. If no development takes place within two years of this survey report, the findings should be reviewed and may need updating, and a full survey should be repeated within three years

Nomenclature

2.11 The English name only of flora and fauna species is given in the main text of this report; however, scientific names are used for invertebrates where no English name is available. Vascular plants and charophytes follow the nomenclature of The Botanical Society for the British Isles (BSBI) 2007 database (BSBI, 2011) with all other flora and fauna following the Nameserver facility of the National Biodiversity Network Species Dictionary (http://www.nhm.ac.uk/nbn/), which is managed by the Natural History Museum.

3.0 Legislation

3.1 The United Kingdom Biodiversity Action Plan (BAP) 1994 sets out a strategy for implementing the Convention on Biological Diversity, which was signed by the United Kingdom at the Rio de Janeiro Earth Summit in 1992. The published report contains action plans for the United Kingdom's most threatened species and habitat plans for the most vulnerable areas.

3.2 The Local BAP sets out the county's part in the UK biodiversity planning process, in the form of local habitat and species action plans. Local BAPs are intended to focus resources, to conserve and enhance biodiversity, by taking account of national and local priorities.

3.3 Schedule 1 Part 1 of The Wildlife and Countryside Act 1981 (and amendments) – this lists birds protected by special penalties at all times. It prohibits intentional killing/injuring, taking, possessing, disturbing and selling (including parts and derivatives, eggs, nests, *etc.* as applicable) as well as damaging, destroying or disturbing nests in current use or dependent young, *etc.*

3.4 Schedule 5 of The Wildlife and Countryside Act 1981 (and amendments) – this prohibits deliberate killing, injuring, taking, possessing, disturbing and selling (including parts and derivatives) as well as damaging, destroying or obstructing any structure or place of refuge of listed fauna, such as Dormouse, Otter and bat species.

3.5 The Conservation of Habitats and Species Regulations 2010, consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is illegal to kill, disturb, destroy eggs, breeding sites or resting places, to pick, collect, take cuttings, uproot or destroy in the wild as well as keep, transport, sell/exchange and offer for sale/exchange species listed.

3.6 The Countryside and Rights of Way Act 2000 – this increases protection given by The Wildlife and Countryside Act 1981 (and amendments). The offence to intentionally damage any structure or place that a wild animal listed in Schedule 5 of the Act uses for shelter or protection or deliberately disturbing any such animal while in such a structure or place is extended so that the offence also covers reckless damage or disturbance. The CRoW Act also places a duty on Ministers and Government Departments to have regard for the purpose of conserving biological diversity in accordance with the Convention on Biological Diversity.

3.7 The Protection of Badgers Act 1992 - this Act makes it illegal to wilfully kill, injure or take any Badger, or attempt to do so and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a Badger sett.

3.8 The Natural Environment and Rural Communities Act, 2006 - as well as creating Natural England, this act gives all public authorities the duty to have regard for conserving biodiversity within the commission of their duties. This includes a duty to restore and enhance as well as maintain biodiversity. The act also strengthens protection for Sites of Special Scientific Interest (SSSI) and makes authorities liable for allowing damage to such sites or their features.

4.0 Results

Desk Study

4.1 There is one statutory designated sites within 2 km of the site.

SJ969549	Ladderedge Country Park	Local Nature Reserve

4.2 There are no statutory designated sites for bats within 5 km of the site.

4.3 There are sixteen non-statutory sites within 2 km of the site.

SK010541	Revedge Farm (north of)	Local Wildlife Site
SJ968538	Caldon Canal (south of Hollinhay Wood)	Local Wildlife Site
SJ965555	Longsdon Wood & Cowhay Wood	Local Wildlife Site
SJ975538	Cheddleton Heath (dismantled railway)	Local Wildlife Site
SJ979539	Leek Brook Meadow	Biodiversity Alert Site
SJ970544	Beech Close (SW of), Longsdon	Local Wildlife Site (SBI)
SJ986534	Cheddleton Heath	Local Wildlife Site
SJ980540	Soils Wood	Local Wildlife Site
SJ981553	Birchall Meadow	Biodiversity Alert Site
SJ988559	Ladydale Wood Pasture	Local Wildlife Site
SJ989556	Ballington Wood	Local Wildlife Site
SJ991529	Ringehay Grassland	Retained Grade 1 SBI
SJ994536	Twinney Wood and Grassland	Local Wildlife Site
SJ997530	Rod Wood	SWT Nature Reserve
SJ991558	Ladydale	Local Wildlife Site
SJ999555	Lowe Hill	Retained BAS

4.4 SER provided the following records for protected and notable species within 2 km of the site boundary:

Plants – Bluebell

Mammals – Eurasian Badger, Daubenton's Bat, Whiskered/Brandt's Bat, Noctule Bat, Common Pipistrelle, Brown Long-eared Bat, Pole cat and Otter

Birds –Common Kingfisher, Greylag Goose, Short-eared Owl, Little Plover, Eurasian Marsh Harrier, Whooper Swan, Peregrine Falcon, Peregrine Falcon, Eurasian Hobby, Brambling, Common Crossbill, Red Kite, Whimbrel, Redwing.

Amphibian - Great Crested Newt

Please see below page 10 & 12 Biological Map of protected species and sites.

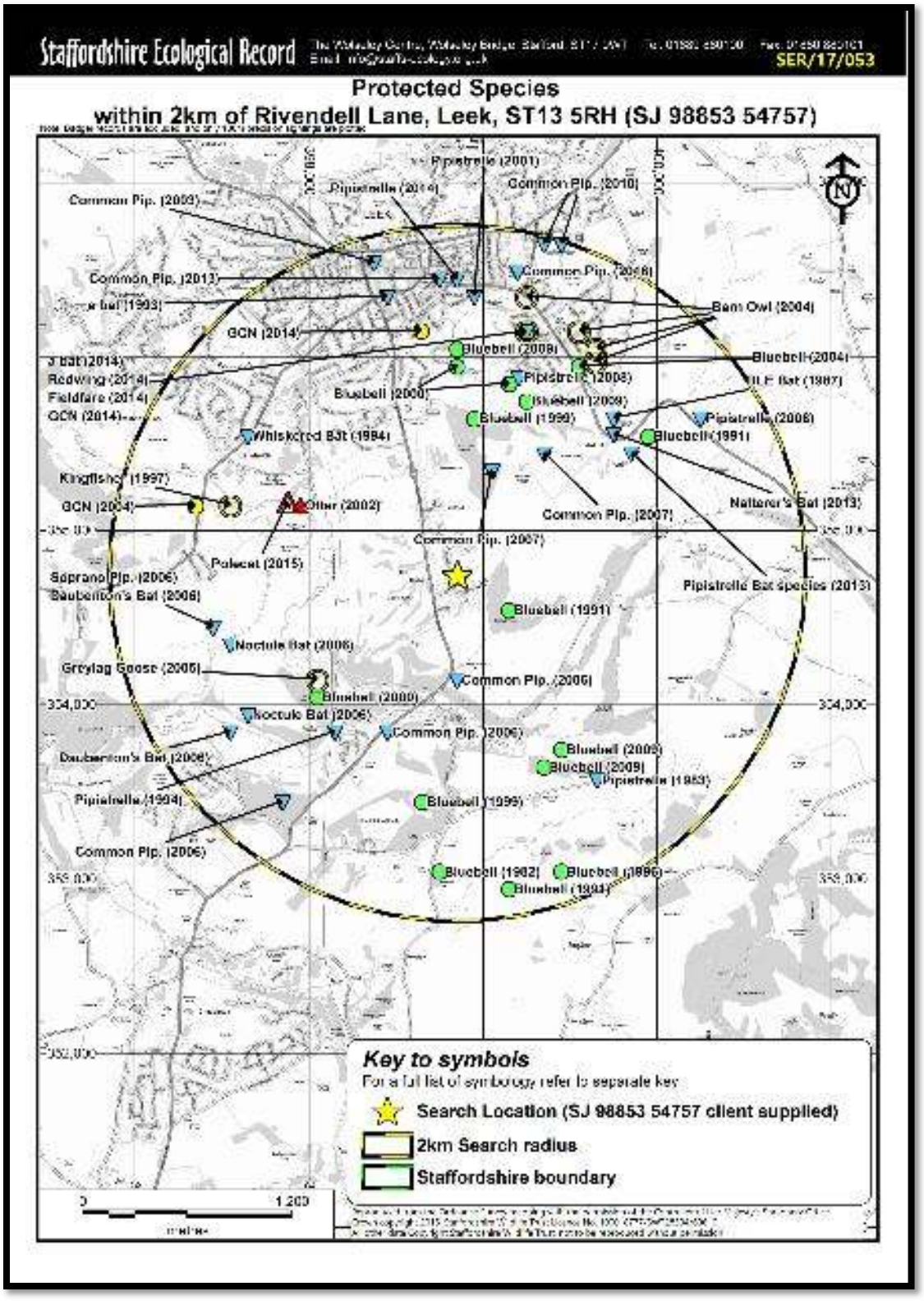

Figure 3: Showing map of protected species within 2Km radius

Staffordshire Ecological Record
The Wolseley Centre, Wolseley Bridge,
Stafford. ST17 0WT
Tel: 01889 880100 Fax: 01889 880101
Email: info@staffs-ecology.org.uk

A legend to the map showing Nature Conservation Sites and Species

Introduction

These colours are used on the site alert mapping within the SWT GIS, but SER cannot guarantee the same colours are used in any other mapping system, particularly those based on ArcView.

Statutory Designations from Natural England's web-site

- National Nature Reserves — NNR (boundary not available owing to OS restrictions)
- Sites of Special Scientific Interest — SSSI (boundary not available owing to OS restrictions)
- Local Nature Reserves — LNR (boundary not available owing to OS restrictions)

Non-statutory Designations from the Staffordshire Grading System (1995 onwards)

- Site of Biological Importance (ex Grade 1 SBI) equivalent to "Local Wildlife Site"
- Biodiversity Alert Site (ex Grade 2 SBI)
- Proposed/potential Site of Biological Importance

Geological Sites

- Regionally Important Geological/geomorphological Site (= Local Geological Site)

Staffordshire Wildlife Trust Sites

- SWT Nature Reserves

Other Nature Reserves

- Royal Society for the Protection of Birds

Ancient Woodland Inventory

- Ancient & Semi-natural Woodland
- Ancient Replanted Woodland

Species Information

- Mammals excluding those listed below
- Otter (Lutra lutra)
- Badger (Meles meles) - not normally supplied
- Water Vole (Arvicola terrestris)
- All bat species
- All bird species
- Any other protected species (precise to 100m)
- All Protected Species Records (precise to 1km)
- Amphibians and reptiles excluding those below
- Great Crested Newt (Triturus cristatus)
- Native Crayfish (Austropotamobius pallipes)
- Flowering plants except those below
- Bluebell (Hyacinthoides non-scripta)
- Butterflies and Moths
- BAP Species Records (precise to 100m)
- BAP Species Records (precise to 1km)

Notes:

The Local Nature Reserve and other nature reserve boundaries can overlay the current grading when both layers are actively visible

Where there are multiple species records for the same grid reference the dot for one species may obscure the dots for other species - all species records will be displayed in the accompanying spreadsheet

Not all the above categories may be present on the accompanying map

Version 2.0 July 2011

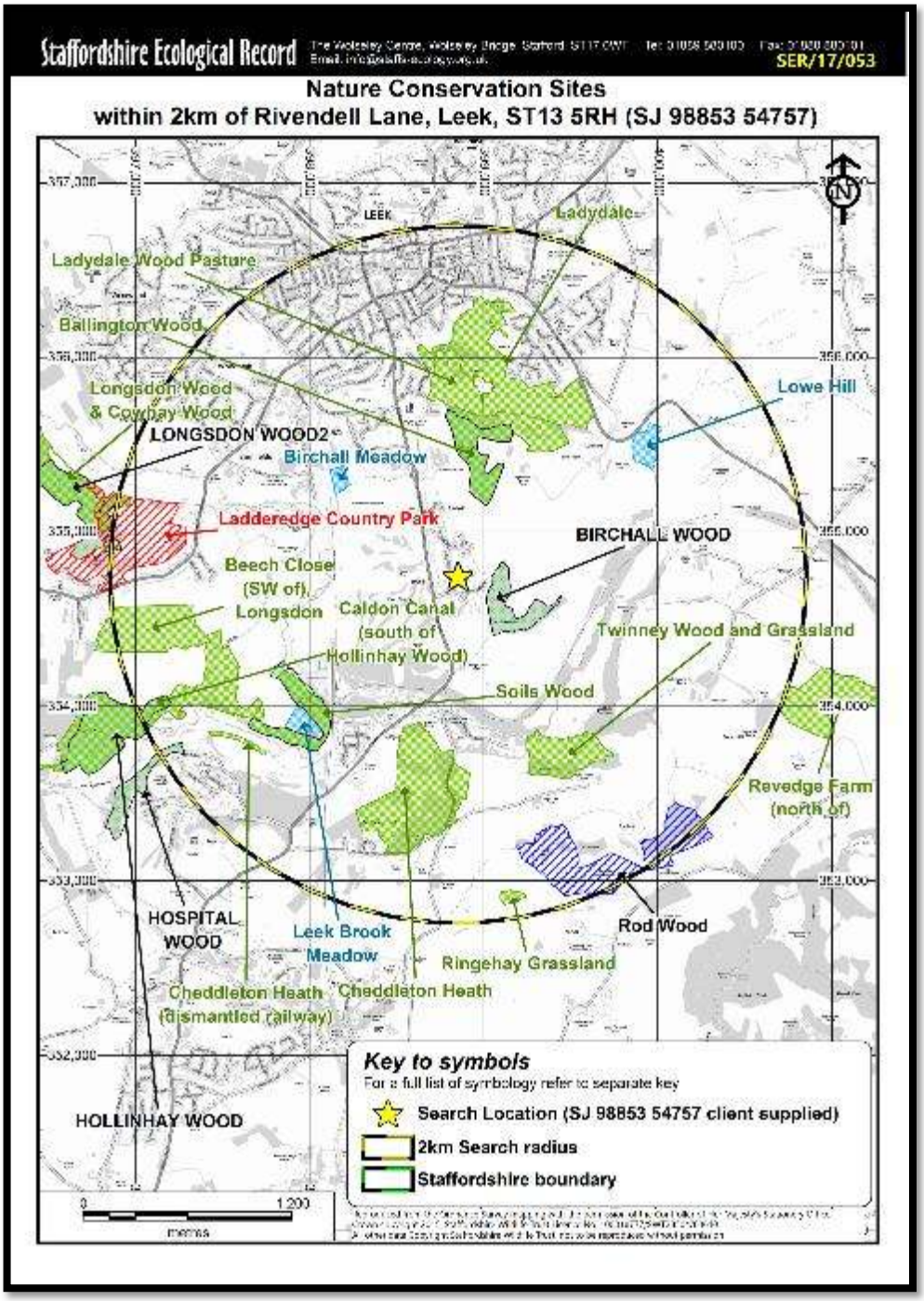

Figure 5: Showing map of protected sites within 2Km radius

Habitats

4.5 The following habitats or vegetation types were identified on the site during the course of the habitat survey.

- Improved grassland
- Scrub
- Trees
- Bare ground

Improved grassland

4.6 Short sward grass area, dominated by perennial ryegrass (Lolium perenne) Abundant, with abundant white clover (Trifolium repens), frequent daisy (Bellis perennis), Rare, ragwort (Jacobaea vulgaris), occasional dandelion (Taraxacum officinale), occasional broad-leaved dock (Rumex obtusifolius), Occasional rosebay willowherb (Chamerion angustifolium) and occasional nettle (Urtica dioica). The grassland on site was patchy with some areas of tussock grass but much of the grassed area is short and eroded from possible maintenance of the site. The inspection was conducted in winter but given the below no further action would be required botanically.

- Grasses present were low in diversity and typical of improved grassland
- Herbs present were sparse, lacking in diversity and typical of improvement
- There were no key indicator herbs of more species-rich grassland present (for example, ribwort plantain, black knapweed, common cat's-ear, sedges etc - even in winter these herbs would have vegetative parts showing within the sward)
- Within the grassland, there was no evidence of dead flower stems / stalks which often persist into the winter and give an indication of herb presence



Plate 1: Showing improved grassland



Plate 2: Showing improved grassland

Species Poor Hedgerow

4.7 Running along the northern boundary is a beech hedgerow which was found to be fairly gappy and sparse the understory of the hedgerow was mainly of bare ground. The hedgerow is to be retained.



Plate 3: Beech hedgerow indicated by red line

Scrub

4.8 Within the site is a scattering of scrub which includes bramble (Rubus fruticosus) and tall ruderal Rosebay Willowherb (Chamerion angustifolium)



Plate 4: Showing area of scrub.

Trees

4.9 The trees on site consisted of non-native confier trees and native Holly (Ilex aquifolium), Common ash (Fraxinus excelsior) , sycamore (Platanus occidentalis) and bird cherry (Prunus padus), Oak (Quercus robur), Willow bay (Salix pentandra) upon inspection the trees were found to be either young or semi-mature. The tree line along the boundary are to be retained.



Plate 5: Showing trees on site primarily along the boundary to the north of site

Bats

4.10 SER provided several records of bat species within 2 km of the site. There are no buildings on site. The trees on site were assed of having negligible opportunity for roosting bats due to the lack of cracks, crevices associated with bats, the inspection conformed to the Bat Conservation Trust Best Practice 3rd Edition 2016.

4.11 The site provides some foraging habitat for a range of bat species. The tree line is likely to be used by foraging bats, as well as for navigational flight lines.

Badgers

4.12 SER provided records of Badger within 2 km of the site. The site provides moderate foraging habitat for Badgers in the form of improved grassland and bare soil. No evidence of Badger activity, such as setts, hairs, dung pits, latrines or snuffle marks, was discovered during the survey.

Dormice

4.13 There are no records of Dormice occurring within 2 km of the site. The potential for the site to support Dormice is low due to no habitat that would support such a species.

Water Voles and Otters

4.14 There are no records of Water Voles and one record of Otters occurring within 2 km of the site. No standing or running water was present on site at the time of the survey; nor likely even during extreme rainfall.

4.15 Due to the absence of water on or adjacent to site, these species are considered likely absent from site.

Other mammals

4.16 One record of Polecat exists but no records of another mammal species were provided by SER.

Birds

4.17 Records of Hobby, and Kingfisher were provided by SER. The following were all either observed or heard on site during the survey: Blackbird, Robin.

4.18 The site provides potential foraging habitat for a range of bird species. The trees, Hedgerow and scrub offer good foraging and nesting habitat for a range of common birds.

Reptiles

4.19 SER provided no records of reptiles. The site is generally unsuitable for reptiles and lacks extensive areas of scrub with open basking areas typically associated with reptiles. The inspection identified small brash pile which was fully inspected with the aid of a video endoscope and nor reptiles were evident. The site was also considered to be not well connected to potential reptile habitat within the wider landscape as immediate landscape consists of minor road housing and maintained gardens.

Amphibians

4.20 SER provided two records of GCN species within 2 km of the site. There is no ponds or ditches on site also desktop study identified no ponds within a 500-meter radius of the site using google earth and pro-map software, it is therefore considered that their presence on site would be unlikely.

Invertebrates

4.21 SER did not provide any records of protected or notable invertebrate species. The habitats on site are generally common and do not provide much potential for rare invertebrate species, although they are expected to support a number of more common species

5.0 Development Constraints and Recommendations

5.1 The site is the subject of a possible planning application for a residential development. Ecological constraints and recommendations with regard to any development are discussed below.

Designated Sites

5.2 There is sixteen non-designated with one designated statutory site within 2 km of the site.

5.3 Given the physical distances between them and considering the geographical features that also separate them, including open farmland built development and roads; it is very unlikely that the proposed development would affect any of these areas.

Habitats

5.4 Botanically, the site itself does not appear to have any rare species and it is not particularly diverse.

Potential Impacts of Works

5.5 There are existing plans for the site; however, if commercial development is undertaken in the future, potential impacts are likely to include the following.

5.6 Nesting birds may be present in the trees, hedgerow and scrub during the bird breeding season (March to August inclusive). If vegetation removal is planned during these months, this could have a negative impact on nesting birds.

5.7 Although no badger setts were observed on site, badger activity can change over a short time. If any setts are created on site prior to works, tunnels could be affected by ground works and vegetation removal and badgers could be harmed.

Recommendations

5.8 The following are general recommendations that are likely to be a minimum requirement for any future development of the site.

Bats

5.9 The habitats for foraging bats are limited within the site, and loss of grassland is unlikely to significantly impact local bat populations, particularly as any new residential development will also include gardens, which can be used by foraging bats. The development proposals do not involve removal or severance of any of the existing hedgerows on site; but rather 'reinforcement' of the boundary landscaping.

5.10 If the hedgerows or tree line are likely to be affected by an increase in light spill, then there may be significant impacts on commuting routes, particularly if there are roosts in existing houses nearby. It is recommended that the use of artificial lighting follows the protocols outlined in the Institute for Lighting Engineers document "Guidance for the Reduction of Obtrusive Lighting" (2005) and BCT's "Artificial Lighting and Wildlife Interim Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting" (2014) to minimise disturbance and sky-glow across the site. If this were not possible, then bat activity surveys would be required; however given the small scale of the proposed development, this should not be an issue. If the local planning authority is minded to grant planning consent, then implementation of these protocols should be a condition of that consent.

Birds

5.11 Where possible, habitats suitable for nesting and foraging birds should be retained, enhanced or created within any new development. The buildings within the site are likely to be the most valuable to nesting birds, and should be retained as far as possible.

5.12 bird breeding season (February/March to August inclusive). If vegetation removal is planned during these months, a prior check and onsite supervision during vegetation removal for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.

5.13 It would be of conservation benefit to install a variety of nesting boxes for different bird species within the site in future (buildings and trees where suitable) to enhance the site for nesting birds and encourage bird diversity. Information on bird nesting boxes can be found at http://www.rspb.org.uk/advice/helpingbirds/nestboxes/. Enhancing existing hedgerows or planting new hedgerows and shrubs within any new development can benefit birds if a wide range of native species are used.

5.14 Similar to bats, bird habitats, including nesting and roosting sites, are diminishing or have disappeared altogether due to changes in the landscape, environment and building techniques. Consequently, the provision of boxes for birds will provide supplementary nesting sites that are relatively safe from predators, close to feeding areas, and give essential winter protection for roosting birds. A range of designs are available to suit most species, including garden species, birds of prey and colonial nesting species, for both trees and buildings. Colonial nesting species, such as House Sparrows, which are currently facing a dramatic decline, suffer from a lack of suitable buildings in which to nest. Moulded woodcrete boxes can be used to form a network of contiguous boxes favoured by the species.

Additionally, nesting baskets can be used to encourage birds of prey to areas where they have not previously nested. Health risks from breeding birds generally relate to Feral Pigeons and Starlings, and require direct contact with nesting material, dried faeces etc., within confined spaces. Consequently, the public health risk relating to encouraging nesting birds on the new housing development is considered to be negligible.

- The Sparrow terrace nest boxes and the 1B Schwegler nest boxes will be positioned on the existing trees or incorporated onto the new dwelling or garages.
- All the bird boxes will be positioned at least 4 metres high, or more.

Table 1: Bird boxes to be incorporated into the new development

Bird Boxes	Type and Quantity	Information
	**2 x Sparrow Terrace**	The Sparrow Terrace will attract Sparrows, but also Tits and Redstarts. These should be incorporated onto retained trees within the proposed development or if possible to new development
	**2 x No. 10 Schwegler Swallow Nest**	The No. 10 Schwegler Swallow Nest will attract swallow species. These should be incorporated onto retained buildings within the proposed development.

Bat Boxes

The development will incorporate a total of two bat boxes: where possible, developments should include small access points suitable for bat access and/or wall mounted bat boxes (2FR Schwegler Bat Tube'' style bat boxes), positioned onto the new housing. Further information about providing access for roosting bats can be found on the Bat Conservation Trust website at http://www.bats.org.uk/pages/new_build.html. It is recommended that bat boxes, such as the Schwegler 1FQ, are installed onto a selection of housing in a south facing position,. The installed bat boxes will be sited at least 7–8 metres above the ground.

- Two 2FR Schwegler Bat Tube boxes will be installed to provide summer and hibernation opportunities on the new office.
- Boxes will not be placed in an overly exposed position on the new builds. Crucially, the box entrances should face south-west to south-east.
- Checks for droppings or observations at dusk during the summer for emerging bats will indicate if they are being used.

- If a box is not used after two years, it will be relocated to an alternative situation.
- Once discovered, a bat roost is protected by law and must not be disturbed.
- It is envisaged that bat box monitoring should be undertaken by the site owners who will require a licensed bat worker to inspect the boxes in order to conform to current guidance and legislation.

Table 1: Bat box to be incorporated into the new development

Bat boxes	Type and Quantity	Location
	**2 x** 2FR Schwegler Bat Tube	The 2FR Schwegler Bat Tubeis ideal for all types of bats that inhabit buildings. Its shape and design make it equally attractive to bats as a roost or nursery, and it is also very attractive to the human eye, which is an important consideration.

Badgers

5.15 Although no badger activity was observed on the site at the time of the survey, activity patterns of this species can change over a short time. It is recommended that a full badger survey is undertaken prior to any works commencing on site. Badger surveys can be undertaken at any time of year.

Planting Enhancement

5.1 Any landscaping relating to the proposed development should also take into consideration bats and other wildlife, and it is recommended that only native tree and shrub species are planted. No plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 should be planted during the landscaping of this development. For further details of Schedule 9 plants, visit the Defra website: www.defra.gov.uk/wildlife-pets/non-native.

5.2 New planting should contain native species of trees.

Table 3: List of native tree species

	Species	Planting Time
Native Tree Species	Ash (*Fraxinus excelsior)*	January/February
	Aspen (*Populus tremula)*	January/February
	Field maple (*Acer campestre*)	January/February
	Bird Cherry (*Prunus padus*)	January/February
	English Elm(*Ulmus minor* var *vulgaris*)	January/February
	Oak (*Quercus robur*)	January/February

5.3 Smaller scale plantings that will be included within the landscape planting design should endeavour to resemble niche habitats. For example, native ferns and other plants that thrive in low light (e.g. Ivy, Holly, and a variety of grasses and mosses) can be used. Species should be chosen according to moisture and sunlight availability, but also with regard to their wildlife value. Many grasses will offer cover and breeding places for invertebrates as well as food for some birds. More open but sheltered areas within the development site are particularly suitable for colourful plants that thrive in full sun. These can function as bee and butterfly gardens, supplying a rich source of nectar from spring to autumn. Shrubs such as Buddleia, Broom *Cytisus scoparius*, Lavender *Lavendula* sp. and Gorse *Ulex europaeus*, and herbs such as Willowherb *Epiloobium* sp., Michaelmas Daisy *Aster* sp., Soapwort, Mullein *Verbascum* sp. and Thyme *Thymus vulgaris* all enjoy a sunny position and provide significant nectaring resources for invertebrates.

5.4 The use of climbing plants to enhance the design and aesthetic elements is generally an accepted practice. The process of allowing and encouraging plants to grow on and up walls allows the natural environment to be extended within the site. From an ecological perspective, green walls will provide resting and feeding places for birds, invertebrates and small mammals. Climbers provide nesting habitats for birds such as Wrens, Blackbirds, Song Thrushes and House Sparrows. Species such as Cotoneaster, Ivy, Climbing Roses and Honeysuckles are all important fruit resources for birds. Equally, climbing plants such as Virginia Creeper and Ivy form important habitats for invertebrates. Although native species are more likely to attract wildlife, some exotic species are also effective in this respect. Within the site grounds it may be more productive to use a combination of native and exotic species to maximise the range of annual and perennial, deciduous and evergreen foliage, and flowering, climbing and creeping species. This latter plant type provides a selection of plants suitable for green walls. The aspect of a climbing plant on a wall can have significant ancillary effects, such as insulation and moisture retention. For example, north-facing walls are more suitable for supporting native herbs and a wider range of plants. This is due to the higher moisture regime. Further structural benefits of the space between the wall and the climbing plants include pockets to collect leaf litter and provision of nesting sites, as well as baffles to trap rising warm air.

5.5 The improvement of the existing beech hedgerow pacifically along the northern boundary of the site and within the development would be of a great biodiversity benefit to the site itself by planting native species.

Table 4: List of species for two types of hedgerow deemed suitable for these areas, which can be planted for conservation or to provide a thorn-less barrier.

	Species	**Planting Time**
Conservation Hedgerow	Hawthorn (*Corylus avellana*)	January/February
	Blackthorn (*Prunus spinosa*)	January/February
	Field maple (*Acer campestre*)	January/February
	Spindle (*Euonymus europaeus*)	January/February
	Hazel (*Corylus avellana*)	January/February
	Dog rose (*Rosa canina* agg.)	January/February
	Wayfaring tree (*Viburnun lantana*)	January/February
	Oak (*Quercus robur*)	January/February
Thorn-less Hedgerow	Field maple (*Acer campestre*)	January/February
	Common dogwood (*Cornus sanguinea*)	January/February
	Guelder rose (*Viburnum opulus*)	January/February
	Wild privet (*Ligustrum vulgare*)	January/February
	Hornbeam (*Carpinus betulus)*	January/February

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7.0 Plans

Phase 1 Habitat Map

