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# EXTENDED PHASE 1 HABITAT SURVEY AND BADGER SURVEY OF LAND AT RACECOMMON QUARRY, PENISTONE, SHEFFIELD

## CLIENT: DESIGN SPACE ARCHITECTS

## OUR REF: DESSPA-RACQUA-2283

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DESSPA-RACQUA-2283

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## EXECUTIVE SUMMARY

In June 2009, ecosulis ltd was commissioned by Design Space Architects to undertake an extended Phase 1 habitat survey and badger survey of land at Racecommon Quarry, Penistone, Sheffield.

The objectives of this study are: To provide information on the existing ecological conditions at the site; to identify potential constraints and opportunities that ecology may pose to site clearance and future development; and to identify further ecological studies that may be required to ensure that ecology is fully considered within the site clearance works and future development plans.

The recommendations within this report are tailored to the current works proposed for the site (Drawing number: 002, render 01 and render 04, Design Space, 2009). The site proposals involve the removal of a small area of vegetation and construction of two single story residential dwellings and associated infrastructure.

The site is a former quarry, situated within the rural village of Penistone (centred on OS grid reference SE247 014). The location of the site is shown on Figure 1. The area of the site is approximately 1.1ha. Habitats within the site boundary include a lake, dry heathland and acid grassland, deciduous woodland and scrub, bear earth, bedrock and fenced and walled boundaries.

A desktop study was undertaken, which included a web based search. In addition Barnsley Metropolitan Borough Council Planning Department was contacted to provide information on non-statutory site designations occurring on or within 2km of the site and records of protected/notable species occurring within 2km of the site (4km for bats).

One senior member of staff of ecosulis ltd, Lisa Peirce carried out a survey of the site on 17 June 2009 using a standard Phase 1 habitat survey method, extended to record provisional signs of and potential for protected or notable species. Detailed notes of vegetation, habitats and signs of animal activity were recorded. In addition, a badger survey of the site was also undertaken in combination with the above survey.

The ecological interest of the site is related to:

- The presence of two single hole badger setts (inactive at time of survey)
- The presence of a small area of Upland Dry Acid Grassland and Upland Heathland UK BAP habitats

- The presence of a poor example of the UK BAP habitat Eutrophic Standing Waters
- The suitability of the bedrock and two semi-mature trees to support roosting bats and the site's suitability to support foraging bats
- The site's limited suitability to support foraging otter
- The site's suitability in providing nesting and foraging opportunities for birds
- The site's suitability to support basking, foraging and hibernating reptiles and hedgehog
- The site's limited suitability to support breeding and hibernating amphibians, including great crested newt
- The site's suitability to support a range of common and invertebrate species an has limited suitability for less common species

Based on the results of the desktop study and field survey, and following an assessment of the site, the habitats present are of ecological value at a Site to Local level.

The following provides a summary of the key recommendations:

- The acid grassland and heath is a UK BAP habitat and therefore it is recommended that it be retained and managed in the long-term where possible. Should habitat be lost to the proposals, it is recommended that compensatory habitat/habitat enhancements be provided.
- It is recommended that lake is retained and protected during construction works.
- It is recommended that the existing semi-mature trees and woodland strip are retained where practicably possible. Where this is not possible, compensatory planting of native tree species is recommended and advice sort from an Arboricultural Consultant
- The bedrock has potential for roosting bats. Given the close proximity of the proposed development to this suitable habitat, it is recommended that an emergence and bat activity survey is undertaken to gain an understanding of bats usage of the site to inform any mitigation and support a bat licence if necessary. It is recommended that trees on site are retained where possible. If the two semi-mature trees on site with potential for roosting bats are due to be removed, pruned or isolated it is recommended that a Precautionary Method of Works is followed and that 'soft' felling techniques are employed in accordance with BCT 2007 guidance. This is likely to include a climbing inspection to further assess their suitability to habour roosting bats and search for evidence of use by bats and

inform the need for further consideration. Climbing surveys can be undertaken at any time of year.

- No active setts have been recorded on site and the site is unlikely to form a significant part of the local badger territory due to its size and lack of recent evidence. Works beyond 30m of the setts are unlikely to affect badgers even if the setts were to become active; however, measures may be required to ensure disturbance is minimised. It is recommended that immediately prior to any works on site an updated badger survey is undertaken to determine the current level of activity on site, reassess the status of the setts and to search for any further setts. An Ecological Clerk of Works should also oversee the scrub removal, which will enable periodic checks throughout clearance for badger setts. Surveys can be undertaken at any time of year; however, they tend to be most effective in spring when vegetation is at its lowest. If an active badger sett is discovered on site and works are likely to impact upon it then a licence will be required prior to proceeding. A licence can only be obtained once planning permission has been granted and generally only allows works between 1 July and 30 November. If there is a delay of six months or more between this survey and submission of planning then a repeat survey is recommended. Badgers are very faithful to their commuting routes and as such are likely to continue to pass through the site. Consideration should be given to incorporating a suitable route to enable badgers to continue to pass through the site. As badgers possibly use the site for foraging, following best practice guidelines it is recommended that any loss of habitats to development be compensated for with the provision of smaller areas of better quality habitats where possible. It is also recommended that precautions are taken during construction in the form of providing escape routes within trenches for badgers and other animals.

- It is possible that the lake is used by otter as a feeding resource and therefore it is recommended that the lake and connectivity via woodland to the lake is maintained. Should modification of the lake or surrounding or connecting habitat be proposed then further survey for otter would be recommended. It is recommended that measures are taken to protect the water quality during works and that a Construction Environmental Management Plan (CEMP) is produced which would details protection measures for the lake. It is recommended that the design takes into account measures to minimise risk of pollution to the lake.

- Scrub and woodland provide suitable foraging and sheltering habitats for hedgehog. Any removal of these habitats should be carried out with care and an Ecological Clerk of Works should be present

- Legislation involving birds has implications on the timing of vegetation clearance, which should avoid the bird nesting season (which generally occurs between March and September). Should this be unavoidable a check of the site for nesting birds should be undertaken by an ecologist prior to the commencement of any vegetation clearance works.

- The site is considered to offer suitable hibernation, foraging and basking habitat for common species of reptile. Should reptiles be present, it is recommended that an appropriate mitigation strategy is prepared in consultation with the Local Planning Authority to ensure that any reptiles present on site are protected throughout construction works and to identify any enhancement opportunities for these species. In order to inform the mitigation strategy, a reptile presence/absence survey is recommended. This survey should involve laying out refuges for reptiles across the site. Seven subsequent site visits in suitable weather would then be required to check the refuges for signs of reptile presence. The optimum time for undertaking this survey is April/May or September, but subject to suitable weather conditions, the survey could be carried out between March and October.

- Further survey and assessment of the pond on site and pond to the west of the site if possible is recommended in order to further assess ponds suitability to support great crested newts and the presence/absence of great crested newts by undertaking a Habitat Suitability Index (HSI) assessment, which predicts the suitability of the habitat to support great crested newt. Should the assessment find the lake suitable, a presence/absence surveys is recommended. This involves four visits to the site. The optimal timing for the presence/absence survey is between mid-March and mid-June, with at least two between mid-April to mid-May.

There are a number of opportunities within the development proposals to provide wildlife enhancements post-development. Consideration should be given to the incorporation of biodiversity enhancing features in order to ensure that any future development meets criteria set out within PPS9 and other local planning policies and Biodiversity Action Plans (that should be reviewed). For example, the proposals include 'green roofs', which has potential to be designed to provide biodiversity gain and contribute towards credits for Code for Sustainable Homes/BREEAM Assessments:

## CONTENTS

## INTRODUCTION

1. In June 2009, ecosulis ltd was commissioned by Design Space Architects to undertake an extended Phase 1 habitat survey and badger survey of land at Racecommon Quarry, Penistone, Sheffield.

2. One senior member of staff of ecosulis ltd, Lisa Peirce, visited the site on 17 June 2009, accompanied by the landowner, Mr Gregg Walters.

### Objectives of Study

3. The objectives of this study are: To provide information on the existing ecological conditions at the site; to identify potential constraints and opportunities that ecology may pose to site clearance and any future development; and to identify further ecological studies that may be required to ensure that ecology is fully considered within the site clearance works and any future development plans.

### Site Proposals

4. The recommendations within this report are tailored to the current works proposed for the site (Drawing number: 002, Design Space, 2009). The site proposals involve the removal of a small area of vegetation and construction of two single story residential dwellings and associated infrastructure.

### General Description

5. The site is a former quarry, situated within the rural village of Penistone (centred on OS grid reference SE247 014). The location of the site is shown on Figure 1. The area of the site is approximately 1.1ha. Habitats within the site boundary include a lake, dry heathland and acid grassland, deciduous woodland and scrub, bare earth, bedrock and fenced and walled boundaries.

6. The site is bounded by agricultural land (pasture grassland) to the east and south and by two minor roads to the west and north. The site lies within a rural area, just south of the village of Penistone. Beyond these immediate surrounds are extensive areas of agricultural land to the east and south, the village of Penistone to the north and a quarry to the west.

## NOMENCLATURE

7. The common name only of flora and fauna species is given in the main text of this report; however, Latin names are used for species where no common name is available. A full species list with Latin names is listed in Appendix I. All plant names follow the nomenclature of Stace (1997).

## METHODS

### Desktop Study

Local Records

8. Barnsley Metropolitan Borough Council Planning Department (BMBCPD) was asked to provide any information on non-statutory site designations occurring on or within 2km of the site. At the time of writing, no Local Ecological Records Centre covers the area of the site.

Web Based Search

9. The 'Local Live' website was accessed for aerial views of the site and used as a visual aid to help put the site into context with its surroundings and to identify any potential features of interest in the surrounding land.

10. The Multi-Agency Geographical Information for the Countryside (MAGIC) website was consulted for information on statutory site designations in the area.

11. The National Biodiversity Network (NBN) website was also consulted for information on records of protected and notable species in the area.

### Ecological Field Survey

Extended Phase I Habitat Survey

12. Phase 1 Habitat Survey is a survey method and habitat classification system that was developed by the Nature Conservation Council, now Joint Nature Conservation Committee (JNCC, 2007) to map habitats and land use categories to a 'consistent level and accuracy'. Vegetation and habitats are mapped using standard colour codes, allowing rapid visual assessment of the extent and distribution of different habitat types. Where appropriate, Target Notes highlight potential features of interest. An extended Phase 1 habitat survey also records provisional signs of protected or notable species and assesses the suitability of the habitats on site and within the accessible surroundings to support such species.

13. The site was surveyed on 17 June 2009, by a senior ecologist of ecosulis ltd, Lisa Peirce.

Badger Survey

Badger Survey and Assessment

14. The badger survey was undertaken on 17 June 2009 by a senior ecologist of ecosulis ltd, Lisa Peirce. A systematic walk of the site was undertaken to check for

the presence of signs of badger, such as setts, latrines, signs of foraging, tracks and prints. The survey followed recommended guidelines in Harris *et al.* (1989).

15. Assessment of badger activity such as the presence of setts and foraging activity, is based on visual evidence at the time of the survey and apparent suitability of habitats present within the study corridor, taking into account the surrounding land and linkages to other badger setts (if present).

16. The status of any entrances found was assessed according to Harris et al. (1989) and Neal and Cheeseman (1996). Refer to Appendix III for further details. For the purpose of reporting, the activity status of each sett has been classified as follows:

- Active Setts – Setts that have one or more well-used holes with or without bedding
- Inactive Setts – Setts that were not active at the time of survey and that comprise one or more partially-used entrances. Unlikely to have been used within the past 21 days
- Disused Setts – No well-used or partially used entrances. Would require considerable clearance before they could be used

**Ecological Evaluation**

17. Habitat areas and species populations (where appropriate) within the site are assigned ecological values on a scale between International Value and Negligible Value, based on the results of the desktop study and survey. The value assigned to habitats and species adopts the recommendations for evaluating habitats given in the IEEM guidelines for Ecological Impact Assessment (2006). The geographical value categories used in this assessment are: *International* (Europe)*, UK, National* (England), *Regional* (north), *County* (Sheffield), *District* (north Sheffield), *Local* (Penistone), and *Site* (within immediate the zone of influence only). Examples of the factors that are considered in defining such ecological values are given in Appendix II. Natural processes and interactions between physical and biotic factors are all considered in the assessment. Values are assigned to all habitats likely to be directly or indirectly affected by the proposed development.

18. The site as a whole has been assessed using criteria set out by Ratcliffe (1977) as a guide (Appendix IV).

## RESULTS

### Desktop Study

Designated Sites

19. MAGIC informs that no statutory sites of nature conservation lie within the site boundary, but one Site of Special Scientific Interest (SSSI) is located south-west of the site. This SSSI is designated for its ecological interest, as summarised in Table 1 below.

Table 1. Summary of Statutory Sites within 2km of the Site

| Site Name | Distance From Site | Reason for Designation |
|---|---|---|
| Spring Meadows, Alderman's Head & Cow Croft Meadows | 1.9km south-west | Lowland species-rich neutral grassland meadow that is the largest of its type in South Yorkshire |

20. The BMBCPD stated that there is one non-statutory designated wildlife site (Natural Heritage Site (NHS)) within the search area; however, this does not lie within the site itself. The details of this site are summarised in Table 2 below.

Table 2. Summary of Non-Statutory Sites within 2km of the Site

| Site Name | Distance From Site | Reason for Designation |
|---|---|---|
| Brock Holes NHS | 2.0 km west | The site is a good example of a typical habitat mosaic of heathland and grassland with mire areas. |

Habitats

21. From aerial photograph interpretation, the site is bounded by agricultural land (pasture grassland) to the east and south and by two minor roads to the west and north. The site lies within a rural area, just south of the village of Penistone. Beyond these immediate surrounds are extensive areas of agricultural land to the east and south, the village of Penistone to the north and a disused quarry to the west. The disused quarry supports a small lake. Large areas of woodland and heathland/tall grassland exist in the wider area south and south-west of the site. Habitat

connectivity is provided by a network of hedges in the wider area and by field margins adjacent to the site.

Species

22. NBN Gateway holds a large number of records for protected and/or notable species in the 10km grid square in which the site lies (SU29). Unless otherwise stated these records are either from an unknown location within the 10km grid square within which the site lies. These include:

- *Plants* – Corn buttercup and lesser butterfly orchid
- *Fungus* – Orange chanterelle
- *Bats* – Noctule (2.6km north of the site) and soprano pipistrelle
- *Other mammals* –Brown hare, red squirrel, otter, water vole (1.3km east of the site), mountain hare, pine marten, polecat and hedgehog
- *Birds* –House sparrow (1.3km north of the site)
- *Amphibians* – Common toad and great crested newt
- *Reptiles* – Adder and common lizard
- *Invertebrates – Beetles:*- Necklace ground beetle
- *Invertebrates – Butterflies*:- Small heath, wall, white-letter hairstreak
- *Invertebrates – Ephemeroptera*:- Iron blue mayfly
- *Invertebrates – Moths*:- Argent & sable, brindled ochre, dark-barred twin-spot carpet
- *Invertebrates – Molluscs*:- Mud pond snail
- *Invertebrates – Spiders*:- Triangle hammock-spider

**Ecological Field Survey**

Extended Phase I Habitat Survey

23. The following habitat types were recorded on site, and their distribution is mapped on Figure 2. Target Notes are used to describe specific features and are also shown on Figure 2. Adjacent habitats are also described.

- Dry heath / acid grassland
- Deciduous woodland
- Dense scrub and occasional trees

- Bare earth and earth banks
- Lake
- Tall herb
- Bedrock
- Boundaries (stone walls and fences)

*Dry Heath / Acid Grassland*

24. The site is dominated by a mosaic of dry heath and acid grassland. The north of the site is an earth mound formed during the former quarry works, which has since become vegetated with dry heath/acid grassland. This habitat extends through most of the site. The area in the east and south of the site (Target Note 1) is dominated by grassland and the central and northern areas (Target Note 2) are dominated by dry heathland. The acid grassland is dominated by grasses in patches including creeping soft-grass, Yorkshire-fog, sweet vernal-grass and rough and smooth meadow-grasses. Herbaceous species included sheep's sorrel, bush vetch and common vetch, rosebay willowherb and soft-rush. The dry heath is dominated by heather with occasional broom, red fescue, foxglove, rosebay willowherb and heath bedstraw.

*Deciduous Woodland*

25. A strip of deciduous woodland lies on a steep bank along the western side of the site. The trees are generally immature to semi-mature and dominated by sycamore with occasional downy birch. One mature willow lies within the woodland strip. The Ground flora is dominated by bramble and common nettle. Other ground flora includes cock's-foot, willowherb, creeping buttercup, tufted hair-grass, mosses and ferns.

*Dense Scrub and Occasional Trees*

26. Dense bramble scrub bounds either side of an earth track through the site and the southern bank of the lake.

27. Occasional immature and semi-mature trees lie within the dry heath/acid grassland habitat and to the south of the lake, comprising willow species and down birch. A mature oak lies within the dry heath/acid grassland habitat, to the east of the earth track.

*Bare Earth and Earth Banks*

28. A bear earth track runs through the site from the north-west corner, where is joins Oxspring Road, to the centre of the site. The western banks of the lake support bare earth and there are patches of bare earth along a steep bank to the east of the site.

*Lake*

29. A lake lies along the southern boundary of the site, measuring approximately 35m by 25m, which was the site of the former quarry works and is therefore man-made. The water quality appears to be good in that turbidity is low and there were no algae at time of survey, indicating moderate to low nutrient levels. There is a lack of marginal and aquatic plants. The banks of the lake are steep with bedrock along the southern and eastern banks. The northern and western banks are earth. A few willow trees shade the lake to the west and south. The northern banks support tall herb. There are no ditches connecting to the lake.

*Tall Herb*

30. Patches of tall herb lie along the northern banks of the lake. Species include ribwort plantain, rosebay willowherb, foxglove, common ragwort, red clover, creeping thistle, common nettle and hogweed.

*Bedrock*

31. Bedrock, exposed from the former quarry works, lies along the south-western boundary of the site and around the southern and eastern boundary of the site and scattered throughout the dry heath/acid grassland habitat in the south-east of the site. Exposed areas show the soils to be thin over bedrock area in the south-east of the site. The bedrock is poorly vegetated in places where heath has grown over.

*Boundaries (stone walls and fences)*

32. The western and northern boundaries comprise a dry stone wall. The western and southern boundaries comprise a post and wire fence with no associated vegetation.

*Adjacent Habitat*

33. The site is bounded by agricultural land (pasture grassland) to the east and south and by two minor roads to the west and north. The site lies within a rural area, just south of the village of Penistone. Beyond these immediate surrounds are extensive areas of agricultural land to the east and south, the village of Penistone

to the north and a disused quarry to the west. From aerial interpretation, large areas of woodland and heathland/tall grassland exist in the wider area south and south-west of the site.

Badger Survey

34. The site provides limited suitable foraging habitat in the form of small areas of bare earth, grassland, scrub and woodland. The ground provides suitable sett building habitat although the extent of a sett underground is likely to be limited by bedrock.

35. Evidence of badger was found on site in the form of two, single-hole badger setts in the south-east of the site (Target Notes 4 and 5, Figure 2). The setts are approximately 6m apart and are unlikely to be linked owing to the rocky ground conditions. The entrances were over-grown with grass and there were no signs of recent occupation, such as prints, fresh bedding material or fresh spoil. Bank vole feeding remains were found within one entrance, there was no leaf litter in the entrances as they were covered by long grass and no bedding material was found, which indicates that they are inactive at present. Owing to the lack of signs of activity around the setts and low number of holes, these setts are likely to be inactive at present. They are likely to function as subsidiary or outlying setts.

36. No signs of badger were recorded elsewhere on site, such as setts, prints, foraging signs or hairs, during the survey. Several well worn mammal tracks were found along the southern boundary and through the south-east of the site, possibly attributable to badger, which connected to the field to the south of the site via the south-east corner of the site. It is possible that badger use the site for foraging; however, if this formed a key area of any badger territory it is considered that more evidence would have been apparent. The data search found no records of badger within the 2km search area.

37. A full search of some areas of more dense vegetation could not be undertaken, and these areas may have concealed further signs of badger activity. However, it is considered very unlikely that a main sett is present on site due to the lack of other evidence.

**Field Observations and Consideration to Protected/Notable Species**

Flora

38. No species listed upon Schedule 8 of the Wildlife and Countryside Act 1981 (protected plants), were noted during the survey. No other notable species of flora were observed, however, the scope of the Phase 1 habitat survey does not

include a detailed botanical survey. Due to the habitats present, it is considered possible for it to support floral species of note.

39. No species listed upon Schedule 9 of the Wildlife and Countryside Act 1981 (non-native species) were noted during the survey. None of the disturbed areas (earth track) supported Japanese knotweed.

Mammals

*Bats*

40. The majority of trees on site are immature and semi-mature and do not offer features suitable for roosting bats such as cracks, splits, arboreal ivy and rot holes. There are two mature trees on site, a willow along the western boundary of the site (Target Note 3, Figure 2) and an oak in the centre of the site (Target Note 4, Figure 2), that have potential for a transitional roost owing to the presence of cracks and splits.

41. The bedrock along the western boundary of the site has many narrow cracks throughout the rock with potential for roosting bats.

42. Habitats on site that offer suitable foraging habitat for bats include the scrub and trees and the lake. Adjacent to the site, the trees and hedgerows around fields and the lake (disused quarry) to the west of the site provide suitable foraging habitat and provide connectivity to other suitable habitat, such as woodland, within the wider area.

43. There are records of soprano pipistrelle and noctule bats within the data search area.

*Otter and Water Vole*

44. The lake on site provides suitable foraging habitat for otter. The landowner confirmed the lake supports fish (pers. comm. Greg Walters, June 2009). The scrub on site has low suitability as an otter holt/couch owing to its small size and patchy nature. The local area supports streams and other water bodies, which may provide suitable habitat for otter; however, connectivity between these habitats and the site is moderate to poor owing to the lack of rivers and ditches connecting to the site, although connectivity is provided by hedges. The site is therefore considered to have low suitability for this species; however, there are records of otter within the data search area.

45. The site supports limited suitable burrow habitat for water vole around the northern bank of the lake. Other banks are either shaded or comprise bedrock and are unsuitable. Suitable foraging habitat is limited and provided by a small area

of tall herb and grassland along the northern banks of the lake. There are no ditches connecting to the lake and therefore connectivity is poor. It is considered unlikely that the site supports this species due to the small extent of suitable habitat and poor connectivity despite there being records of water vole 1.3km east of the site.

*Dormouse*

46. The scrub, trees and hedgerows provides some suitable opportunities for dormouse on site. However, the area of suitable habitat is limited, species poor and isolated by surrounding roads to the west and north and poor connectivity due to the lack of suitable hedgerows to the south and east. There was no dormouse records within the data search area and owing to the limited area of suitable habitat on site and a lack of connectivity with other suitable habitat in the wider area make it highly unlikely that dormouse are present on site.

*Other mammals*

47. There are records of hedgehog within the data search area. Suitable foraging habitat and shelter for hedgehog is present on site in the form of the tall herbaceous vegetation, grassland and scrub. The woodland and scrub provides suitable hibernation habitat. Connectivity to suitable habitat in the wider area is restricted by the boundary stone walls to the north and west and narrow margins of tall grassland provide limited connectivity to the south and east.

48. There are records of polecat within the data search area. This species typically inhabits woodland and farmland, feeding mainly on small mammals and as such it is possible that polecat is present on site. The small area of woodland on site and poor connectivity limits its suitability for this species.

49. There are records of brown and mountain hare within the data search area. In Great Britain, mountain hare tends to be associated with heather moorland with a patchwork of heather at different ages. They also occur in montane grassland, new forestry plantations and dry rocky hills. In areas where brown hares are absent, mountain hares may inhabit pasture and arable lowlands. The site provides a small area of suitable habitat for mountain hare, which could be used in combination with surrounding agricultural land. Suitable habitat is present and extensive in the surrounding area. Brown hare prefer a mosaic of agricultural land in open habitats and as such the site is sub-optimal habitat for brown hare.

50. There are records of pine marten within the data search area. Pine marten inhabit densely wooded areas. The site supports a small strip of woodland; however, the

extent of this woodland makes it unlikely to support this species. Larger areas of woodland can be found within the wider area.

51. Bank vole feeding remains were found within the entrance of one of the badger setts.

Birds

52. Chiffchaff and chaffinch were noted on site during the surveys. Several bird boxes were recorded on semi-mature trees throughout the woodland strip along the western boundary of the site. Habitat of value to nesting and foraging birds within the site boundary includes the woodland strip and scrub and the heath also provides some value to foraging and nesting birds (including ground nesting) birds. The site is unlikely to support overwintering birds due to the small size of the lake, its enclosed nature and lack of adjacent suitable foraging habitat. Two domestic ducks were noted on the lake. No native wildfowl species were noted.

53. There are records of house sparrow within the data search area; however, the site is not suitable for this species. Anocdotal evidence was provided by the landowner (pers comm. Gregg Walters, June 2009) of barn owl perching on a tree adjacent to the south-western boundary of the lake. The site does not provide any suitable nest habitat for barn owl; however, the grassland and heath provide suitable foraging habitat. Suitable foraging habitat is common throughout the surrounding area.

Reptiles

54. Scrub, tree roots within the woodland strip, gaps within the bedrock and stone walls and between the bedrock and ground, provide suitable refuge and/or hibernation habitat for reptiles. The tall grassland, heath, rocks and bare earth provide foraging and basking habitat. The minor roads surrounding the site are unlikely to form a barrier to movement to other suitable habitat in the wider area.

55. There are records of adder and common lizard within the data search area; the site provides suitable habitat for adder and common lizard in the form of grassland, heath, scrub, trees, bedrock and bare earth.

Amphibians

56. The lake provides limited suitable breeding habitat for amphibians due to its steeply shelving banks and lack of aquatic vegetation. There is anecdotal evidence of frogs in the lake (Gregg Walters, Landowner, June 2009) and therefore it is possible that the lake supports other species of amphibian. Furthermore, there are records of great crested newt in the area, therefore, the lake is considered to

have potential to support great crested newt. The site itself offers suitable terrestrial habitat for amphibians in the form of scrub, woodland, grassland and dry stone walls, although limited in extent.

Invertebrates

57. Habitats suitable for foraging invertebrates are present on site in the form of trees, shrubs, tall herb, acid grassland and heath. The good structural diversity, moderate floristic diversity and small size of the site are likely to provide suitable habitat for low numbers of a moderate range of invertebrate species.

58. The site provides a small area of suitable heath habitat for the following UK BAP butterflies: Small heath, wall and white-letter hairstreak. The site provides very limited suitability for the following UK BAP species: Triangle hammock-spider, necklace ground beetle, which prefers grassy meadows, dark-barred twin-spot carpet, which prefers bogs and fens and Argent & sable, which prefer the edges of young birch woodland. There is no flowing water to support the iron blue mayfly or coastal habitats for brindled ochre that have been recorded locally. The lake is unlikely to support mud pond snail (recorded locally) owing to its lack of marginal and aquatic vegetation.

## ECOLOGICAL EVALUATION

### Component Habitats

59. The table below (Table 3) provides an evaluation of habitats on site and adjacent habitats, based upon the results of the desktop study and ecological field surveys undertaken to date. Further surveys may lead to a re-evaluation of some habitats.

Table 3. Ecological Evaluation of Habitats

| Habitat | Qualifying Criteria | Ecological Value |
|---|---|---|
| Dry heath / acid grassland | Provides suitable basking and foraging habitat for reptiles and limited foraging habitat for amphibians, badger, invertebrates and hedgehog and suitable foraging and nesting habitat for ground nesting birds. Presence of two, single-hole badger setts with no signs of occupation by badger<br><br>Relatively small isolated area surrounded by pasture grassland, and | Local Value |

| | | |
|---|---|---|
| | common in the wider area<br>Upland Dry Acid Grassland and Upland Heathland are UK BAP habitats | |
| Deciduous woodland | Provides suitable habitat for foraging and nesting birds, foraging and commuting bats, badger, hedgehog, invertebrates and hibernating reptiles and amphibians.<br>Relatively isolated and common in the local environ | Site value |
| Dense scrub and occasional trees | Provides suitable habitat for foraging and nesting birds, foraging and commuting bats, badger, hedgehog, invertebrates and sheltering and hibernating reptiles and amphibians. Two semi-mature trees provide potential as a bat roost<br>Relatively isolated and common in the local environ | Site value |
| Bare earth and earth banks | Provides negligible wildlife habitat other than some basking opportunities for reptiles, foraging badger and invertebrates | Site value |
| Lake | Provides limited suitable habitat for breeding and foraging amphibians, foraging otter, foraging bats, nesting and foraging wildfowl<br>The lake is a poor example of the UK BAP habitat Eutrophic Standing Waters, owing to the lack of aquatic vegetation | Local value |
| Tall herb | Provides limited suitable habitat for invertebrates and foraging reptiles | Site value |
| Bedrock | Provides opportunities for roosting bats and nesting birds within the crevices | Site value |

| | | |
|---|---|---|
| Boundaries (stone walls and fences | Stone walls provide some basking, shelter and limited hibernation for reptiles and amphibians if present | Site value (stone walls)<br>Negligible value (fences) |
| Adjacent habitats | Agricultural land provides suitable habitat for badger, bats, brown hare, reptiles, foraging amphibians, hedgehog, nesting and foraging birds and invertebrates<br>From aerial interpretation, large areas of woodland and heath/tall grassland exist in the wider area south and south-west of the site, which provide suitable habitat for the above species groups and also polecat and pine marten<br>There is one statutory (Spring Meadows, Alderman's Head & Cow Croft Meadows SSSI) and one non-statutory (Brock Holes NHS) designated wildlife site situated within 2km of the site | Local Value<br>National Value<br>Local Value |

**Overall Site Evaluation**

60. The site is of small size and supports dry heath / acid grassland, deciduous woodland, scrub and trees, bare earth, a lake, tall herb and boundary walls and fences. Species diversity is moderate due to the presence of a moderate diversity of habitats but its value is reduced by is small size and relative isolation. The exposed bedrock is not naturally formed and does not support the flora communities associated with natural bedrock outcrops and scree and therefore is not considered to be an example of the BAP habitat Inland Rock Outcrop and Scree Habitats.

61. The habitats on site have a low level of naturalness and fragility, as they have established following the relatively recent cessation of quarrying and elements are provided by the semi-mature trees. However, the site supports a small area of ecological valuable habitat in the form of the UK BAP habitats Upland Dry Acid

Grassland and Upland Heathland. These habitats are relatively isolated by surrounding farmland, however, from aerial interpretation, larger areas exist in the wider area south-west of the site. The site also supports a lake, which is a poor example of the UK BAP habitat Eutrophic Standing Waters, owing to the lack of aquatic vegetation.

62. Habitat rarity on the site is moderate owing to the presence of UK BAP habitats and the site has some suitability to provide habitat for protected/notable species and should they be recorded, these species may also afford the site a level of rarity.

63. The ecological interest of the site is related to:

- The presence of two single hole badger setts (inactive at time of survey)
- The presence of a small area of Upland Dry Acid Grassland and Upland Heathland UK BAP habitats
- The presence of a poor example of the UK BAP habitat Eutrophic Standing Waters
- The suitability of the bedrock and two semi-mature trees to support roosting bats and the site's suitability to support foraging bats
- The site's limited suitability to support foraging otter
- The site's suitability in providing nesting and foraging opportunities for birds
- The site's suitability to support basking, foraging and hibernating reptiles and hedgehog
- The site's limited suitability to support breeding and hibernating amphibians, including great crested newt
- The site's suitability to support a range of common and invertebrate species and its limited suitability for less common species

64. Based on the desktop study and survey results and assessment of the site, the habitats present on site are of ecological value at a Site to Local level.

**ECOLOGICAL CONSIDERATIONS AND RECOMMENDATIONS**

65. This section provides considerations in relation to the ecology of the site and adjacent habitats, where appropriate, that should be considered within the current development proposals for the site to ensure that impacts on ecology are avoided and / or mitigated within the scheme. Further surveys have been outlined within the ecological considerations below.

66. Local Biodiversity Action Plan objectives and local planning policies should be reviewed and taken into account within the development design.

67. A full data search is recommended to obtain any records of protected species from BMBCPD.

**Designated Sites and Habitats**

68. There is one statutory (Spring Meadows, Alderman's Head & Cow Croft Meadows SSSI) and one non-statutory (Brock Holes NHS) designated wildlife site situated within 2km of the site. Due to the small area of vegetation being removed from the site for the development and abundance of similar intervening habitat and the distance of these designation sites from the development site (1.9km and 2km respectively), they are likely to remain unaffected by the proposed development.

69. The acid grassland and heath is a UK BAP habitat and therefore it is recommended that it be retained and managed in the long-term where possible. Within the current proposals, this habitat would remain largely unaffected by the development. It is recommended that compensatory habitat is provided for the loss of a small area of this habitat for a proposed access road and housing development. It is recommended that the retained area is fenced during the construction period to delineate a 'no access' area to construction staff and that no construction materials or site compound are located within this area. Measures should be implemented during construction to avoid indirect impacts such as dust pollution and hydrological impacts. This area would benefit from habitat enhancements, such as tree thinning/pruning and rotational cutting to maintain it as open grassland/heath.

70. The lake is proposed to remain unaffected by the proposals and it is recommended that this area is fenced during the construction period to delineate a 'no access' area to construction staff. It is recommended a Construction Environmental Management Plan (CEMP) is produced which would details protection measures for the lake during construction. This would need to take into account any protected species present and any protected species licences (if required). It is recommended that the design takes into account measures to minimise risk of pollution to the lake.

71. It is recommended that existing semi-mature trees and woodland strip are retained where practicably possible. Where this is not possible, compensatory planting of native tree species is recommended. An Arboricultural Consultant should be contacted for advice prior to any tree works and further consideration

should be given to protect species (considered below) prior to any tree felling/pruning.

**Bats**

72. All British species of bat and their place of shelter are protected under the Wildlife & Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) from deliberate capture, injury and killing, intentional or reckless disturbance, intentional or reckless obstruction of access to any structure or place which any such animal uses for shelter or protection, and deliberate damage or destruction of a breeding site or resting place. This includes trees and applies throughout the year whether bats are present or not at the time of survey or work being carried out.

73. The bedrock has potential for roosting bats. Given the close proximity of the proposed development to this suitable habitat and potential for construction activities to cause disturbance, it is recommended that an emergence and bat activity survey is undertaken to gain an understanding of bats usage of the site to inform any mitigation. Depending on the results of an initial survey, further surveys may be required to inform mitigation and support a bat licence. Emergence and dawn surveys are optimal between May and August (inclusive) and due to seasonality regarding levels of bat activity can generally only be carried out between April and September (inclusive).

74. It is recommended that trees on site are retained where possible. If the two semi-mature trees on site with low potential for roosting bats are due to be removed, pruned or isolated it is recommended that a Precautionary Method of Works is followed and that 'soft' felling techniques are employed in accordance with BCT 2007 guidance. This is likely to include a climbing inspection to further assess their suitability to harbour roosting bats and search for evidence of use by bats and inform the need for further consideration. Climbing surveys can be undertaken at any time of year.

**Badger**

75. The Protection of Badgers Act 1992 affords protection to badgers and their setts, under which it is illegal to wilfully kill, injure or take any badger, or attempt to do so and it is an offence to damage, destroy or obstruct access to any part of a badger sett.

76. Until recently Natural England would issue licences for all works within 30m of an active badger sett that were likely to cause an offence under the Protection of Badgers Act 1992. Recently, however, Natural England has not issued licences in

respect to disturbance unless it can be proven that disturbance is likely i.e. they will not issue precautionary licences. Instead, they have recommended that in instances where disturbance is possible that works are undertaken under a Precautionary Method of Works (PMW).

77. No active setts have been recorded on site and the site is unlikely to form a significant part of the local badger territory due to its size and lack of recent evidence.

78. It is understood that the location and immediate surroundings of the two inactive badger setts will remain undisturbed by the proposals. Works beyond 30m of the setts are unlikely to affect badgers even if the setts were to become active; however, measures may be required to ensure disturbance is minimised.

79. A full search of some areas of more dense vegetation could not be undertaken, and these areas may have concealed further signs of badger activity. However, it is considered very unlikely that a main sett is present on site due to the lack of other evidence.

80. It is recommended that immediately prior to any works on site an updated badger survey is undertaken to determine the current level of activity on site, reassess the status of the setts and to search for any further setts. If there is a delay of six months or more between this survey and submission of planning then a repeat survey is recommended. An Ecological Clerk of Works should also oversee the scrub removal, which will enable periodic checks throughout clearance for badger setts. Surveys can be undertaken at any time of year; however, they tend to be most effective in spring when vegetation is at its lowest. If an active badger sett is discovered on site and works are likely to impact upon it then a licence will be required prior to proceeding. A licence can only be obtained once planning permission has been granted and generally only allows works between 1 July and 30 November.

81. Badgers are very faithful to their commuting routes and as such are likely to continue to pass through the site. Consideration should be given to incorporating a suitable route to enable badgers to continue to pass through the site and maintaining existing access points on and off the site as close as possible to the existing ones. Connectivity to the wider area should be maintained through the retention of boundary features.

82. As badgers possibly use the site for foraging, following best practice guidelines it is recommended that any loss of habitats to development be compensated for with the provision of smaller areas of better quality habitats where possible. Any

removal of trees should be compensated for with tree planting of native species of local origin. This should be supplemented with appropriate planting of species which offer a foraging resource to badgers such as native fruit and nut bearing species. It is also recommended that precautions are taken during construction in the form of providing escape routes within trenches for badgers and other animals.

**Otter**

83. It is possible that the lake and surrounding scrub is used by otter as a feeding resource and for shelter and therefore it is recommended that the lake and connectivity via woodland to the lake is maintained and protected throughout development. Should modification of the lake or surrounding or connecting habitat be proposed then further survey for otter would be recommended. It is recommended that measures are taken to protect the water quality during works and that a Construction Environmental Management Plan (CEMP) is produced which would details protection measures for the lake. This would need to take into account any protected species present and any protected species licences (if required). It is recommended that the design takes into account measures to minimise risk of pollution to the lake.

**Other Mammals**

84. Hedgehogs have recently been added to the UK BAP species list and as such should be considered in site clearance works.

85. Scrub and woodland provide suitable foraging and sheltering habitats for hedgehog. The proposals include the retention of the woodland area but some scrub may be removed and as such it is recommended that it is carried out with care and that an Ecological Clerk of Works is present to carry out a hand search to locate any hedgehogs present. In addition it is recommended that vegetation clearance / removal of leaf litter is not carried out in winter when this species hibernates.

86. Any hedgehogs found should be relocated to retained suitable undisturbed habitat on or adjacent to the site.

**Birds**

87. In Britain all wild birds are granted legal protection under the Wildlife and Countryside Act 1981 (as amended). This legislation protects birds, their eggs and nests while being built or whilst in use.

88. Legislation involving birds has implications on the timing of vegetation clearance, which should avoid the bird nesting season (which generally occurs between March and September). Should this be unavoidable a check of the site for nesting birds should be undertaken by an ecologist prior to the commencement of any vegetation clearance works.

**Reptiles**

89. Common species of reptile are partially protected under the Wildlife & Countryside Act 1981 (as amended), under which it is an offence to intentionally kill or injure a reptile.

90. The site is considered to offer suitable hibernation, foraging and basking habitat for common species of reptile within the woodland, acid grassland, heath, tall herb, bare earth, bedrock and stone wall habitats. The main areas of suitable habitat are proposed for retention; however, the bare earth and a small area of heath, scrub and trees would be lost as a result of the proposed development.

91. Should reptiles be present, it is recommended that an appropriate mitigation strategy is prepared in consultation with the Local Planning Authority to ensure that any reptiles present on site are protected throughout construction works and to identify any enhancement opportunities for these species. In order to inform the mitigation strategy, a reptile presence/absence survey is recommended. This survey should involve laying out refuges for reptiles across the site. Seven subsequent site visits in suitable weather would then be required to check the refuges for signs of reptile presence. The optimum time for undertaking this survey is April/May or September, but subject to suitable weather conditions, the survey could be carried out between March and October.

**Amphibians**

92. Great crested newts are protected under the Wildlife & Countryside Act ((1981) as amended) and the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) from deliberate capture, injury and killing, intentional or reckless disturbance, intentional or reckless obstruction of access to any structure or place which any such animal uses for shelter or protection, and deliberate damage or destruction of a breeding site or resting place.

93. The site offers suitable terrestrial habitat for amphibians and the lake provides limited suitable breeding habitat and there is anecdotal evidence of frogs being present on site. The site therefore has potential to support sheltering and possibly breeding great crested newt. Further survey and assessment of the lake is recommended in order to further assess ponds suitability to support great crested

newts and the presence/absence of great crested newts. It is recommended that a Habitat Suitability Index (HSI) assessment (HSI; Amphibian and Reptile Group (ARG) UK, 2007) is undertaken. The HSI assessment methodology uses ten key habitat criteria to produce an HSI score for a water body, which ranges between 0 and 1. The final HSI score gained for the pond can be used to predict the suitability of the habitat to support great crested newt, however it can not be used to determine presence/absence.

94. Presence/absence surveys involve four surveys of the pond on site and the pond to the west of the site if access is possible (each comprising an evening and morning visit), as required by the Great Crested Newt Mitigation Guidelines (English Nature 2001). The optimal timing for these surveys is between mid-March and mid-June, and the Great Crested Newt Mitigation Guidelines (English Nature 2001) require all presence/absence surveys to be carried out in this period with least two between mid-April to mid-May. Should great crested newt be present then a total of six surveys would be required to assess population size (three between mid-April and mid-May). If great crested newts are present then a Natural England protected species licence may be required, which would include appropriate mitigation

**Invertebrates**

95. The site provides limited suitable habitat for a range of common invertebrate species. The key habitats for these species are trees, shrubs, tall herb, acid grassland and heath.

96. The site provides a small area of suitable habitat for a low number of UK BAP associated with heath, woodland and grassland habitats. These habitats are largely proposed for retention. Should the proposals involve habitat loss, replacement planting with native species associated with these habitats is recommended.

**ECOLOGICAL OPPORTUNITIES**

97. There are a number of opportunities within the development proposals to provide wildlife enhancements post-development.

98. Consideration should be given to the incorporation of biodiversity enhancing features in order to ensure that any future development meets criteria set out within PPS9 and other local planning policies and Biodiversity Action Plans (that should be reviewed). For example, the proposals include 'green roofs', which have potential to be designed to:

- Support plant species that compliment the existing habitats

- Support UK BAP habitats, such as acid grassland and species, such as black red start and other bird and invertebrate species
- Provide biodiversity gain in the form of additional areas of good quality habitat and increasing habitat and species diversity
- Provide additional habitat to support species already present, such as foraging badger (provided there is connectivity with surrounding suitable habitat) and birds and invertebrates
- Provide suitable habitat for protected species, such as foraging and ground nesting birds, foraging badger, amphibians and reptiles (provided there is connectivity with surrounding suitable habitat)
- Provide benefits to the management of run-off and improve water quality

99. In addition to biodiversity gain, green roofs can provide the following benefits:

- Reduce the 'heat island' effect
- Contribute towards credits for Code for Sustainable Homes/BREEAM Assessments

100. There is potential for also installing bat on retained trees to encourage bats to the area (lighting should be directed away from these features). In addition to the existing bird boxes the buildings could provide further opportunities for species such as house sparrow.

101. Ecological input should be sought for any landscape plans or planting schemes proposed on the site in order to maximise the biodiversity potential of development proposals.

102. Habitat enhancements to the lake could be undertaken to increase its value as a UK BAP habitat, such as re-landscaping the earth bank to create a more shallow profile and planting of aquatic and marginal plants of local provenance.

103. It is advised that native species are included within future planting schemes, such as hawthorn, willow hazel, pedunculate oak, and down birch, with specimens sourced locally.

**LIMITATIONS OF SURVEY AND REPORT**

104. This report records wildlife found during the survey and anecdotal evidence of sightings. It does not record any plants or animals that may appear at other times of the year and were therefore not evident at the time of visit. Some species that might use the site or be apparent at other times of year, or only in certain years,

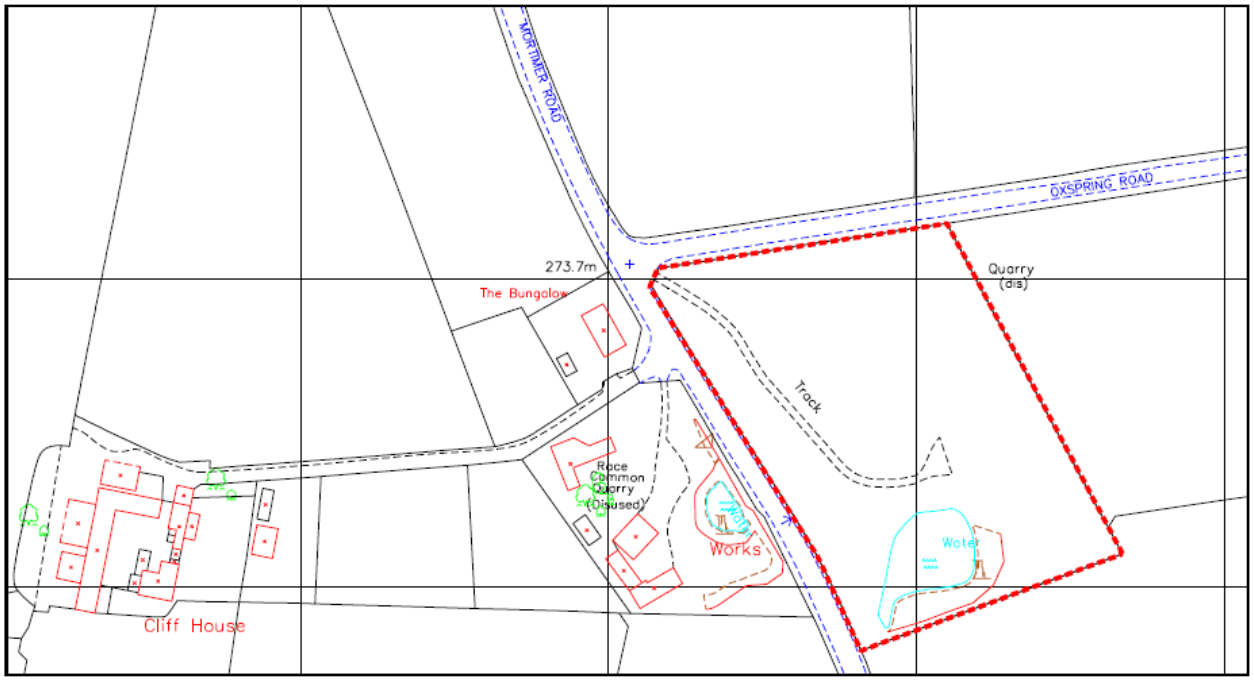
would not have been detected. Due to the presence of dense bramble and heath across part of the site it was not possible to thoroughly search all of this area for signs of badger.

105. This report provides provisional ecological baseline for the site and should not be considered to be conclusive until the ecological considerations have been undertaken and all necessary further surveys completed. Likewise the ecological considerations at this stage are not necessarily final and may be subject to change or additional proposals made following the results of further surveys and any proposals for development.

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

107. The desk study can only provide information on species already recorded and cannot be taken to represent a complete overview of all species present in the survey site.

108. The advice contained in this report relate primarily to factual survey results and general guidance only. On all legal matters you are advised to take legal advice.




Key

Site boundary

OS Map provided by the client, Design space Architects under their licence

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Tel: 01225 874040 Fax: 01225 874554

| | | |
|---|---|---|
| Client | Design Space Architects | |
| Project | Racecommon Quarry | |
| Title | **Phase I Habitat Map** | |
| Date<br>July 09 | Scale<br>Schematic only | Figure<br>1 |


Key

- Site boundary
- Dry heath / Acid grassland
- Deciduous woodland
- Dense scrub
- Mature and semi-mature trees
- Bare ground
- Lake (disused quarry) with no marginal and aquatic vegetation
- Tall herb
- Bedrock
- Stone wall
- Target Note
- Wooden fence (paneling)

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| | | |
|---|---|---|
| Client | Design Space Architects | |
| Project | Racecommon Quarry | |
| Title | **Phase I Habitat Map** | |
| Date<br>June 09 | Scale<br>Schematic only | Figure<br>2 |

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**APPENDIX I: SPECIES LIST**

| **Flora** | |
|---|---|
| **Common Name** | **Latin Name** |
| Ash | *Fraxinus excelsior* |
| Bramble | *Rubus fruticosus agg.* |
| Broom | *Cytisus scoparius* |
| Bush vetch | *Vicia sepium* |
| Cock's foot | *Dactylis glomerata* |
| Common nettle | *Urtica dioica* |
| Common vetch | *Vicia sativa* |
| Corn buttercup | *Ranunculus arvensis* |
| Creeping buttercup | *Ranunculus repens* |
| Creeping soft-grass | *Holcus mollis* |
| Creeping thistle | *Cirsium arvense* |
| Cypress | *Euphorbia cyparissias* |
| Downy birch | *Betula pubescens* |
| Fern sp. | *Filicopsida* |
| Foxglove | *Digitalis purpurea* |
| Hawthorn | *Crataegus monogyna* |
| Hazel | *Corylus* |
| Heath bedstraw | *Galium saxatile* |
| Heather | *Calluna vulgaris* |
| Hogweed | *Heracleum sphondylium* |
| Ivy | *Hedera helix* |
| Lesser butterfly orchid | *Platanthera bifolia* |
| Moss | *Bryopsida* |
| Oak | *Quercus* |
| Orange chanterelle | *Cantharellus friesii* |

| | |
|---|---|
| Pedunculate oak | *Quercus rubra* |
| Privet | *Liguistrum ovalifolium* |
| Ragwort | *Senecio* |
| Red clover | *Trifolium pratense* |
| Red fescue | *Festuca rubra* |
| Ribwort plantain | *Plantago lanceolata* |
| Rosebay willowherb | *Chamerion angustifolium* |
| Rough meadow-grass | *Poa trivialis* |
| Rowan | *Sorbus aucuparia* |
| Sheep's sorrel | *Rumex acetosella* |
| Silver birch | *Betula pendula* |
| Smooth meadow-grass | *Poa pratensis* |
| Soft-rush | *Juncus effusus* |
| Sweet vernal-grass | *Anthoxanthum odoratum* |
| Sycamore | *Acer pseudoplatanus* |
| Tufted hair-grass | *Deschampsia cespitosa* |
| Willowherb | *Epilobium parviflorum* |
| Willow species | *Salix sp.* |
| Yorkshire-fog | *Holcus lanatus* |

**Fauna**

| **Common Name** | **Latin Name** |
|---|---|
| Adder | *Vipera berus* |
| Argent & sable | *Rheumaptera hastata* |
| Badger | *Meles meles* |
| Blackbird | *Turdus merula* |
| Brindled ochre | *Dasypolia templi* |
| Brown hare | *Thecla betulae* |
| Bullfinch | *Pyrrhula pyrrhula* |

| | |
|---|---|
| Dormouse | *Muscardinus avellanarius* |
| Common lizard | *Lacerta vivipara* |
| Common toad | *Bufo bufo* |
| Dark-barred twin-spot carpet | *Xanthorhoe ferrugata* |
| Dormouse | *Muscardinus avellanarius* |
| Grass snake | *Natrix natrix* |
| Great crested newt | *Triturus cristatus* |
| Great spotted woodpecker | *Dendrocopos major* |
| Green woodpecker | *Picus viridis* |
| Hedgehog | *Erinaceus europaeus* |
| House sparrow | *Passer domesticus* |
| Iron blue mayfly | *Nigrobaetis niger* |
| Mountain hare | *Lepus timidus* |
| Mud pond snail | *Omphiscola glabra* |
| Necklace ground beetle | *Carabus (Morphocarabus) monilis* |
| Noctule | *Nectars noctula* |
| Otter | *Lutra lutra* |
| Pine marten | *Martes martes* |
| Polecat | *Mustela putorius* |
| Red squirrel | *Sciurus vulgaris* |
| Slow worm | *Anguis fragilis* |
| Small heath | *Coenonympha pamphilus* |
| Song thrush | *Turdus philomelos* |
| Soprano pipistrelle | *Pipistrellus pygmaeus* |
| Triangle hammock-spider | *Saaristoa firma* |
| Water vole | *Arvicola terrestris* |
| White-letter hairstreak | *Strymonidia w-album* |
| Wall butterfly | *Lasiommata megera* |

## APPENDIX II: DEFINING ECOLOGICAL VALUES

**Institute of Ecology and Environmental Management**

1. The examples contained in the table below are only for general guidance and other considerations may apply, e.g. features of low value in isolation but which are subject to cumulative national decline may be afforded higher values in certain circumstances.

| Level of Ecological Value | Examples of Criteria |
|---|---|
| International | • An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, Ramsar site, Biogenetic Reserve)<br>• A sustainable area of a habitat listed in Annex I of the Habitats Directive, or smaller areas of such habitat that are essential to maintain the viability of a larger whole<br>• A sustainable population of an internationally important species, e.g. a UK Red Data Book species, species listed under categories 1 or 2 of the UK BAP, or listed under Annex IV of the Habitats Directive<br>• Sites supporting a breeding population of internationally important species or supplying a critical element of their habitat requirements |
| National | • A nationally designated site (SSSI, ASSI, NNR, MNR) or a discrete area that meets the selection criteria for national designation (e.g. SSSI selection guidelines)<br>• A sustainable area of a priority habitat identified in the UK BAP, or smaller areas of such habitat that are essential to maintain the viability of a larger whole<br>• A sustainable population of a nationally important species or a site supporting such a species, i.e. a species listed on Schedules 5 and 8 of the W&CA (as amended) which is a UK Red Data Book species that is not listed as being of unfavourable conservation status in Europe, of uncertain conservation status or of global concern in the UK BAP<br>• A non-Red Data Book species that is listed as occurring in |

| | |
|---|---|
| | 15 or fewer 10km squares in the UK (categories 1 and 2 of the UK BAP). Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements |
| Regional | • Sustainable areas of key habitat identified in the relevant Regional BAP or smaller areas of such habitat that are essential to maintain the viability of a larger whole<br>• Sustainable areas of key habitat identified as being of Regional Value in the appropriate Natural Areas profile<br>• A population of a species listed as being nationally scarce (i.e. occurring in 16 - 100 10km squares in the UK, or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements<br>• Sites, which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur |
| County/ Metropolitan | • Semi-natural ancient woodland greater than 0.25 ha<br>• County/Metropolitan sites and other sites which meet the ecological selection criteria for designation<br>• A sustainable area of habitat identified in a county BAP<br>• A population of a species that is listed in a county/metropolitan 'red data book' or BAP on account of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements |

| | |
|---|---|
| District | • Semi-natural ancient woodland smaller than 0.25 ha<br>• Sustainable areas of habitat identified in a sub-county (district/borough) BAP or in the relevant Natural Area profile<br>• Sites/features that are scarce within the district/borough or which appreciably enrich the district/borough habitat resource<br>• A diverse and/or ecologically valuable hedgerow network<br>• A population of a species that is listed in a district/borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. Also sites supporting a breeding population of such a species or supplying a critical element of their requirements |
| Local | • Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or local neighbourhood, e.g. isolated species-rich hedgerows |
| Site | • Small patches of poor semi-improved grassland, amenity grassland not used by Badgers |
| Negligible | • Areas of little current or potential ecological value |

## APPENDIX II: BADGER ASSESSMENT

Sett and Entrance Status (Harris *et al.* (1989) and Neal and Cheeseman (1996)

### Sett Status

Social Badger groups live in underground burrow systems known as setts. Groups often have more than one sett in their territory with varied status and levels of use:

- The main sett is the most frequently used. It will have several holes with large spoil heaps and an obvious network of paths leading from it.
- Annex setts are regularly used with several holes but are smaller than the main sett. They are found close to the main sett and are connected by well-worn paths.
- Subsidiary setts are further away with no obvious paths connecting them to other setts. These setts are not continuously active and have few holes.
- Outlying setts are sporadically used with few holes and little evidence of Badger use. Fox or rabbit may take over outliers.
- Single holes may be sporadically used and have little evidence of Badger use. Some may be occupied by a breeding female. Fox may take over single holes

Latrines or dung pits often indicate the boundary of distinct sett territories.

### Entrance Status

*Well-used holes with bedding*

Same as below but with bedding material present at entrance.

*Well-used holes*

Clear of any debris or vegetation and are obviously in regular use. May be evidence of recent excavation or fresh footprints.

*Partially-used holes*

Not in regular use with debris such as leaves and twigs in the entrance and moss or other plants growing in and around the entrance. A minimal amount of clearance would be necessary for Badgers to continue using the hole.

*Disused holes*

Have not been in use for some time and would require a considerable amount of clearance before they could be used. A very long-disused hole may be just a depression in the ground and the remains of a spoil heap.

## APPENDIX VI: AN ECOLOGICAL EVALUATION

### The Criteria for Evaluation

1. The criteria for evaluation have been adopted from the widely used set developed by Ratcliffe (1977). These were originally conceived to provide a systematic framework for the selection of Sites of Special Scientific Interest (SSSI) by the Nature Conservancy Council (NCC), but have since been adopted and adapted widely by ecologists, for example in Local Authorities and Wildlife Trusts.

   The criteria used in this report are drawn from these widely applied criteria. They are:

   Size

2. In general, larger sites are more highly valued than smaller ones, all else being equal. However, relative size to similar sites and other local sites should be considered. The area of a site is also important in management terms, i.e. whether short-term neglect/disturbance or any small changes would lead to the loss of a site's interest.

   Diversity

3. One of the most important site attributes is the variety of communities and species which is largely dependent on diversity of habitat. Large numbers of species, particularly when represented by large populations, are to be valued. Diversity can also be related to habitat instability that may affect management prescriptions.

   Naturalness

4. Ecosystems least modified by man tend to be rated more highly. However, most sites are influenced by man, the degree and nature of which is important.

   Fragility

5. This reflects the degree of sensitivity of habitats, communities and species to environmental change. Fragile sites often represent ecosystems that are highly fragmented, dwindling or difficult to re-create.

   Typicalness

6. The typical and commonplace within a field of ecological variation are also of value.

   Recorded History

7. The existence of a scientific record of long-standing adds considerably to the value of a site.

Permanence

8. A site that has been occupied by a semi-natural habitat for a long time is usually more valuable than one that has only recently arisen. This is because they have had time to acquire rich assemblages of plants and animals.

Lack of Modification

9. Adverse influences from humans, such as inappropriate management regimes and pollution, will reduce the quality of an area.

Rarity

10. Rarity is concerned with communities and habitats as well as species. The presence of rare species adds to overall ecological value especially when a habitat also ranks highly on other criteria. The habitat type too may also be nationally or regionally rare.

Position in an Ecological Unit

11. In the event of two sites being of equivalent intrinsic value, the close proximity of one site to a highly rated example of another type increases the value of the site. The presence of other areas of semi-natural habitat adjacent or close to a site enhances the value of both habitats.

Potential Value

12. Certain sites could, through appropriate management or even natural change, eventually develop a nature conservation interest substantially greater than that existing at present.

Intrinsic Appeal

13. While science may view all creatures as equal, pragmatism dictates that in nature conservation it is realistic to give more weight to the more popular appeal of some species, groups or habitats than others.

These criteria provide a useful basis against which to evaluate the intrinsic ecological quality of a site, but in an urban area it is also important to consider the value of an area to the local people (GLC 1985). Thus the appeal of a site, its educational and amenity value, as well as its accessibility as a wildlife area, need to be included in the evaluation.

14. The survey results were assessed and evaluated using these criteria as a guide.

## APPENDIX V: ASSESSMENT METHODOLOGIES, RESOURCES AND LEGISLATION

### Planning Policy Context and Legislation

### Planning Policy Statement 9

1. PPS9 *Biodiversity and Geological Conservation* (2005) sets out the Government's vision for conserving and enhancing biological diversity in England. It includes the broad aim that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible. The broad objectives for planning include:

- Promotion of sustainable development
- To conserve, enhance and restore the diversity of England's wildlife
- To contribute to rural renewal and urban renaissance

### Red Data Books

2. Red Data Books and Nationally Scarce Lists (JNCC) classification of rarity is broken down into several categories, and these are summarised in Table 1 below: Table 1: JNCC Classification of Red Data Book and Nationally Scarce Species

| Category | Status | Definition |
|---|---|---|
| Red Data Book 1 | Endangered | In danger of extinction, whose survival is unlikely if the causal factors continue operating |
| Red Data Book 2 | Vulnerable | Likely to move into the Endangered category in the near future if the causal factors continue operating |
| Red Data Book 3 | Rare | Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk |

| | | |
|---|---|---|
| Nationally Scarce | Nationally Notable | Uncommon taxa that have been recorded in 16 – 100 10km squares in Great Britain.<br>The category is further divided for some animal groups:<br>Nationally Scarce A: Recorded from 16-30 10km squares.<br>Nationally Scarce B: Recorded from 31-100 10km squares. |

3. Red List Bird Species are those, which are classified by the Royal Society for the Protection of Birds (RSPB 1996), as being of 'high conservation concern'. Amber List Species are those, which are classified by the RSPB (1996), as being of 'medium conservation concern'. Red List species have either experienced a decline in breeding population or range of 50% or more between 1971 and 1996; have declined historically between 1800 and 1995; or are a species of 'global conservation concern'. Amber List species have either experienced a decline in breeding population or range of between 25 and 49% or more between 1971 and 1996; have a five year mean of between 0.2 and 300 breeding pairs in the UK; have 20% or more of their European breeding population in the UK; have 20% or more of the north-west European (wildfowl), East-Atlantic Flyway population (waders), or non-breeding populations (others) in the UK; have 50% or more of their UK breeding or non-breeding populations in 10 or fewer sites in the UK; or are a species of 'European Conservation Concern'.

**Hedgerow Regulations 1997**

4. Under the Hedgerow Regulations 1997 hedgerows are important if they have been in existence for thirty years or more and if they satisfy at least one of the ecological or historical criteria as defined in the Regulations (Department of the Environment 1997).

**Wildlife and Countryside Act 1981**

5. Schedule 1 Part 1 of The Wildlife and Countryside Act 1981 (and amendments) 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.

6. Schedule 5 of The Wildlife and Countryside Act 1981 (and amendments) 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.

**The Conservation (Natural Habitats &c.)) Regulations 1994**

7. The Conservation (Natural Habitats &c.) Regulations 1994, is concerned with animal and plant species requiring strict protection. It is illegal to kill, disturb, destroy eggs, breeding sites or resting places, pick, collect, take cuttings, uproot or destroy in the wild as well as keep, transport, sell/exchange and offer for sale/exchange species listed. Amendments in 2007 and 2009 strengthen protection afforded to European protected species such as bats and great crested newts.

**The Countryside Rights of Way Act 2000**

8. The Countryside Rights of Way Act (CRoW) 2000 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 to the purpose of conserving biological diversity in accordance the Convention on Biological Diversity.

**The Natural Environment and Rural Communities Act 2006**

9. The Natural Environment and Rural Communities Act (NERC, 2006) is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. The Act implements key elements of the Government's Rural Strategy published in July 2004 (DEFRA 2006).

**The Protection of Badgers Act 1992**

10. The Protection of Badgers Act 1992 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