

Preliminary Ecological Assessment

***Land bounded by Shires Lane and
Low Lane, Embsay***

Chatsworth Settlement Trustees

November 2014

Revision 1

access**Ecology**



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A INTRODUCTION

1. This report presents the results of investigations and surveys relating to the land bounded by Shires Lane and Low Lane, Embsay (OS Grid Reference: SE 01303 53640) undertaken in November 2014.
2. The aim of the survey was to record any evidence of use of the site by protected or notable species, as well as to assess any features of importance or features that would support the presence of protected species, or other species of nature conservation importance, and to determine if controlled non-native invasive species that could represent a constraint to future proposals are present on site.
3. The survey was undertaken by Louisa Molloy an experienced field Ecologist and graduate member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and Sam Barnes, Assistant Ecologist.
4. This report presents an assessment of potential ecological constraints to development, based on the results of the survey, along with recommendations for further more detailed surveys to be undertaken, as appropriate.

A.1 Background to the Survey

5. Access Ecology Ltd was commissioned in November 2014 by Cliff Caruthers of O'Neill Associates, on behalf of Will Kemp of Chatsworth Settlement Trustees, to undertake an ecological survey of the land bounded by Shires Lane and Low Lane, Embsay (see Appendix A - 1).
6. The ecological survey was commissioned in relation to the outline planning application for the development of 39 residential dwellings on the site.

A.2 Habitat Description Summary

7. The site is located in the small village of Embsay and is composed of improved pasture, bounded by drystone walls, with a single mature tree at the southern boundary of the site. The market town of Skipton lies approximately 3km south west of the site, and the southern boundary of the Yorkshire Dales National Park (YDNP) is approximately 300m north of the site.
8. The site is bounded to the north and east by Shires Lane and Low Lane, respectively. To the south are pasture fields and to the west a cricket ground. Beyond this to the south, east and west are further pasture fields, and to the north a small (approx. 4ha) housing estate, with associated gardens, which adjoins the north eastern edge of the main part of the village of Embsay. There is a pond located within one of the pasture fields to the east of the site, approximately 150m south east of the eastern site boundary.
9. In the wider landscape, to the north of the site within the YDNP (approx. 300m north) is Barden Moor which contains open water habitats indicated by the names Tewitt and Wayshaw bogs, along with Embsay and Barden Reservoirs (1.6km north west and 3.82km north east, respectively).

10. Haw Beck runs approximately 300m to the south of the site and is directly connected to the site by Green Bottom Beck which runs under the site from a north easterly direction via a culvert, before emerging on the southern boundary of the site. Other becks passing close to the site include Kempley Beck (approx. 300m east) and Embsay Beck (approx. 850m south east), which are connected to the reservoir's becks on Barden Moor to the north.
11. Small (<1ha) pockets of woodland are present to the north of the site which from studying aerial photography appear to be clough woodlands associated with watercourses, including Heugh Gill (approx. 1.23km north east) Monks Well (approx. 800m north west) and Milking Hill Wood (1.2km north west). A larger (approx. 4ha) woodland and open waterbodies, both associated with a working quarry, are located approximately 450m to the south.
12. Connectivity between the site and the habitats in the wider landscape is relatively high. Green Bottom Beck which runs through the site connects the site directly to Haw Beck and a working railway line in the south (vegetated partly by continuous lines of trees and partly by scrubby grassland) both of which provide connectivity to semi-natural habitats to the east and west. Other connective habitats are present, mainly in the form of drystone walls, dilapidated hedgerow field boundaries with standard trees, lines of mature trees and residential gardens.

B CONTEXT

13. The following context text has been provided to Access Ecology Ltd by Chatsworth Settlement Trustees (CST, 2015).

B.1 The applicant

14. The Chatsworth Settlement Trustees (CST) is a business which owns and manages land on behalf of the Cavendish Family. It derives income from rents and admission charges to some of its assets (e.g. Chatsworth House, Bolton Priory). It owns the application site and other parcels of land in Craven, and indeed gifted land to Embsay Cricket Club in both 1983 and 1992.

15. CST therefore takes a responsible approach to architectural/environmental conservation and community development, but also has to be able to fund such activities accordingly.

B.2 Site Context

16. The application site is located on the south side of the settlement of Embsay at the junction of Shires Lane and Low Lane which, respectively, form the north and east boundary of the site. To the west the site has a boundary with a sports field defined by a dry stone wall.

17. To the south are open fields and some 250 metres further to the south is the Embsay Steam Railway line and the Skipton Rock Quarry which is prominent in views from the site. The western half of the south boundary is defined by a stone wall and tree belt. The eastern half of the south boundary is undefined.

18. The site is relatively flat with a slight gradient rising from south west to north east. There is a distinguishing mound on the east boundary. Green Bottom Beck runs across the site by way of a culvert from the north eastern corner to the southern boundary, and is known to cause localised flooding/drainage issues.

19. There are no significant off-site constraints. There is sufficient infrastructure capacity in the vicinity to support the application proposals.

B.3 Design Process

20. Liaison with Craven District Council (CDC) and North Yorkshire County Council (NYCC) has been integral to the design of the proposal and the submission of supporting information.

21. Pre-application meetings were held with CDC's planning officer on 23rd February 2015 and with affordable housing officers on the 9th April 2015. These meetings established no fundamental objections to the principle of development provided that a well-designed scheme with an acceptable component of affordable housing was prepared and localised traffic, flooding, ecological, arboricultural and landscape issues were assessed.

22. CDC stressed the importance of: good design (i.e. the need for the proposal to retain a rural character to fit with the surrounding area); the acceptability of a proposal with two

points of access; and the need for improved pedestrian access to the village centre. These views were confirmed in subsequent telephone conversations and a letter from CDC dated 6th March 2015 providing its pre-application advice.

23. As such, CST revised its preliminary design proposal and decided against submitting a planning application until it had addressed all of CDC's points and could present a development proposal which takes a sympathetic approach to the predominantly rural character of the area for example by reinstatement of the beck across the site.

24. Pre-application discussions were also held with NYCC as the local highways authority. These established no fundamental objections to the principle of development but did identify a need to provide sufficient visibility splays for traffic leaving the site. This requirement has been built into the scheme design.

B.4 Development Proposal

25. This is an outline planning application for residential development in which all matters are reserved other than the principle of development and the proposed access. The indicative layout for the site is for a scheme of 39 dwellings served off two separate access points. Each access serves a cluster of 18-20 dwellings.

26. The existing dry stone walls along Shires Lane and Low Lane are retained except where it is necessary to create the two access points. Between and around the new junctions on Shires Lane the wall will have to be moved back from the highway edge to create the visibility splays required for highway safety. The existing access at the east end of the Shire Lane frontage will be closed and infilled with a drystone wall.

27. The scheme design responds positively to the advice put forward by the Council by adopting an organic layout that controls the dominance of the car and creates clusters of development with stepped frontages; varied rooflines; and variety and interest in private spaces.

28. It should be noted that the layout shown is one way of addressing these comments and requirements. There will undoubtedly be other ways of doing so, which may be developed as the reserved matters proposals for the site are drawn up.

29. The application proposes that the problematic culvert relating to Green Bottom Beck is opened up and reinstated as a swale to help alleviate localised flooding incidents upstream of the site.

30. CST may seek to work up detailed designs and develop the site itself (with a view to retaining or selling it), or it may offer it for sale for others to work up detailed designs and build out the site.

B.5 Planning Policy

31. Planning legislation requires applications to be determined in accordance with the Development Plan unless material considerations indicate otherwise. However, little weight can be attached to the saved policies of the Craven District Local Plan (CDLP)

1999, since the National Planning Policy Framework (NPPF) 2012 limits the weight to be attached to the policies of out-of-date Local Plans such as the CDLP and provides for NPPF policy to apply in such circumstances.

32. Moreover, the NPPF provides for planning permission for residential development in areas where a Council is failing to meet its 5 year housing supply. This issue is addressed in more detail in the Planning Statement submitted with this application.
33. The Craven Draft Local Plan identifies the site as suitable for housing development because it is well-related to existing services and recreational opportunities and has no flood risk or known highway safety issues.
34. The Planning Statement demonstrates how the proposal accords with the NPPF and emerging Local Plan policy, and will help address the district's housing supply shortage. It will also have no adverse impact on the area or buildings. As such, it comprises sustainable development and should be granted planning permission accordingly.

B.6 Benefits

35. The Planning Statement submitted with the application identifies the main benefits of the development proposal as:
 - Provision of a mix of residential dwellings that will widen the choice of housing in the locality and help to meet the Council's housing requirement
 - provision of affordable housing for local residents
 - provision of affordable housing for local residents
 - provision of affordable housing for local residents
 - Supporting the viability of local services and community facilities
 - Ecological benefits arising from the re-instatement of the beck and retention of the trees on the south-western corner of the site.

C LEGISLATION

37. This legal information is a summary and intended for general guidance only. It is recommended that the original documentation is referred to for detailed and definitive information. Web addresses are located in the References and Bibliography section of this report.

C.1 Habitat Regulations

38. The Conservation of Habitats and Species Regulations 2010 transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive) into English law, making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is absent at the time).

C.2 Wildlife & Countryside Act 1981

39. The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act (NERC) 2006 (which also places a duty on authorities to have due regard for biodiversity and nature conservation) consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive), making it an offence to:

40. Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;

41. Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection;

42. Pick or uproot any wild plant listed under Schedule 8 of the Act.

C.3 National Planning Policy Framework

43. The NPPF outlines government planning policies and how they should be applied within local authorities. The framework places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. The NPPF states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

C.4 Biodiversity Action Plans

44. The original objective of the UK Biodiversity Action Plan (UKBAP) was to fulfil the requirements of the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A list of national priority species and habitats has been produced with specific action plans defining the measures considered necessary to ensure their conservation. Regional and local BAPs have also been developed for species/habitats of nature conservation importance both regionally and locally.

C.5 Local Structure Plans

45. County, District and Local Councils have Structure Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity through the planning system.

D METHODOLOGY

D.1 Desktop Study

D.1.1 Biological Records

46. A desk study has been undertaken as part of this study. Protected and notable species information for the site and surrounding area (up to two kilometres) was requested from the North and East Yorkshire Ecological Data Centre (NEYEDC) and North Yorkshire Bat Group (NYBG).

D.1.2 Designated Sites

47. The Multi-Agency Geographic Information for the Countryside (MAGIC) internet resource was examined to find out the locations of areas designated for nature conservation in the area surrounding the surveyed land.

D.1.3 Non-Designated Sites

48. A data search was requested from NEYEDC listing any non-statutory local wildlife sites within a 2km radius of the site.

D.2 Flora

D.2.1 Extended Phase 1 Habitat Survey

49. The Phase 1 Habitat survey took place on the 13th November 2014. The survey was carried out in accordance with the standard Phase 1 Habitat Survey methodology (JNCC, 2003). Dominant plant species were noted, as were any uncommon species or species indicative of particular habitat types.

50. The information collected during the survey was approximately mapped and can be found on the Phase 1 Habitat survey map in Appendix A - 2. The survey was carried out by Louisa Molloy an experienced field Ecologist and Graduate member of the Chartered Institute of Ecology and Environmental Management and Sam Barnes, Assistant Ecologist.

D.2.2 Controlled Invasive Species Assessment

51. The site was assessed during the Phase 1 Habitat survey for the presence of invasive non-native species including Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera*, giant hogweed *Heracleum mantegazzianum* and Australian swamp stonecrop *Crassula helmsii*.

D.3 Fauna

D.3.1 Bats – Ground Based Risk Assessment of Trees

52. Trees which are within, and those immediately adjacent to the boundary of, the survey site were visually assessed for potential bat roosting opportunities from ground level.

53. Each tree was inspected for features which may be used by roosting bats including natural holes, woodpecker holes, cracks/splits in major limbs, loose bark, dense thick stemmed ivy, hollows/cavities and birds or bat boxes. Signs indicating use of tree features by

roosting bats include scratches and/or staining around entry points, bat droppings in/around/below entrance, audible squeaking at dusk or in warm weather, flies around entry points, the distinctive smell of bats and the smoothing of surfaces around cavities.

54. When a roost is positively identified during the inspection the tree within which the roost is located is classified within the category Roost Present. Other trees are classified as having High, Moderate, Low or Negligible potential to contain bat roosts based upon the number and quality of features present, and the trees position in relation to the surrounding environs. Table 1 gives the features considered when attributing a potential classification to a tree.

Table 1. Features typical of trees within the different risk categories

Negligible	Low Potential	Moderate Potential	High Potential
Geographic location poor species diversity (i.e.: extensive arable areas, upland sites)	Geographic location moderate species diversity	Geographic Location moderate species diversity	Geographic location with moderate or high species diversity (i.e.: Welsh valleys, southern counties)
Isolated tree	Located within coniferous plantation or within groups of young trees with simple growth forms	Located within an area offering some habitat features likely to be used by bats	Located within ancient woodland or parkland
Immature or semi mature tree with no evidence of disease or damage	Immature or semi mature tree with evidence of disease or damage. Mature tree in good condition	Mature tree or over mature tree with signs of disease or damage	Mature tree, over mature or dead tree with obvious signs of disease or damage
No cracks or crevices	Few small cracks and crevices	Cracks/crevices suitable for small numbers or individual bats	Cracks/crevices potentially suitable for larger colonies
No flaking bark	Limited flaking bark	Loose or Flaking bark with suitability to support small numbers or Individual bats	Loose or Flaking bark with areas deep enough to support larger colonies
Low/no ivy cover	Low ivy cover	Medium-Dense Ivy cover	Medium-Dense ivy cover
No epicormic growth	Limited epicormic growth	Thick epicormic growth	Thick epicormic growth
No Woodpecker holes	No Woodpecker holes	Woodpecker holes	Woodpecker holes
No deadwood in canopy or stem	Limited deadwood in canopy or stem with no obvious holes	Deadwood in canopy or stem with shallow cracks or holes	Deadwood in canopy or stem with obvious cracks and holes
No snagged branches	No snagged branches	Snagged branches	Snagged branches
No hollow areas	Majority of limbs and stem solid	Hollow stem or limb suitable for small numbers or individual bats	Hollow stem or limb with areas deep enough to support larger colonies
Buttresses intact	Buttresses intact	Hole between buttresses with areas deep enough small numbers or individual bats	Hole between buttresses with areas deep enough to support larger colonies
Core Solid	Core solid	Hollow core with areas deep enough small numbers or individual bats	Hollow core with areas deep enough to support larger colonies

D.3.2 Great Crested Newt

D.3.2.1 Habitat Suitability Index (HSI) Assessment

55. One water body was identified 150m south east of the survey site and as such a HSI assessment was carried out during the habitat assessment. The pond was assessed using the HSI methodology guidelines provided by the National Amphibian and Reptile Recording Scheme (NARRS 2008, based on Oldham *et al.* 2000).
56. The habitat suitability assessment uses ten key habitat criteria and is based on the assumption that habitat quality can be used as a tool to determine whether a pond is likely to contain great crested newts and the likely population size (Oldham *et al.* 2000). The criteria are as follows:
- SI1 = geographic location
 - SI2 = pond area
 - SI3 = pond permanence
 - SI4 = water quality
 - SI5 = pond shading
 - SI6 = number of waterfowl
 - SI7 = occurrence of fish
 - SI8 = pond density
 - SI9 = proportion of 'newt friendly' habitat
 - SI10 = macrophyte (aquatic plant) content
57. Of these, SI2, SI3, SI5, SI6, SI8, SI9 and SI10 are assessed using objective measures, whilst SI1, SI4 and SI7 are assessment quality.
58. The HSI is derived using the following equation:

$$\text{HSI} = (\text{SI1} \times \text{SI2} \times \text{SI3} \times \text{SI4} \times \text{SI5} \times \text{SI6} \times \text{SI7} \times \text{SI8} \times \text{SI9} \times \text{SI10})^{1/10}$$

59. The results of the HSI calculation were compared to categorized HSI scores used by the National Amphibian and Reptile Recording Scheme (NARRS, 2008) to identify the probability of a pond to support great crested newts (GCN). The five categories are summarised in Table 2 below.

Table 2. HSI Scores

Probability of ponds supporting GCN	HSI Scores
Poor	Below 0.5
Below average	0.5 – 0.59
Average	0.6 – 0.69
Good	0.7 – 0.79
Exceptional	Above 0.8

D.3.2.2 Terrestrial Habitat Assessment

60. The habitats within the survey site were assessed for their suitability to support terrestrial GCN. Any features of particular interest for GCN were noted and mapped during the Phase 1 habitat assessment.

D.3.3 Other Protected and Notable Species

61. Any field signs of other protected and notable species were noted by the surveyors during the survey.

E RESULTS

E.1 Desktop Study

E.1.1 Biological Records

62. A total of 75 records were provided by North and East Yorkshire Ecological Data Centre (NEYEDC) and 11 records from North Yorkshire Bat Group (NYBG). Of the records provided, only those deemed relevant to the site and the outline proposal have been considered and are shown in Table 3 below.
63. Of the total records provided, 3 records from NEYEDC and 11 records from NYBG were considered relevant to the site.
64. The search revealed a total of 11 bat records from a 2km radius of the survey site. The records show *Pipistrellus* sp. records along with unidentified vesper bat species records.
65. 8 of the records are located within 1km of the site and indicate 4 separate bat roosts, 3 of which are within 500m of the survey site located 310m west, 330m north west and 410m west.
66. The species using these roosts is not provided in the results, however, roosts located over 1km from the site record pipistrelle bats. No other bat species were returned in the data.
67. Two records for water vole *Arvicola amphibius* were provided from within 2km of the site. Both records are from 1.56km from east/south east of the site.
68. One record of merlin *Falco columbarius* was returned in the data, however a two figure grid reference means the record can only be placed within 10km square.
69. No records of great crested newts *Triturus cristatus* or reptiles were returned in the data

Table 3. Relevant NEYEDC and NYBG species records within a 2km radius of the site.

Group	Taxa	Scientific Name	Common Name	Record Type	Date	Grid Ref.	Distance (km) & Bearing from Site
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Summer Roost	21/08/2000	SE010536	0.31 W
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Summer Roost	28/03/1986	SE011539	0.33 N/W
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Roost	01/05/2008	SE009537	0.41 W
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Roost	01/05/2008	SE009537	0.41 W
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Injured Bat	27/12/2002	SE012541	0.47 N/NW
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Summer Roost	21/07/2001	SE006534	0.74 W/SW

NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Unspecified	17/02/1992	SE016544	0.82 N/NE
NYBG	Terrestrial Mammal	<i>Vespertilionidae</i>	Vesper bat species	Unspecified	02/07/1991	SE016544	0.82 N/NE
NYBG	Terrestrial Mammal	<i>Pipistrellus sp.</i>	Pipistrelle bat	Roost	02/08/2008	SE002533	1.15 W/SW
NYBG	Terrestrial Mammal	<i>Pipistrellus sp.</i>	Pipistrelle bat	Summer Roost	11/07/2004	SE013549	1.26 N
NYBG	Terrestrial Mammal	<i>Pipistrellus sp.</i>	Pipistrelle bat	Roost	01/04/1986	SE0053	1.45 W/SW
NEYEDC	Terrestrial Mammal	<i>Arvicola amphibious</i>	European Water Vole	Yorkshire water vole records (positive)	1989 - 1990	SE028532	1.56 E/SE
NEYEDC	Terrestrial Mammal	<i>Arvicola amphibious</i>	European Water Vole	Yorkshire water vole and mink	1989 – 1990	SE028532	1.56 E/SE
NEYEDC	Bird	<i>Falco columbarius</i>	Merlin	Bird Records from RSPB	31/12/1987	SE05	N/A

E.1.2 Designated Wildlife Sites

70. A search of the MAGIC database and results from NEYEDC revealed that there are 11 designated wildlife sites within a 2km radius of the survey site, although it was noted that some of these are the same areas with several different designations. A summary of the results is shown in Table 4 below.
71. The closest of these sites is the Yorkshire Dales National Park (YDNP) which is designated as National Park and encompasses the Yorkshire Dales Moorland Important Bird Area (IBA). The YDNP covers an area of 176886 ha, with the closest boundary being approximately 260m north west of the survey site.
72. The remaining designated sites include the North Pennine Moors SPA and SAC which also incorporates West Nidderdale, Barden and Blubberhouses Moors SSSI (located approx. 1.44km N/NW) which have several layers of statutory designations due to the presence of Annexe 1 habitats, which in turn support important upland breeding birds.
73. Three of the sites are woodlands of which two are Sites of Importance for Nature Conservation (SINC) (Haw Wood 1.02km south/ south west and Castle Wood 2.13km west/south west) with the remainder being an Ancient and Semi-natural woodland (Heugh Gill Wood 1.13km north/north west).

Table 4. Designated wildlife areas within 2km of the site.

Grid Reference	Name	Size (ha)	Distance from Site (km)	Bearing	Designation	Reason for Designation
SE 011 538	Yorkshire Dales Moorland	176686.27	0.26	NW	Important Bird Area (IBA)	Important for upland breeding birds.
SE 011 538	Yorkshire Dales National Park	176686.27	0.26	NW	National Park	
SE 009 527	Haw Wood	Unknown	1.02	S/SW	Site of Importance for Nature Conservation (SINC)	
SE 017 547	Heugh Gill Wood	1.87	1.13	N/NE	Ancient and Semi-Natural Woodland	
SE 006 549	North Pennine Moors Incorporating West Nidderdale, Barden and Blubberhouses Moors SSSI	13421.85	1.44	N/NW	Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI)	Presence of Annexe 1 habitats including European dry heaths, blanket bogs sessile oak woods. Supports breeding birds including golden plover, hen harrier, merlin, curlew and dunlin.
SE 027 532	Holy Well Bridge	1.5	1.46	E/SE	Site of Special Scientific Interest (SSSI)	Geological interest. Shows the best exposure of Courceyan Age in the Craven Basin
SD 995 525	Castle Wood	4.04	2.13	W/SW	Ancient Replanted Woodland and Site of Importance for Nature Conservation (SINC)	

E.2 Flora

E.2.1 Phase 1 Habitat Survey

74. Five habitat types were identified during the Phase 1 Habitat survey. A Phase 1 Habitat plan is provided as Appendix A – 2 and a non-exhaustive species list for the site is provided as Appendix A – 4.

- Improved grassland
- Drystone wall
- Tall ruderal
- Scattered trees
- Open running water

E.2.1.1 Improved Grassland

75. Improved grassland is the dominant habitat on site and is grazed by both cattle and sheep indicated by faeces of both being present. The sward is composed of grass and herb species indicative of nutrient enrichment such as perennial rye grass *Lolium perenne* (dominant), dandelion *Taraxacum* agg., white clover *Trifolium repens*, creeping thistle *Cirsium arvense* (frequent) and broad-leaved dock *Rumex obtusifolius* (occasional).

Occasional hummocks of tufted hair grass *Deschampsia cespitosa* are present within the grassland, On the edges of the grassland immediately adjacent to the drystone wall boundary, where cattle and sheep have not grazed, stands of Yorkshire fog *Holcus lanatus* and rough meadow grass *Poa trivialis* (rare) were noted.

76. In areas where poaching by cattle has occurred, notably around the entrance gate to the north east of the site, yet also occurring occasionally across the grassland, stands of chickweed *Stellaria media* and creeping buttercup *Ranunculus repens* (locally dominant) were noted.

77. A west facing earth embankment (indicated by Target Note 1 on Appendix A – 2) which runs from the north east corner of the site in a south westerly direction, is present. The embankment is approximately 2m tall to the northeast, narrowing gradually to approximately 1m tall to the south west. The species composition on the slope is similar to that of the surrounding grassland, however, possibly due to the reduced grazing pressure on the slope, it was noted that sheep's fescue *Festuca ovina*, crested dog's-tail *Cynosurus cristatus*, common sorrel *Rumex acetosa*, greater plantain *Plantago major* and yarrow *Achillea millefolium* were present in the sward.

E.2.1.2 Drystone Wall

78. A drystone wall forms the borders of improved grassland to the north, east and west, and half of the southern boundaries. The wall is approximately 1.5m tall and 0.5m wide and constructed in the form typical for the area (double wall of facing stones packed with filling and finished with coping stones) from sandstone and limestone. No vegetative species were recorded in association with the drystone wall.

E.2.1.3 Tall ruderal

79. Occasional patches of tall ruderal habitat are present at the northern and eastern boundaries of the site adjacent to the drystone wall composed of common nettles *Urtica dioica* (dominant), cow parsley *Anthriscus sylvestris* (locally frequent) and spear thistle *Cirsium vulgare* (occasional).

E.2.1.4 Scattered Trees

80. One tree, a mature common ash *Fraxinus excelsior*, is present within the survey site and is located to the south west, immediately adjacent to the drystone wall boundary (indicated by Target Note 3 on Appendix A – 2). The tree contains cavities, dead wood supporting bracket fungi, gaps at the base of the trunk, and cavities in cracked and split limbs.

81. Other trees are present outside of, yet immediately adjacent to the northern and southern boundary of the survey site. These include 15 poplar trees adjacent to the southern boundary, and 2 hawthorn *Crataegus monogyna*, 3 sycamore *Acer pseudoplatanus*, 1 elm *Ulmus spp* and 1 ash sapling adjacent to the northern boundary.

E.2.1.5 Open Running Water

82. Green Bottom Beck runs under the site through a culvert from a north east direction before emerging at the southern boundary of the site, running southwards overground for approximately 40m before entering a further culvert. Within the site boundary the beck is exposed in two places (indicated by Target Note 2 on Appendix A – 2) due to the culvert roof collapsing forming sink holes approximately 1m in diameter and 80cm deep..
83. Within the sink hole to the north of the site, a single specimen of hart's tongue fern *Asplenium scolopendrium* was noted. Although the beck does not run above ground within the survey site, the surveyors briefly assessed the section to the south of the survey site and noted the presence of wavy bittercress *Cardamine flexuosa* and rushes *Juncus sp.* on the banks.

E.2.2 Controlled Invasive Species

84. No evidence of controlled invasive species was found during the survey.

E.3 Fauna

E.3.1 Bats

E.3.1.1 Ground Based Tree Risk Assessment

85. A total 23 trees were assessed for their potential to support roosting bats during the visit. Of these 23, one tree is within the survey boundary, with the remainder outside of, yet immediately adjacent to, the northern and southern boundaries of the survey site.
86. The single tree within the survey site is considered to have High potential to support roosting bats. This tree (indicated by T8/Target Note 3 on Appendix A – 2) is a mature common ash *Fraxinus excelsior* with an approximate depth at breast height (DBH) of 1m, a height of approximately 12m, and crown width of 12m. The tree is a mature specimen with a number of dead limbs and signs of rot. A number of features suitable for roosting bats are present and include a large hole in the trunk approximately 2m from the ground allowing access into a cavity within the trunk; cracked and split limbs within the crown; loose and peeling bark on both the trunk and limbs; and occasional natural holes on the limbs. It was noted however, that the trunk is open at the top, potentially allowing water to freely enter the trunk.
87. The remaining 22 trees include 15 poplars *Populus spp*, 2 hawthorn *Crataegus monogyna*, 3 sycamore *Acer pseudoplatanus*, 1 elm *Ulmus spp* and one ash sapling. All these 22 trees are considered to have negligible potential for roosting bats.
88. All of the assessed trees are considered to offer potential for foraging and commuting bats.
89. The locations of all trees assessed are included on Appendix A – 2 and a summary of the survey results is included as Appendix A – 5.

E.3.2 Great Crested Newts

E.3.2.1 Habitat Suitability Index (HSI) Assessment

90. One water body was identified 150m south east of the survey site and as such a HSI assessment was carried out during the habitat assessment, the results of which are below in Table 5.

Table 5. HSI results for Waterbody 1 (SE 01522 53548)

HSI Categories	Field Score	Water body 1 Index Score
SI ₁ Geographic Location	Zone B – Marginal	0.5
SI ₂ Water body Area	1550m ²	0.87
SI ₃ Water body Permanence	Rarely	1
SI ₄ Water quality	Poor	0.33
SI ₅ Water body Shading	0%	1
SI ₆ Number of waterfowl	Minor	0.67
SI ₇ Occurrence of fish	Possible	0.67
SI ₈ Water body density	2.229 (7 waterbodies)	0.85
SI ₉ Proportion of 'newt friendly' habitat	Poor	0.33
SI ₁₀ Macrophyte (aquatic plant) content	25	0.55
Overall HSI Score		0.63
HSI Category		Average

91. Waterbody 1 (OS Grid Reference: SE 01522 53548) is a field pond located in a pasture field, approximately 150m from the south eastern boundary of the survey site, and separated from the survey site by Low Lane. Aerial photography would suggest the pond has been present since at least 2002, and the pond is also marked on the OS Land Ranger Map.
92. The pond has very little marginal or emergent vegetation. However, there is suitable connective habitat between this pond and the survey site in the form of the surrounding pasture, and a dilapidated hedgerow located approximately 20m to the south and west of the pond. It is considered that Low Lane is unlikely to act as a major barrier to GCN dispersal between the pond and the survey site.
93. Using the Habitat Suitability Index (HSI) assessment, Waterbody 1 gained a score of 0.63 indicating that it is of average suitability to support great crested newts *Triturus cristatus*.

E.3.2.2 Terrestrial Habitat Assessment

94. It was noted that the survey site contains suitable terrestrial habitat for great crested newts in the form of improved grassland pasture, along with features such as the dry stone wall around the perimeter of the site and the base of the mature ash tree to the south of the site providing potential hibernacula.

E.3.3 Other Protected and Notable Species

95. It was noted that the beck, which runs under the survey site via a culvert and emerges above ground immediately adjacent to the southern boundary of the site and runs for approximately 40m, may offer suitable habitat for water voles *Arvicola amphibius*. The banks on this open section of beck were searched by the surveyors for signs of water vole activity including latrines, feeding signs, runs and burrows, however, no evidence of water vole activity was observed. The culverted section of the beck does not contain habitat features suitable for water voles.
96. It was also noted that the mature common ash tree located within the survey site, along with the trees outside of yet immediately adjacent to the northern and southern boundaries of the survey site, offer suitable habitat for tree nesting birds.
97. Additionally, the drystone walls on the boundary of the survey site are considered to offer suitable habitat for reptiles and nesting birds.

F INTERPRETATION AND EVALUATION OF SURVEY RESULTS

F.1 Desk study

F.1.1 Biological Records

98. The summarised records show that there are 5 bat roosts recorded within 1km of the survey site, with further bat roost records and records of water voles beyond 1km from the site.
99. None of the records included in Table 3 were from within the survey site or its immediate vicinity (<200m).

F.1.2 Wildlife Sites

100. Eleven designated wildlife sites are present within a 2km radius of the site. The closest of these is the Yorkshire Dales National Park (incorporating the Yorkshire Dales Moorland Important Bird Area) which is approximately 260m north west of the survey site.
101. When compared against the biological records, a single record of merlin, a bird for which the IBA is designated, was returned in the data from within a 2km radius of the site. However, the two figure grid reference provided with the record means it can only be attributed to a 10km square (SE05). However, there is no suitable habitat for merlin, or other birds for which the IBA is designated, within the survey site, where the dominant habitat is improved grassland.
102. Breeding birds from the IBA, such a curlew *Numenius arquata*, may pass over the site or may use the site briefly as a resting place, however, the lack of suitable nesting habitat (unimproved rough pasture, bog, wet heath and moorland) means that the loss of the improved grassland from the survey site will have a negligible impact on these bird species.
103. The remainder of the designated wildlife sites are over 1km from the survey site.

F.2 Flora

F.2.1 Phase 1 Habitat Survey

104. A single mature common ash tree containing features with the potential to support a number of different species is present to the south of the survey site.
105. A beck runs via a culvert under the survey site, however 2 sink holes are present within the survey site and the beck emerges above ground at the southern boundary of the survey site.
106. All of the remaining habitats and floral species identified on site are common and the site was found to contain limited floral diversity.

F.2.2 Controlled Invasive Species

107. No evidence of any controlled invasive species were found during the survey.

F.3 Fauna

F.3.1 Bats – Ground Based Risk Assessment of Trees

108. One tree within the survey site was identified as being of an appropriate size and age, and with features present that offer High potential to support roosting bats.
109. The remaining trees outside of, yet directly adjacent to, the northern and southern boundaries of the site are considered to offer negligible potential to support roosting bats.
110. It is considered that all of the assessed trees offer potential for foraging and commuting bats.

F.3.2 Great Crested Newts

F.3.2.1 Habitat Suitability Index (HSI) Assessment

111. No suitable breeding habitat for great crested newts (GCN) is present on the site.
112. The closest habitat for breeding GCN is a field pond approximately 150m south east of the site (Waterbody 1) which received an 'average' HSI score.

F.3.2.2 Terrestrial Habitat Assessment

113. The whole of the survey site includes suitable terrestrial habitat for GCN, being composed predominantly of improved pasture, with suitable features for hibernacula present in the drystone wall on the perimeter of the survey site and the base of the mature common ash tree at the southern boundary of the site.

F.3.3 Other Protected and Notable Species

F.3.3.1 Water voles

114. Suitable water vole habitat is present to the south of the survey site in the form of a beck, which first passes under the survey site via a culvert.
115. No evidence of water vole activity was found on the section of beck to the south of the survey site, and the culverted section of the beck within the survey site, which is a piped culvert, does not offer suitable burrowing or foraging habitat for water voles.

F.3.3.2 Nesting Birds

116. Habitat features suitable for nesting birds are present in the tree within the survey site, and those outside of but immediately adjacent to the northern and southern boundaries of the site, along with the drystone walls.

F.3.3.3 Reptiles

117. It was noted that the drystone walls on the perimeter of the site may offer suitable hibernacula for reptiles. Although this suitability is reduced greatly by the lack of other suitable habitat (i.e. dense tussocky grassland and scrub) within and in the immediate vicinity of the survey site.

G CONCLUSIONS AND RECOMMENDATIONS

118. These conclusions and recommendations are made in relation to the outline planning application for the development of 39 residential dwellings on the site. If there are any changes to the current proposals, the recommendations made below should be reassessed by a suitably qualified Ecologist against new or amended proposals for the site.

G.1 Flora

G.1.1 Designated Wildlife Sites

119. The distance between the survey site and closest designated wildlife site is 260m (Yorkshire Dales National Park and Yorkshire Dales Moorland Important Bird Area (IBA)). Furthermore, the survey site does not contain suitable nesting or foraging habitat for any of the birds for which the IBA is designated.

120. It is therefore considered that the proposal to develop 39 residential housing units on the site will not have a direct effect on this area, and the loss of the improved grassland from the survey site will have a negligible impact on the bird species for which the IBA is designated. .

121. As a result, no further consultations or desk studies are considered necessary at this stage.

G.1.2 Phase 1 Habitat Survey

G.1.2.1 Trees

122. A single mature common ash tree containing features with the potential to support a number of different species is present to the south of the survey site.

123. As this tree contains features that can be likened to those of a 'veteran' tree i.e. a tree which contains important wildlife and habitat features such as decay fungi, holes and dead branches, and may be in the second or mature stage of its life (The Woodland Trust, 2014), then it is strongly recommended that it is retained as part of the development and adequately protected by appropriate tree protection measures during any works on the site.

124. The remaining trees adjacent to the northern and southern boundaries of the site should be retained as part of any future development of the site if possible, and protected by appropriate tree protection measures during any works on the site.

125. Furthermore, in order to maintain and enhance the ecological value of the site and in accordance with the aims of The National Planning Policy Framework, it is suggested that the developer may wish to incorporate tree planting into any future landscaping plans for the site. It is recommended that trees planted as part of any future development are native tree species of local provenance.

G.1.2.2 Beck

126. The beck which runs under the survey site via a culvert before emerging above ground at the southern boundary of the site has the potential to be polluted by run-off and spills during clearance and construction works, and once the site has been developed. The beck's connectivity to other waterbodies in the wider landscape has the potential to have detrimental impacts on these habitats.
127. Whilst no further surveys are required on the beck, it is recommended that further advice is sought from the Environment Agency with regards to measures that will assist in avoiding pollution caused by run-off into the beck and associated habitats during the clearance, construction and post-development phases of any future development on the site. This should pay particular attention to cleaning up potential spills from vehicles on site.
128. Proposals for the site include opening up the culverted section of the beck and the creation of a swale. The opened beck and swale should be enhanced for wildlife by planting a selection of at least fifteen of the plant species provided in Table 6 below.

G.1.2.3 Remaining Habitats

129. All of the remaining habitats and floral species on site are common and the site was found to contain limited floral diversity.
130. As a result of this no further botanical survey is required.
131. However, in order to maintain and enhance the ecological value of the site and in accordance with the aims of the National Planning Policy Framework, it is suggested that the developer may wish to incorporate a wildlife friendly landscaping design into any future development. This could include the creation of wildflower grasslands in communal areas across the development; along with the creation of linear features such as hedgerows and drystone walls within the development. All species incorporated into any future landscaping designs should be native species or species of known wildlife value. Further advice on wildflower and hedgerow planting is included in Appendix B.

G.2 Fauna

G.2.1 Bats – Ground Based Risk Assessment of Trees

132. A single mature common ash tree within the boundary of the survey site (T8) was assessed as having High potential to support roosting bats. Furthermore, the tree is within close proximity (<500m) to 3 different bat roosts and suitable bat foraging and commuting habitat on the perimeter of the site and beyond.
133. The current proposals seek to retain this tree and recommendations to adequately protect it during clearance and construction have been made in section G.1.2.1 above. Furthermore, an appropriate wildlife friendly lighting scheme for the site, which avoids directly lighting this tree and the adjacent tree line to the south of the site, should be incorporated into the design. Further advice on wildlife friendly lighting is included as Appendix B.

134. If the tree cannot be retained or lighting the tree cannot be avoided, further survey will be required to establish the presence/absence of a bat roost within this tree.
135. Additionally, in order to maintain and enhance the ecological value of the site and in accordance with the aims of The National Planning Policy Framework, it is suggested that the developer may wish to incorporate suitable enhancements for bats within the plans of any future development. Such features could include the incorporation of bat boxes into new buildings and bat friendly plant species into the soft landscaping scheme and the creation of linear features within the development such as hedgerow and tree lines,. Further advice on bat boxes, bat friendly planting, creation of hedgerows and wildlife friendly lighting design is included as Appendix B.

G.2.2 Great Crested Newts

136. The surveys found that there is no suitable breeding habitat for GCN within the survey site. However, the terrestrial habitat assessment for GCN within the survey site found that the whole site contains suitable habitat for terrestrial GCN in the form of improved grassland pasture, along with features that may provide suitable hibernacula, namely the drystone wall on the perimeter of the site and base of mature common ash tree to the south of the site.
137. One waterbody was identified approximately 150m south east of the survey site. This waterbody was assessed using the Habitat Suitability Index (HSI) for great crested newts which classifies the pond as having 'average' suitability to support GCN.
138. It was noted that suitable connective habitat is present between the closest waterbody and the terrestrial habitat within the survey site, and between suitable hibernacula within the survey site.
139. As a result of these findings it is recommended that prior to any development on the site GCN presence/absence surveys should be undertaken at all waterbodies identified within a 250m radius of the survey site.
140. Dependent on the status of the waterbody a selection of the following four survey methodologies should be used:
- Bottle trapping – Bottle Traps will be placed at intervals of 2m around the shoreline of each waterbody at dusk. The following morning the traps will be checked for GCN and removed.
 - Egg searching – Emergent vegetation will be searched for GCN eggs. Once eggs have been confirmed at a waterbody the search should be terminated.
 - Torch survey – Ecologists will search the waterbody for all adult GCN using a torch with a minimum of 1,000,000 candle power.
 - Netting – Surveyors should use pond dipping nets to search the margins of the water body for GCN (adult, juvenile and efts).

141. Appropriate waterbodies should be surveyed using the above methodologies during four separate visits within the recommended survey period (mid-March to mid-June) If GCN are found within a waterbody a further two surveys will be required to determine a population size class assessment.

G.2.3 Other Protected and Notable Species

G.2.3.1 Nesting Birds

142. The tree within the survey site boundary (T8), and those outside of but adjacent to the northern and southern site boundaries, along with the drystone walls, are considered to offer suitable habitat for nesting birds.

143. Recommendations for retaining the tree within the site boundary (T8) have been made in section F.1.2.1 above.

144. Furthermore, it is recommended that the trees outside of but immediately adjacent to the site boundary, and the drystone walls on the perimeter of the survey site, are retained where possible.

145. However, if retention of these trees or the drystone wall is not possible, or if these trees need pruning or the drystone wall needs repairing, it is recommended that these works be conducted outside the main bird nesting period which runs from March to August inclusive. Should works need to be carried out within this period, a suitable method statement for the protection of nesting birds would have to be put in place which should include:

- Pre-works inspections of suitable nesting habitat in and around the work area by a suitably qualified ecologist.
- Netting of any suitable habitat features, once assessed as clear of nesting birds, as appropriate.

146. To maintain and enhance the ecological value of the site and in accordance with the aims of The National Planning Policy Framework, it is suggested that the developer may wish to include suitable habitat features for nesting birds within any future development plans for the site. This could include the incorporation of bird boxes into new buildings, or on newly planted trees across the development, along with the creation of hedgerows and/or dense shrub habitats. Further advice on the incorporation of bird boxes and hedgerow creation is included in Appendix B.

G.2.3.2 Water Voles

147. No evidence of water vole activity was observed on the section of beck to the south of the survey site, and the culverted beck within the survey site does not offer suitable habitat for water voles. Furthermore, no water vole records were returned for the site or from within 1km of the site, with the closest being 1.47km from the site associated with a separate waterbody

148. As a result of these findings no further water vole surveys are required.

149. However, as the beck to the south of the survey site is considered to offer suitable habitat for water voles, it is recommended that the following reasonable avoidance measures are followed during any works on the site:

- All workers should be made aware that water voles are present in the wider area. If at any point water voles are found or suspected to be present, works should be suspended until the advice of Access Ecology Ltd is sought (Tel: 0114 258 7819).
- Any open trenches left overnight should be covered or left with a means of escape for water voles (and other mammals).

150. Proposals for the site are to open up the culverted section of the beck and the creation of a swale. The beck and swale should be enhanced for water voles and other wildlife by planting at least fifteen of the species included in Table 6 below.

151. Further enhancements for water voles to the opened beck could include:

- Regrading the banks of the opened beck to a stepped profile, or with a steeper incline on the upper half of the bank, to facilitate burrowing.

Table 6: Water vole food plants

Grasses	-Rough-stalked meadow-grass <i>Poa Trivialis</i> Cocksfoot <i>Dactylis glomerata</i> Sweet vernal-grass <i>Anthoxanthum odoratum</i> Creeping bent <i>Agrostis stolonifera</i> Marsh foxtail <i>Alopecurus geniculatus</i> Meadow foxtail <i>Alopecurus pratensis</i>
Reeds	Reed canary-grass <i>Phalaris arundinacea</i> Common reed <i>Phragmites australis</i>
Rushes	Soft rush <i>Juncus effusus</i> Hard rush <i>Juncus inflexus</i> Jointed rush <i>Juncus articulatus</i>
Sedges	Bottle sedge <i>Carex rostrata</i> Hairy sedge <i>Carex hirta</i> Common sedge <i>Carex nigra</i>
Water Plants	Common water plantain <i>Alisma plantago-aquatica</i> Water Milfoil <i>Myriophyllum spicatum</i> Bulrush <i>Schoenoplectus lacustris</i> Yellow Flag <i>Iris pseudacorus</i> Water Crowfoots <i>Ranunculus spp</i> Watercress <i>Nasturtium officinale</i>
Wetland/ Edge Plants	Bistort <i>Polygonum amphibium</i> Marsh Marigold <i>Caltha palustris</i> Meadowsweet <i>Filipendula ulmaria</i> Water Avens <i>Geum rivale</i> Marsh Cinquefoil <i>Potentilla palustris</i> Water forget-me-not <i>Myosotis scorpioides</i> Water Mint <i>Mentha aquatica</i> Brooklime <i>Veronica beccabunga</i>

Trees	Trees shade out water vole food plants, so tree planting close to the bankside should be avoided with the exception of willow saplings which provide a winter food source for water voles.
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G.2.3.3 Reptiles

152. The drystone walls are considered to offer suitable hibernacula for reptiles; however there are no other suitable habitat features within the site and in the immediate vicinity and no records of reptiles were returned from within a 2km radius of the site.
153. As a result of these findings it is considered unlikely that reptiles are present within the survey site and no further survey is required.
154. It is recommended that the drystone wall around the perimeter of the site is retained where possible. However, where sections of the drystone wall may need to be removed and/or repaired, the following reasonable avoidance measures should be followed:
- All individuals working on site must be aware of the possibility of the presence of reptiles within the drystone walls on site and how to recognise them.
 - The removal of any parts of the drystone wall should be done by hand.
 - In the unlikely event that reptiles are discovered within the drystone walls, or anywhere on site, during the development, works must cease immediately and the advice of Access Ecology Ltd sought (Tel: 0114 258 7819)

G.3 Survey Validity

155. The relevance of any ecological survey work degrades with time. Therefore, if the development works have not been completed within one year of the publication date of this report (November 2014), further surveys will be required to re-establish the ecological status of the site.

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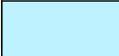
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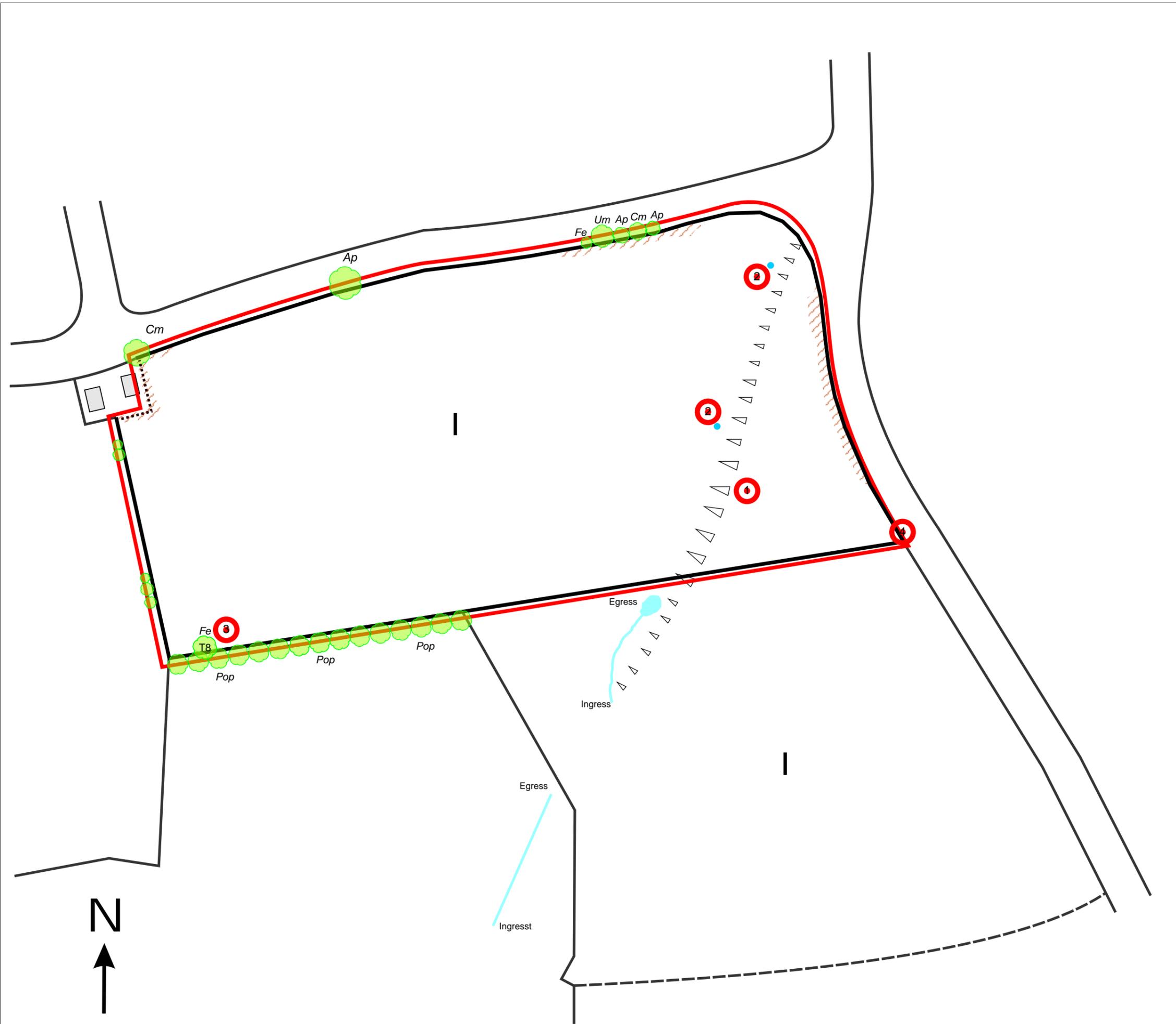
APPENDIX A



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 R1b Riverside Block Sheaf Bank Business Park Sheffield S2 3EN info@accessecology.co.uk	Legend	Project	Land bounded by Shires Lane and Low Lane, Embsay
	 Site location	Title	App. A - 1. Location Plan
		Client	Chatsworth Settlement Trustees
		Date	November 2014
	www.accessecology.co.uk	Ref	[0745]AppA1[SB]loc



Do not scale from plan

Legend	
I	Improved grassland
	Survey Area
	Drystone wall
	Post and rail fence
	Open running water
	Tree
	Slope
	Tall ruderal
Target Note Descriptions	
	West facing slope
	Sinkhole allowing access to brook
	Ash tree <i>Fraxinus excelsior</i> [T8] with high bat roost potential.
	Dry stone wall closest to pond.
R1b Riverside Block Sheaf Bank Business Park Sheffield S2 3EN info@accessecology.co.uk www.accessecology.co.uk	
Project	0745. Land bounded by Shires Lane and Low Lane, Emsay
Title	App A - 2. Phase 1 Habitat Survey Plan
Client	Chatsworth Settlement Trustees
Date	November 2014
Ref	[0745]AppA2[SB]Survey

View west showing improved grassland and with dominant perennial rye-grass and low herb diversity



View south east showing part of embankment



View of site to facing south west



Northern boundary of site



Tree 8 considered to offer high bat roost potential



Tree 8 with high bat roost potential



Beck which emerges at southern boundary of the site.



	<p>R1b Riverside Block Sheaf Bank Business Park Sheffield S2 3EN</p>	Project	0745. Land bounded by Shires Lane and Low Lane, Embsay
		Title	App. A - 3. Site Images
<p>info@accessecology.co.uk</p>	<p>www.accessecology.co.uk</p>	Client	Chatsworth Settlement Trustees
		Date	November 2014
		Ref	[0745]AppA3[SB]img

Appendix A-4. Site Species List

Herbs		
Common Name	Scientific Name	DAFOR
Common chickweed	<i>Stellaria media</i>	A
Creeping buttercup	<i>Ranunculus repens</i>	A
Creeping thistle	<i>Cirsium arvense</i>	F
Dandelion	<i>Taraxacum</i> agg.	F
White clover	<i>Trifolium repens</i>	F
Common nettle	<i>Urtica dioica</i>	O
Broad-leaved dock	<i>Rumex obtusifolius</i>	O
Cow parsley	<i>Anthriscus sylvestris</i>	O
Spear thistle	<i>Cirsium vulgare</i>	O
Greater plantain	<i>Plantago major</i>	O
Wavy Bitter-cress	<i>Cardamine flexuosa</i>	R
Common sorrel	<i>Rumex acetosa</i>	R
Yarrow	<i>Achillea millefolium</i>	R

Grasses and Ferns		
Common Name	Scientific Name	DAFOR
Perennial rye-grass	<i>Lolium perenne</i>	D
Tufted hair-grass	<i>Deschampsia cespitosa</i>	O
Hart's tongue fern	<i>Asplenium scolopendrium</i>	R
Annual meadow-grass	<i>Poa annua</i>	R
Cock's-foot	<i>Dactylis glomerata</i>	R
Crested dog's-tail	<i>Cynosurus cristatus</i>	R
Sheep's fescue	<i>Festuca ovina</i>	R
Rough-stalked meadow-grass	<i>Poa trivialis</i>	R

Trees and Shrubs		
Common Name	Scientific Name	DAFOR
Common ash	<i>Fraxinus excelsior</i>	R

Appendix A- 5 – Ground Based Tree Risk Assessment Results Table

Project Number		0745		Date		13/11/2014		Plan Ref									Sheet No.						
Project Site Name		Shire Lane		GPS Handset Ref		2		Beaufort		3/ 4		Temp (°C)				Cloud Cover %		100		Rain		0	
Ecologists		LM/SB		Survey Constraints																			
Tree ID/ Tag No.	GPS WP	Photo ID	Species	DBH (m)	Height (m)	Crown width (m)	Natural hole	Woodpecker hole	Cracked/ Split limb	Loose bark	Dense ivy	Hollow/ Cavity	Dense epicormic	Bird/Bat box	Signs of bat use?	BCT Category	Aerial required?	Comments					
T8	001	N/A	Common ash <i>Fraxinus excelsior</i>	1	12	12	Y	?	Y	Y	N	Y	N	N	N	HIGH	Y	Bracket Fungi. Cavity approx. 2m high.					

APPENDIX B

Why Plant Wildflowers?

Wildflower planting is a simple and effective way to improve the ecological value of a site.

The plants themselves are important species due to the decline in wildflower meadows over the years but they are also beneficial to a wide variety of small mammal and insect species.

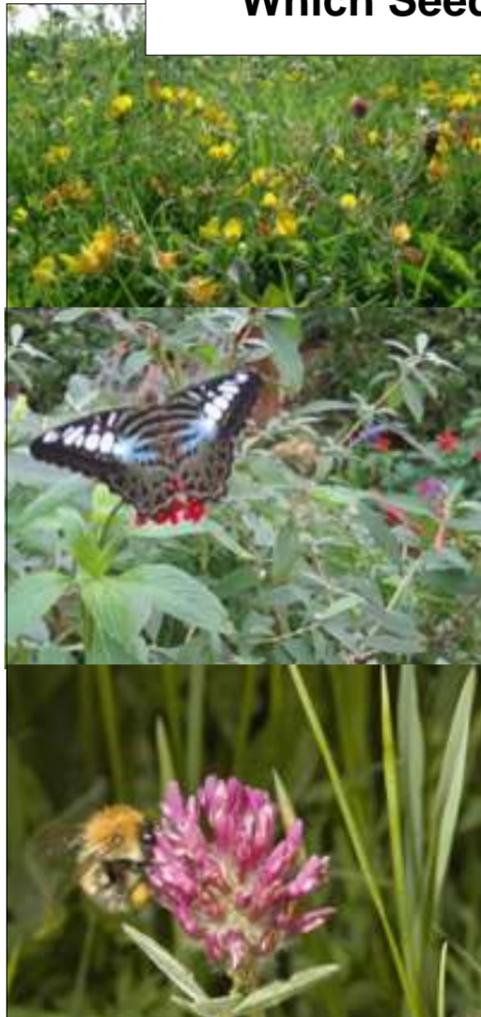
Compared to conventional lawns or planted beds, wildflower lawns and beds lead to more species rich sites and are easier to maintain whilst being more aesthetically pleasing.

Where to plant Wildflowers?

Wildflowers don't have to be planted in large meadows for them to be beneficial to wildlife. A wildflower lawn can be planted as an alternative to a conventional lawn, or where space is limited a small flower bed can be planted or even just planting wildflowers around borders or in pots



Which Seed mix?



Your choice of seed mix is determined by the following factors:

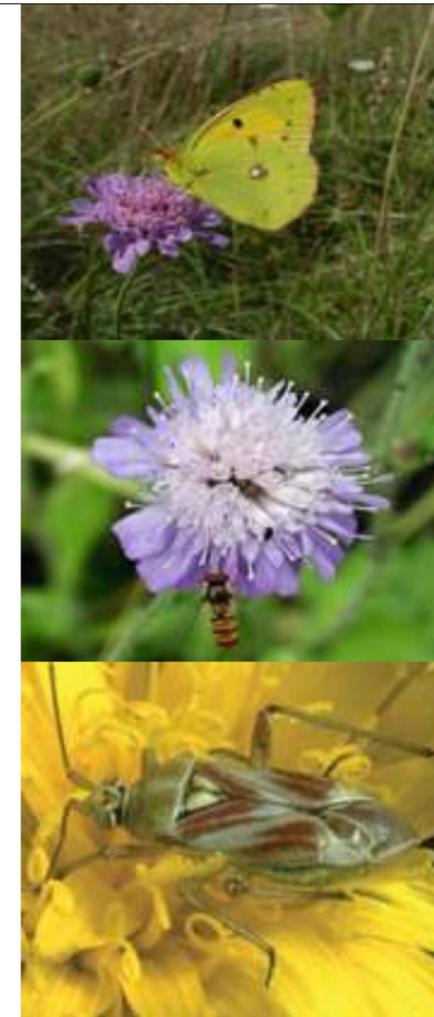
Location, amount of sun or shade received in the area, whether you are planting a lawn or border.

It is essential to choose a native flower mix to ensure it is beneficial to native wildlife.

To prepare the ground, scrape away the top layer of soil and sow a meadow mix which is generally 80% grass and 20% flowers. The grasses protect the soil while the flowers grow through the grass to add colour and attract the animals and insects.

For borders or pots 100% flower mixes are sufficient.

Mixes are also available to specifically target beneficial wildlife such as butterflies and bees.



Further information

Wildflower seed mixes can be purchased from various companies. the following are examples of companies selling wildflower mixes online;

www.meadowmania.co.uk
www.reallywildflowers.co.uk
www.wildflower.org.uk
www.pictoralmeadows.co.uk
www.naturescape.co.uk

Further advice about planting wildflowers can be obtained from the following organisations;

Natural England
<http://naturalengland.etraderstores.com/NaturalEnglandShop/NE32>

Royal Horticultural Society
<http://apps.rhs.org.uk/advicesearch/Profile.aspx?pid=436>

Cheshire Wildlife Trust
http://www.cheshirewildlifetrust.co.uk/documents/advice_wildflowers.pdf

Pictures obtained from
meadowmania.co.uk
reallywildflowers.co.uk and
howtomakeadifference.net
thegrassseedstore.co.uk
wildflowermix.com
rspb.org.uk
meadowmat.com

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Project	0745. Land Bounded by Shires Lane and Low Lane, Emsay
Title	Wildflower Planting Advice
Client	Chatsworth Settlement Trustees
Date	November 2014
Ref	0745/AppB1

Why Plant a Hedgerow?

Hedgerows are a simple and effective way to greatly improve the ecological value of a site.

Hedgerows are important for a huge array of wildlife. Many bird and small mammal species are known to nest within and underneath hedgerows. Hedgerows are also important habitats for many invertebrate species, particularly if the hedgerow is floristically diverse.

Attracting species such as these can notably improve the ecological significance of a site.

Hedgerows are also more aesthetically pleasing than fences. They can provide a screen to unsightly surroundings and a link between urban and rural landscapes.

The hedgerow should contain a minimum of five native species.



How to plant a Hedgerow

Hedging packs are an easy and convenient way to begin your hedgerow. These packs are a selection of hedgerow saplings that can be purchased to fill the length of hedgerow required.

A species rich hedgerow is preferred to achieve the upmost ecological value possible.

Hedging packs can be purchased to target specific requirements. Most suppliers will have a selection of native hedgerow packs, or you can purchase edible hedgerow packs, or packs containing species that are known to attract wildlife, or that grow colourful flowers. Thornless hedge packs are also available.

Once they are planted hedgerows do not require a great deal of maintenance. An annual trim is sufficient to keep it neat and achieve enough growth and fullness.

Avoid using hybrid and ornamental varieties.



Native Hedgerow Species

Hawthorn

Crataegus monogyna

Blackthorn

Prunus spinosa

Field Maple

Acer campestre

Alder

Alnus glutinosa

Dogwood

Cornus Sanguinea

Hazel

Corylus avellana

Spindle

Euonymus europaeus

Alder Buckthorn

Frangula alnus

Wild Privet

Ligustrum vulgare

Crab Apple

Malus sylvestris

Field Rose

Rosa arvensis

Dog Rose

Rosa canina

Sea Buckthorn

Hippophae rhamnoides



Wayfaring tree

Viburnum lantana

Guelder Rose

Viburnum opulus

Beech

Fagus sylvatica

Silver Birch

Betula pendula

White willow

Salix alba

Hornbeam

Carpinus betulus

Bird Cherry

Prunus padus

Mountain Ash

Sorbus aucuparia

Yew

Taxus baccata

Holly

Ilex aquifolium

Elder

Sambucus nigra

Sweet Briar

Rosa rubiginosa

Horse Chestnut

Aesculus hippocastanum

Further information

Information on selecting, planting and pruning hedges can be obtained from;

Natural England
<http://www.naturalengland.org.uk/ourwork/regulation/hedgerows/default.aspx>

Hedgelink
<http://www.hedgelink.org.uk/>

Hedging packs can be purchased from most commercial or industrial garden centres. They can also be purchased from many online stores including;

www.ashridgetrees.co.uk/Hedging-Packs

www.hedgesdirect.co.uk/acatalog/mixed_native_hedging_range.html

www.crown-nursery.co.uk/products/hedging/hedging-packs/

www.botanica.org.uk/HedgingCommon.htm

Pictures obtained from;
<http://www.nhm.ac.uk/nature-online/british-natural-history/british-habitats/hedgerow/index.html>

<http://www.ashridgetrees.co.uk/>

<http://www.hedgelink.org.uk/>

www.hedgesdirect.co.uk

www.best4hedging.co.uk

www.hedgenursery.com

www.meredithnurseries.co.uk

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Project	0745. Land bounded by Shires Lane and Low Lane, Emsay
Title	Hedgerow Creation Advice
Client	Chatsworth Settlement Trustees
Date	November 2014
Ref	0745/AppB2

Crevice-dwelling bats

Crevice-dwelling bats are those species which choose crevices or narrow gaps within which to roost. These species are Pipistrelle's, Brandt's, whiskered, noctule, serotine, Leisler's, Daubenton's, barbastelle and Bechstein's.

To provide artificial roosting space for crevice-dwelling bats boxes can either be incorporated into the building, attached to external walls or attached to trees.

Considerations when choosing a crevice-dwelling bat box:

Materials - Rough (for grip), non-toxic and non-corrosive. We recommend wood-concrete (woodcrete)

Access dimensions - 15-20mm (h) x 20-50mm (w)

Dimensions - any size as long as it includes crevices of 20-30mm

Tree-mounted Boxes

Tree-mounted boxes cannot provide the constant temperature that bats prefer for roost sites. However boxes with a choice of panels at different temperatures can compensate for these fluctuations.

Tree-mounted bat boxes have the advantages of being easy to install and access for cleaning and monitoring.

When installing a bat box on a tree position it at a height of 2-7m, away from artificial lights.



b

c

Externally-mounted boxes

Externally-mounted boxes are easy to install and access. They can be mounted on external or internal walls and should be at a height of at least 3m from the ground facing south-southeast.



a

Boxes incorporated into walls

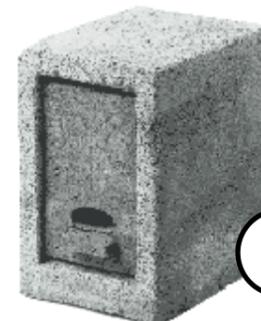
Bat boxes can be incorporated into internal, external or cavity walls and roofs by replacing bricks (d, g, h), facia boards/soffits (f) or roof tiles (e).

Boxes should be installed on the most southerly or westerly aspect, for use as summer maternity roosts, and on northerly aspects, for use during the winter and by males all year round.

The access point should not be illuminated by artificial lights and the box should be positioned at least 2-7m above the ground.



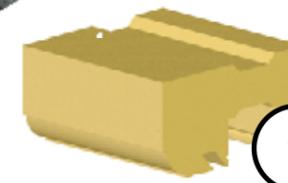
d



g



e



f



h

- a** Improved Treble Crevice bat box
- b** Schwegler 1FF Bat Box
- c** Schwegler Bat Hibernation box 1FW
- d** Schwegler Bat Access panel 1FE
- e** Tudor Roof Tile Co. Bat Access Tile Set
- f** RoofBLOCK Bat Roost
- g** Schwegler Brick Box Type 27
- h** Schwegler Bat Tube 1FE

All pictures have been taken from the websites of The Nest Box Company Schwegler, Tudor Roof Tile Co. and RoofBLOCK.

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Project	0745. Land bounded by Shires Lane and Low Lane, Emsay
Title	Bat Boxes Designs for Buildings and Trees
Client	Chatsworth Settlement Trustees
Date	November 2014
Ref	0745/AppB3

GARDENING FOR BATS



All sixteen species of bats in the UK eat insects, and need a good supply of these from spring through to the autumn. By growing flowers attractive to a range of insects, our gardens can become important feeding stations for bats, birds and other wildlife.

Many plants depend on insects

We grow flowers in our gardens for our own enjoyment. But colour and perfume are really the plants' way of advertising themselves to insects. Sweet nectar and protein-rich pollen are bait to encourage insects to visit. In return, pollen is carried from one flower to another on their bodies so the flowers are fertilised.

Bats need insects

Flying uses a lot of energy, so bats have huge appetites. All our UK bats eat insects. Five species, including the long-eared bat, prefer moths, but most bats rely more heavily on flies as food than any other insect group. Especially important are craneflies, and a range of midge families and their relatives. Pipistrelles, the bats most likely to visit your garden, depend on catching very large numbers of tiny insects, some of which are pests.

Flower shape and insect tongues

Flowers with long narrow petal tubes, such as evening primrose and honeysuckle, are visited by moths and butterflies. Only their long tongues can reach deep down to the hidden nectar. Short-tongued insects include many families of flies and some moths. They can only reach nectar in flowers with short florets. By planting a mixture of flowering plants, vegetables, trees and shrubs, you can encourage a diversity of insects to drop in and refuel.

Follow these general rules

- ? Plant flowers varying not only in colour and fragrance, but also in shape.
- ? Daisies and daisy-like flowers are open with a mass of shallow florets.
- ? Pale flowers are more easily seen in poor light.
- ? Single flowers have more nectar than double varieties
- ? Native wild flowers or those closely related are most useful
- ? Flowers with landing platforms and short florets such as daisy or carrot family attract many insects.
- ? Many flowering vegetables such as beans and courgettes are also good for insects.

Plant trees and shrubs

These are important in providing

- food for insect larvae
- food for adult insects
- shelter for flying insects

- roosting opportunities for bats.

In a small garden, choose trees that can be coppiced – cut down to the ground every few years - to allow new shoots to spring from the base. Young shoots and leaves will support leaf-eating insects, even if they do not produce flowers. Hawthorn and elder are useful small trees.

Create a wet area

A pond, a marshy area, even a half-tub made into a mini-pond can attract insects. Many of the tiny flies favoured by bats start life in water as aquatic larvae.

Say NO to insecticides

Chemical pesticides kill natural predators and so may do more harm than good. They reduce bats' insect prey, and surviving insects carry traces of poison.

Encourage natural predators

Hoverflies, wasps, ladybirds, lacewings, ground beetles and centipedes are the gardener's friends. As natural predators they help keep the balance, eating many pests.

- ? Allow some weeds to grow to provide ground cover for natural predators
- ? Grow favourites of hoverflies and other predators close to the flowers and vegetables that tend to become infested.
- ? Leave hollow-stemmed plants to overwinter as shelter for ladybirds.
- ? Leave heaps of dead leaves and brushwood undisturbed for hedgehogs.
- ? Most garden birds are effective predators. Provide them with regular food and water.

Prevent a CATastrophe

Many bats and other small mammals fall prey to Britain's most dangerous four-legged predator, the domestic cat. Cats do not need to stay out all night. Bring your cat in an hour before sunset so bats can emerge undisturbed.

(Send for our special leaflet on cats and bats.)

The Bat Conservation Trust, 15 Cloisters House
8 Battersea Park Road, London SW8 4BG
Tel 0845 1300 228 Fax 020 7627 2628

enquiries@bats.org.uk www.bats.org.uk

Registered Charity no 1012361 Company limited by guarantee, registered in England no 271282

August 2004

Gardening for bats

Aim at having flowers in bloom through the year, including both annuals and herbaceous perennials.

Below are some suggestions, but this is by no means an exhaustive list. See what grows well in YOUR garden, and what seems most attractive to insects.

Flowering times are approximate, varying in different areas. Regular dead-heading extends flowering period in many flowers. A=annual, HA=hardy annual, HHA=half-hardy annual, P=perennial, W=wild flower,

Flowers for borders			
St John's Wort	<i>Hypericum</i>	P	March-
marigolds	<i>Calendula</i>	H/A	March – Oct.
aubretia	<i>a. deltoidea</i>	P	March-June
honesty	<i>Lunaria rediva</i>	HB	March
forget-me-not	<i>Myosotis sp.</i>	A/P	March - May
elephant ears	<i>Bergenia</i>	P	April
Wallflowers	<i>Erysimum</i>	B	April - June
Cranesbills	<i>Geranium sp</i>	P	May – Sept.
Yarrow	<i>Achillea</i>	P	May -
Poppies	<i>Papaver sp.</i>	A	May - July
Dames violet	<i>Hesperis matronalis</i>	P	May - August
Red Valerian	<i>Centranthus ruber</i>	P	May – Sept.
Poached egg plant	<i>Limnanthes</i>	HA	June – Aug.
Knapweed	<i>Centaurea nigra</i>	P	June- Sept.
Phacelia		HA	June – Sept.
Ox-eye daisy	<i>Leucanthemum vulgare</i>	P	June – Aug.
Evening primrose	<i>Oenothera biennis</i>	B	June-Sept.
Candytuft	<i>Iberis umbellata</i>	HA	June – Sept.
Sweet William	<i>Dianthus barbatus</i>	B	June - July
Blanket flowers	<i>Gaillardia</i>	P	June -
Verbena	<i>V.bonariensis</i>	HHA	June – Oct.
Scabious	<i>knautia arvensis</i>	P	July-Aug.
Night-scented stock	<i>mattiola bicornia</i>	HA	July-Aug
Pincushion flower	<i>Scabious sp.</i>	A/P	July – Sept.
Cherry pie	<i>heliotrope</i>	HHA	July – Oct.
Mexican aster	<i>Cosmos sp.</i>	A/P	July – Oct.
Cone flower	<i>Rudbeckia sp.</i>	A/P	August-Nov.
Mallow	<i>lavatera sp.</i>	P	August-Oct.
Michaelmas daisy	<i>Aster sp.</i>	P	August-Sept.
Ice plant 'Pink lady'	<i>Sedum spectabile</i>	P	Sept.
Herbs – both leaves and flowers are fragrant			
Fennel	<i>Foeniculum vulgare</i>		July – Sept.
Bergamot	<i>Monarda didyma</i>		June - Sept
Sweet Cicely	<i>Myrrhis odorata</i>		April - June
Hyssop	<i>Hyssopus officianlis</i>		July - Sept
Feverfew	<i>Tanacetum parthenium</i>		June – Sept.
Borage	<i>Borago officinalis</i>		May – Sept.

Rosemary	<i>Rosemary officinalis</i>	March - May	
Lemon balm	<i>Melissa officinalis</i>		
Coriander	<i>Coprianrum sativum</i>	June - August	
Lavenders	<i>Lavendula sp.</i>		
Marjoram	<i>Origanum sp</i>		
Trees, shrubs and climbers important to insects			
Oak	<i>Quercus sp.</i>	large gardens only	
Silver birch	<i>Betula pendula</i>		
Common alder	<i>Alnus glutinosa</i>	Suitable for coppicing	
Hazel	<i>Corylus avellana</i>	Suitable for coppicing	
Elder	<i>Sambucus nigra</i>	Small	
Pussy willow	<i>Salix caprea</i>	Suitable for coppicing	
Hawthorn	<i>Crataegus monogyna</i>	Suitable for coppicing	
Honeysuckle	<i>Lonicera sp.</i>	grow a variety for succession.	
Dog rose	<i>Rosa canina</i>	Climber	
Bramble	<i>Rubus fruticosus</i>	Climber	
Ivy	<i>hedera helix</i>	Climber	
Buddleia	<i>Buddleia davidii</i>	shrub	
Guelder rose	<i>Vibernum opulus</i>	shrub	
Gorse	<i>Ulex sp.</i>	shrub	
Plants for pond edges and marshy areas			
Purple loosestrife	<i>Lythrum salicaria</i>	W	June – Aug.
Meadow sweet	<i>Filipendula ulmaria</i>	W	June – Sept.
Lady's smock	<i>Cardamine pratensis</i>	W	April - June
Water mint	<i>mentha aquatica</i>	W	July – Sept.
Angelica	<i>Angeliica sylvestris</i>	W	July – Sept
Hemp agrimony	<i>Eupatorium cannabinum</i>	W	July – Sept.
Marsh marigold	<i>Caltha palustris</i>	W	March – May
Creeping Jenny	<i>Lysimachia nummularia</i>	W	May - August
Fringed water lily	<i>Nymphoides peltata</i>	W	June – Sept.
Water forget-me-not	<i>Myosotis scorpioides</i>	W	June – Sept.

Allow part of your lawn to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilizers.

Compost heaps are good producers of insects too.

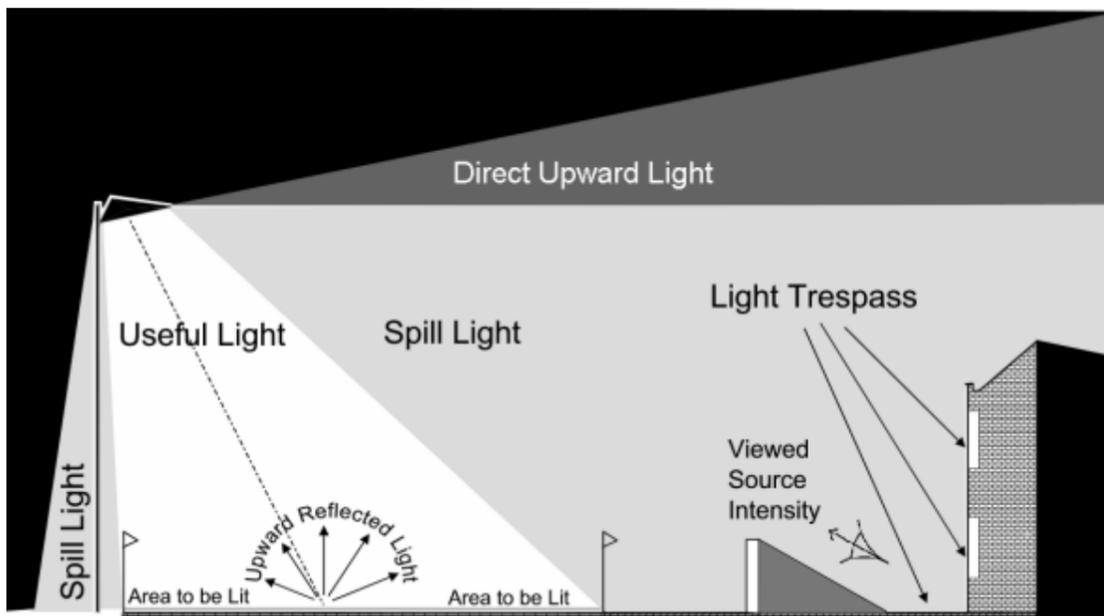
Add a seat to watch your garden come to life!

Lighting and Bats

Artificial lighting can often have an adverse affect on nocturnal species, especially bats. If it is necessary to illuminate a building known to be used by roosting bats considerations should be made of the quantity, location and type of lighting used.

How can lights endanger bats?

- Light falling on a bat roost access point delays bats from emerging and significantly reduces the amount of time they spend foraging.
- At worst bats may abandon an illuminated roost which would result in a breach of national and European legislation.
- Some bat species, including Britains rarest, avoid the same bright lights that their insect prey are attracted to. Resulting in bat foraging habitat becoming devoid of insect prey.
- Important foraging habitats such as river corridors and hedgerows are not used by bats if they are illuminated. Illuminated roads can act as barriers to bat flight paths, disrupting foraging.



1.

Initial Considerations

- Only use lighting when it is necessary.
- Do not illuminate a known bat roost access point.
- Light intensity should be as low as guidelines permit.

2.

What type of light to choose

- Close offset lighting reduces light pollution, is more specific so can avoid bat sensitive areas and can better highlight a buildings features.
- Choose low pressure sodium lights.
- If using a mercury light fit a UV filter.
- Choose a light with a luminaire designed to reduce light spill.

3.

How to reduce light spill

- Hoods, cowls, louvres and shields can be fitted to lights to direct light to the intended area only.
- Plant a natural barrier of trees or shrubs to protect against light spill.

4.

Final Considerations

- Use timers to reduce the hours lit.
- Tailor lighting timetables to wildlife ecology.
- LED lighting responds to need by detecting the presence of pedestrians, reducing lighting hours.

The Bat Conservation Trust
www.bat.org.uk

The Institution of Lighting Engineers (ILE)
www.ile.org.uk

The Bats and Lighting Research project
www.batsandlighting.co.uk/index.html

All pictures have been taken from the
Institution of Lighting Engineers Guidance
Notes on the Reduction of Obtrusive Light.

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Project	0745. Land bounded by Shires Lane and Low Lane, Embsay
Title	Lighting Options
Client	Chatsworth Settlement Trustees
Date	November 2014
Ref	0745/AppB5

Standard nest boxes

Considerations when choosing a standard nest box;

Design - A box with a small circular hole cut out of the front.

Material - Wood or Woodcrete

Dimensions - The exact dimensions vary across brands and designs but should be a minimum of 200mm (h), 150mm (w), 150mm (d)

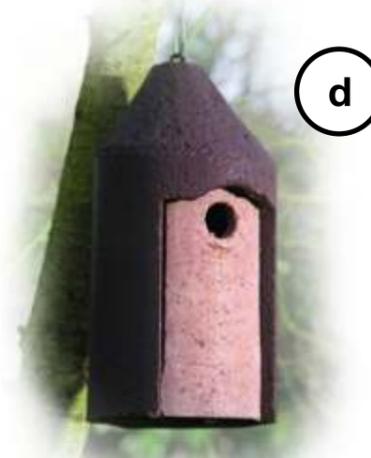
Access Dimensions - Different birds require different access dimensions;
25mm - Blue tits, Marsh tits, Coal tits, 28mm - Great tit, Pied flycatcher, 32mm - Tree sparrows, Nuthatch
Most nest boxes will offer a variety of access hole options to suit different bird species.

Considerations when installing a standard nest box;

Height - 2 - 4m

Aspect - Face between north and east to avoid strong sunlight and wet winds. Tilt the box forward slightly to prevent rain from entering the nest box.

Attaching to tree - Try not to nail the boxes into trees, use wire or a strong twine to tie it in place and re tie it every two years to allow for trunk growth. Alternatively, nest boxes with hooks can be hung from branches.



Open fronted nest boxes

Considerations when choosing an open fronted nest box;

Design - Like the standard box except most of the front is missing to attract Robins, Pied Wagtails, Blackbirds and Redstarts.

Material - Wood or woodcrete.

Dimensions - The exact dimensions vary across brands and designs but should be a minimum of 200mm (h), 130mm (w), 150mm (d).

Considerations when installing an open fronted nest box;

Where - 1.5m - 4m well hidden in vegetation but with a clear view to the surrounding habitat. Ideal in hedgerows.

Attaching to tree - Try not to nail the boxes into trees, use wire or a strong twine to tie it in place and re tie it every two years to allow for trunk growth. Alternatively, nest boxes with hooks can be hung from branches.



Larger Birds

Considerations when choosing a nest box for larger birds;

Design - Larger versions of standard nest boxes will be used by larger bird species such as Stock Dove, Tawny Owl, Jackdaw, Little Owl and Starling.

Material - Wood or Woodcrete.

Dimensions - The exact dimensions vary across brands and designs but should be a minimum of 500mm (h), 200mm (w), 190mm (w).

Access Dimensions - A minimum of 80mm by 90mm

Considerations when installing a nest box for larger birds;

Where - 3 - 5m on isolated trees adjacent to woodland with good visibility from the box and a clear flight path from it.

Attaching to tree - Try not to nail the boxes into trees, use wire or a strong twine to tie it in place and re tie it every two years to allow for trunk growth. Alternatively, nest boxes with hooks can be hung from branches.



- a** Avianex
- b** The Nest Box Co. Apex bird box
- c** Schwegler 1N Deep Nest Box
- d** Schwegler 2M Nest Box
- e** Schwegler 2H Open Fronted Bird Box
- f** The Nest Box Co. Robin Nest Box
- g** Schwegler No 5 Owl Box
- h** The nest Box Co. Starling Nest Box

All pictures have been taken from the websites of Schwegler, The Nest Box Company and Living with Birds.

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Title	Bird boxes for trees
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Swallows

Considerations when choosing a swallow nest box:

Design - Either a nest platform/ledge or a ready-made bowl shaped nest
Example A

Material - Wood-concrete

Dimensions - Platform must be 260mm (w) x 100mm (d)

Access dimensions - Minimum 50 mm (h) 70 mm (w)

Considerations when installing a swallow nest box:

Where - Inside a cold roof space with permanent access, preferably in outbuildings or under deep eaves.

Height - At least 5m

How many - Nests should be placed at intervals of at least 1m

Other - Dropping will occur below the nest so provide a ledge below to catch them.



Swifts

Considerations when choosing a swift nest box:

Material - Wood-concrete or brick

Design - Preferably integral to the building example C and D. Can be integrated with a bat box example B.

Dimensions - 400mm (w) x 200mm (d) x 150 mm (h) or slightly smaller

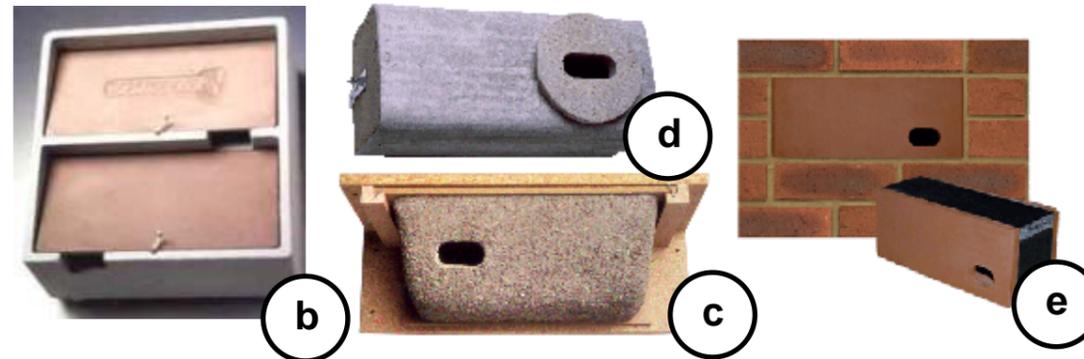
Access dimensions - 30mm (h) x 65 mm (w) oval or rectangle

Considerations when installing a swift nest box:

Where - Anywhere away from direct sunlight and disturbance, preferably under the eaves

Height - At least 5m

How many - Swifts are colonial nesters so ideally 1-4 on a house or 10-20 on a larger building



House Sparrows

Considerations when choosing a house sparrow nest box:

Design - Either singly, which can be used by many small bird species example G, or in a terrace example F.

Material - Wood-concrete

Dimensions - 150mm (w) x 150mm (d) x 350 mm (h)

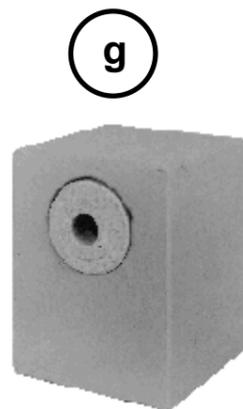
Access dimensions - A 32 mm round hole

Considerations when installing a house sparrow nest box:

Where - Ideally within the structure at eaves level, example H, otherwise externally at the same location

Height - At least 3 m

How many - House sparrows nest in large colonies so fix 10-20 boxes together, 20-30 cm apart.



House Martins

Considerations when choosing a house martin nest box:

Design - Bowl shaped nest attached to a board in groups. Examples I and J.

Material - Air-permeable wood-concrete with a 75% wood content

Dimensions - 180mm in diameter

Access dimensions - A semi-circular hole 25mm (h) x 60-65mm (w)

Considerations when installing a house martin nest box:

Where - Externally under overhanging eaves on north and east facing walls

Height - At least 5m

How many - Fix nests in groups to increase the likelihood of use

Other - Dropping will occur below the nest so provide a ledge below to catch them.



- a** Schwegler Swallow Nest No. 11
- b** Schwegler Swift & Bat Box 1MF
- c** Schwegler Swift Box No. 18
- d** Schwegler Swift Box Type 25
- e** Istock swift box
- f** Schwegler Sparrow Terrace 1SP
- g** Schwegler Brick Box Type 24
- h** Boxes under eaves
- I** Schwegler House Martin Nest No. 9A
- J** Schwegler House Martin Facade No. 11

All pictures have been taken from the websites of Schwegler, Istock, Habitat Aid and Wild About Britain.

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