Brooks Ecological
Grounded advice

Ecological Appraisal
Land off West Street, Worsbrough

Report reference: R-1927-01
August 2014

Report Title:	Ecological Appraisal Land off West Street, Worsbrough,
Report Reference:	R-1927-01
Written by	Daniel Ross BSc (Hons) GradCIEEM Graduate Ecologist
Technical review:	Tim Outlaw BSc(Hons) MCIEEM Principal Ecologist
QA review:	Christopher Shaw BSc(Hons) ACIEEM Ecologist
Approved for issue	Tim Outlaw BSc(Hons) MCIEEM Principal Ecologist
Date	15.08.14

Unit A, 1 Station Road, Guiseley, Leeds, LS20 8BX
Phone: **01943 884451**
01943 879129
Email:admin@brooks-ecological.co.uk
www.brooks-ecological.co.uk
Registered in England Number 5351418

Summary Statement

The majority of the site comprises hard-standing of low ecological value and its loss will have a negligible impact on the biodiversity of the area.

The presence of a nearby water body, in conjunction with great crested newt (GCN) records in the area, prompted eDNA testing to assess the presence or absence of GCN. These returned a negative result, and therefore development of this site is unlikely to impact on this protected species.

A single building on site is assessed as having limited bat roosting potential. Emergence survey of this structure indicates the likely absence of roosting bats. Demolition of the property can proceed with little risk of impacting on roosting bats following standard precautions.

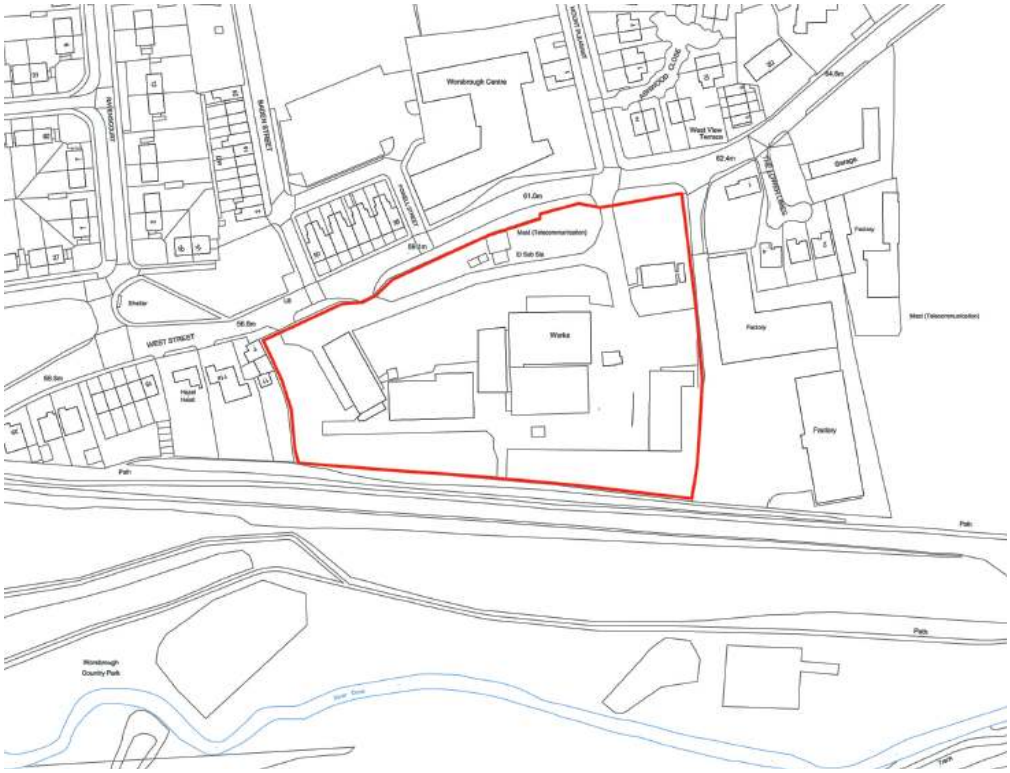
General recommendations are made in relation to avoiding impacts on wildlife and enhancing the developed site.

Introduction

1. Brooks Ecological Ltd was commissioned by JRP Associates to carry out an Ecological Appraisal of land off West Street, Worsbrough, Barnsley, South Yorkshire S70 5PF (SE 358 036).

2. The application site 'the site' comprises a parcel of brownfield, occupied predominantly by hard-standing, situated on the fringes of the suburb of Barnsley.

Figure 1 Site boundary - (Red Line)



Proposals

3. The proposals for the site inform an outline planning application for up to 70 residential dwellings (see figure 2 below).

Figure 2 – site proposals



Site context

4. Aerial photographs published on commonly used websites were studied to place the site in its wider context and to look for ecological features that would not be evident on the ground during the walkover survey. This approach can be very useful in determining if a site is potentially a key part of a wider wildlife corridor or an important node of habitat in an otherwise ecologically poor landscape. It can also identify potentially important faunal habitat (in particular ponds) which could have a bearing on the ecology of the application site. Ponds may sometimes not be apparent on aerial photographs so we also refer to close detailed maps that identify all ponds issues and drains. We use Promap Street + scale maps for this purpose.

5. The site occupies a plot, predominantly occupied by hard-standing, at the southern fringe of Worsbrough; a largely residential area c.3km to the south of Barnsley. To the north of the site is a mosaic of residential development, and amenity space. Along

the southern border of the site a dismantled railway line runs east to west which now forms part of the Transpennine Trail. The wider area consists of farmland for the most part, interspersed with pockets of woodland, towns and villages.

Wildlife corridors

6. The most prominent wildlife corridor feature connecting the site to the wider area is the dismantled railway (The Transpennine Trail) which runs along the southern boundary of the site. Beyond this the reclaimed Worsbrough Country Park borders the south of the site, within which is located Worsbrough Reservoir, Worsbrough Basin and other smaller water bodies. To the east the dismantled railway provides connectivity to large areas of woodland, such as Dovecliffe and Wombwell wood, and further still provides a degree of connectivity to Old Moor, and Wombwell nature reserves c.6.5km to the east.

7. The River Dove more or less mirrors the path of the dismantled railway originating from Worsbrough Reservoir c.850m to the west of the site, flowing c.80m to the south and providing continuing connectivity through areas of woodland to the east.

Figure 3 Local Habitat / connectivity features. Potential wildlife corridors are shown by dashed lines.



Water bodies

8. There are two water bodies within 500m of the site, these are:

- Worsbrough Basin - A Canal dead end c.170m to the west of the site within Worsbrough Country Park.
- A pond c.200m to the south of the site over the River Dove.

9. At the time of survey, there was heavy rain and an area at the south eastern corner of the site had standing water to a depth of c.15cm. Vegetation in this area was typical of elsewhere on the site, and harboured no species which would be considered indicative of a permanent, or even an ephemeral water body.

Statutory Designations

10. A search of the MAGIC website was undertaken. The MAGIC site is a Geographical Information System that contains all statutory (e.g. Sites of Special Scientific Interest [SSSI's]) as well as many non-statutory listed habitats (e.g. ancient woodlands and grassland inventory sites). It is a valuable tool when considering the relationship of a potential development site with nearby important habitats. In addition information from the local record holders (Sheffield Biological Record Centre) has been requested on locally designated sites

11. There is one statutory designated site within 2km of the application site; this is Worsbrough Country Park Local Nature Reserve (LNR), an area of willow carr, managed grassland/meadow, reedbed and woodland adjoining the southern boundary of the site.

12. Although the site shares a boundary with this LNR, it has no similar habitat types, and the development would most likely have a negligible effect on this designated site. The development represents an opportunity to further enhance the LNR provided care is taken during the construction process and the recommendations made within this report are implemented.

Non-Statutory Designations

13. There are five Barnsley Natural Heritage Sites within 2km of the application site, these are as follows –

- Barrow Colliery Site is a candidate site located c.160m to the south.
- Worsbrough Reservoir located c.650m to the west of the site.
- Kendal Green Scrub is a candidate site located c.1.5km to the west.

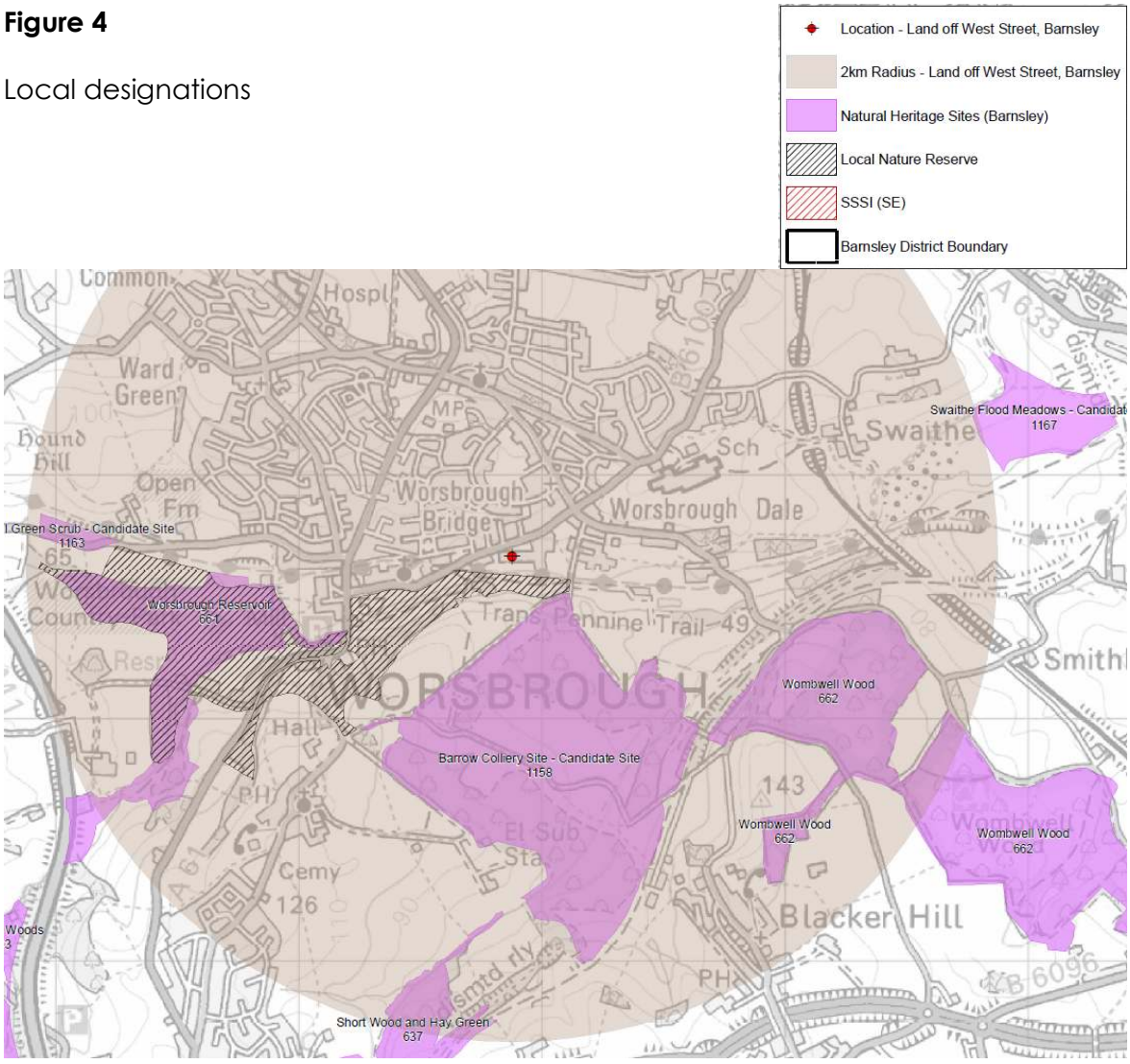
- Short Hay Wood & Hay Green is located c.1.3km to the south.
- Wombwell Wood is located c.1km to the east.

14. The site itself has only a small area of habitat of low ecological value, and shares no links or shared habitat with the above sites. Impacts on these designations would not be expected.

15. Locations of the above non-statutory designations in relation to the site are presented in figure 4 below.

Figure 4

Local designations



Method

16. The survey was carried out on 6th of July 2014 and followed Phase 1 habitat survey methodology (JNCC, 1993). This involves walking the site, mapping and describing different habitats (for example: woodland, grassland, scrub). The survey method was "Extended" in that evidence of fauna and faunal habitat was also recorded (for example droppings, tracks or specialist habitat such as ponds for breeding amphibians). This modified approach to the Phase 1 survey is in accordance with the approach recommended by the Guidelines for Baseline Ecological Assessment (IEA, 1995) and Guidelines for Preliminary Ecological Appraisal (CIEEM 2012).

Results

17. The following habitats, arranged in order of area can be described within the application site and on its boundaries.

- Hard-standing & built structure
- Secondary colonising vegetation/short ephemeral grassland
- Border vegetation & Trees

Hard standing



Figure 5

General view of the site.

18. A large proportion of the site comprises hard-standing concrete and built structures. A common assemblage of ruderal vegetation has colonised here with species such as butterfly bush (*Buddleia davidii*), dandelion (*Taraxacum officinale*), willowherb

(*Epilobium sp.*), nettle (*Urtica dioica*), groundsel (*Senecio vulgaris*), spear thistle (*Cirsium vulgare*) and cocksfoot (*Dactylis glomerata*) penetrating the concrete and colonising rubble piles.

Secondary colonising vegetation/short ephemeral vegetation

19. Some areas of the site consisted of colonising rough neutral grassland, which comprises of species such as false oat (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*) Yorkshire fog (*Holcus lanatus*), fescues (*Festuca sp.)* and annual meadow grass (*Poa annua*). Forb include dandelion (*Taraxacum officinale*), daisy (*Bellis perennis*), common vetch (*Vicia sativa*), creeping buttercup (*Ranunculus repens*), red-clover (*Trifolium pratense*), birds-foot trefoil (*Lotus corniculatus*) and swathes of oxeye daisy (Leucanthemum vulgare). Competitive herbs such as willowherb (*Epilobium sp.*) and nettle (*Urtica dioica*) are present in low densities at areas of the site to the north, and in patches at the west, and south east of the site they have begun to dominate.



Figure 6

Example of ephemeral vegetation on northern border of the site.

20. An area at the western boundary has become more overgrown and a variety of garden species have infiltrated from residential properties bordering the site, such as honeysuckle (*Lonicera sp.*). This area is subject to less management and with denser vegetation and patches thick with bramble (*Rubus fruticosa*), nettle (*Urtica dioica*), and willowherb (*Epilobium sp.*), along with young elder (*Sambucus nigra*), sycamore (*Acer pseudoplatanus*) and dogwood (*Cornus sanguinea*). Japanese knotweed (*Fallopia japonica*) is also present in this area.



Figure 7

Western boundary of site.

Border vegetation & trees

21. The northern and western boundaries of the site are managed to varying degrees, with vegetation graduating from common grass species such as false oat (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*) and Yorkshire fog (*Holcus lanatus*) and associated common forbs such as dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*), daisy (*Bellis perrenis*, and creeping cinquefoil (*Potentilla reptans*). This graduates to thick bramble (*Rubus fruticosa*), *buddleia*, and dog rose (*Rosa canina)* and competitive herbs such as nettle (*Urtica dioica*), and willowherb (*Epilobium sp.*).

22. Around the boundaries of the site are found a mixture of young, self set, and more mature trees with species including birch (Betula sp.), sycamore, elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), elder (*Sambucus nigra*) and lombardy poplar (*Populus nigra* 'Italica').



Figure 8

Larger lombardy poplar on eastern boundary of the site.

Faunal appraisal

23. This section first looks at the types of habitat found on site or within the sphere of influence of potential development, then considers whether these could support protected , UKBAP or Local BAP (LBAP) priority species (referred to collectively as 'notable species'). A full list of LBAP priority species are provided as appendix 2.

24. Records of notable species are supplied from a 2km search area by Barnsley Biological Records Centre and are used to inform this appraisal.

Bats

25. The site's potential to support roosting bats is assessed later in this report (see section 2).

26. The site itself represents only a small area of relatively low value foraging habitat and is unlikely to be of any significant value to commuting bats. The southern boundary of the site however does adjoin the Trans-pennine way, which will, alongside the nearby River Dove, likely provide a foraging and commuting corridor for bats. Recommendations are made in relation to enhancing this corridor in the evaluation section of the report.

Amphibians

27. The site presents very poor terrestrial habitat for amphibians, although there is some limited potential for them to use the rough vegetation at the boundaries of the site.

28. Two potential breeding ponds are present on mapping within a 500m radius of the site.

Figure 9 – Ponds within 500m of the site. The River Dove is shown by a dashed line



29. One of these ponds, located c.200m to the south, is separated from the site itself by the River Dove. This flowing water body will provide a significant barrier to the movement of amphibians from this pond to the site, they would be much more likely to use the adjacent and accessible Country Park. Any populations of amphibians that this pond potentially supports would not be affected by the site's development.

30. The second water body is the Worsbrough basin, a canal dead arm which is located within Worsbrough Country Park. At its closest point this feature is c.170m to the west of the site and physically connected by the Trans-pennine way. Records exist of

great crested newt (GCN) associated with the area around Worsbrough Reservoir c.1km to the west of the site, and c.380m to the west of Worsbrough Basin at its closest point. If GCN were breeding in Worsborough Basin it is possible that they could access the site in small numbers during the terrestrial part of their lifecycle.

31. This pond was visited during the survey to assess its suitability for supporting breeding amphibians. The information collected was then used to carry out a Habitat Suitability Index (HSI) assessment. This is based on an index produced by Oldham et al (2000) and is now recognised by Natural England as a useful tool in evaluating the potential of ponds to support great crested newt (GCN) and therefore the likelihood of offences in relation to this species.

32. HSI scores range from 0.1 - 1.0 with 1.0 representing an ideal breeding pond for GCN (see Table 1 below).

Table 1 Categorisation of HSI score

HSI		Pond suitability
< 0.5	=	poor
0.5 - 0.59	=	below average
0.6 - 0.69	=	average
0.7 - 0.79	=	good
> 0.8	=	excellent

S1 Location	S2 Pond area	S3 Drying	S4 Water Quality	S5 Shade	S6 Waterfowl	S7 Fish	S8 Pond count	S9 Terrestrial	S10 Macrophytes
1	0.8	0.9	1	1	0.67	0.1	1	1	0.3

HSI Score	**0.52**

33. A score of 0.52 indicates that the pond represents below average great crested newt breeding habitat.

34. In order to confirm the presence/likely absence of GCN in Worsbrough Basin, eDNA testing was carried out following standard protocol now accepted by Natural England. This Method detects pond occupancy by great crested newts (GCN) using traces of DNA shed into the pond environment (eDNA)

35. This returned a negative result, meaning GCN DNA was not detected within this water body.



Figure 10

A section of Worsbrough Basin

Birds

36. All significant vegetation, i.e. trees, shrubs, scrub and hedgerows, found on site has the potential to support limited numbers of common garden birds during the nesting season.

BAP species

37. A small patch of Bird's-foot trefoil was found on the northern border of the site. The dingy skipper butterfly (listed as both a UK, and Local BAP species) utilises common birds-foot trefoil as a primary food plant for larvae. Considering the very small amount of birds-foot trefoil on site, it is not thought that the site will support any population of the dingy skipper.

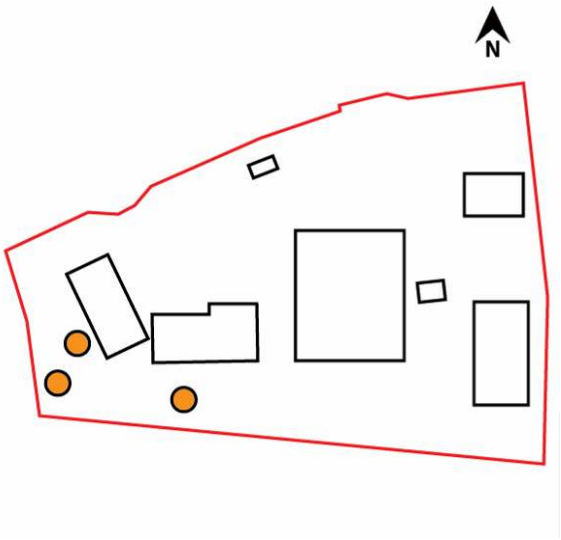
Invasive species

38. The survey identified three small stands of Japanese knotweed which are marked on figure 11 below.

39. It is an offence under section 14(2) of the Act 1981 to "plant or otherwise cause to grow in the wild" any plant listed in Schedule 9, Part II to the Act. This schedule includes Japanese knotweed.

40. Recommendations regarding the removal of this species are detailed in the evaluation.

Figure 11 – location of Japanese knotweed on site (orange dots)



Part 2 : Bat Roost Potential Survey

41. A bat roost potential survey is required as all of the existing buildings will be demolished to facilitate development.

Box 1 *Legal background*

Bats are afforded full protection under The Wildlife and Countryside Act (1981) plus amendments, and the Conservation of Habitats and Species Regulations 2010. Under these Acts it is an offence among others, to recklessly kill, injure or disturb bats. It is also an offence to destroy or obstruct a roost even if bats are not in occupancy at the time of the action.

There are no defences against contravention of the Conservation of Habitats and Species Regulations 2010 which means that it is important for detailed and well designed bat surveys to be carried out, prior to carrying out activities that may impact upon bat roosts such as demolition of buildings or removal of trees.

Where bats are found within a potential development site, a license from Natural England may need to be secured if works that could otherwise contravene legislation are to be carried out. These licences are only issued where Natural England is satisfied that works are unavoidable and would not have a negative impact on the favourable conservation status of bats. A Natural England license requires that the potential development site has full planning permission and that bats were a material consideration of the planning permission.

Box 2 *Bat roosts*

Bats roost in buildings and trees in different locations depending upon time of year and environmental factors such as position of the sun, proximity to heat sources and feeding grounds. The following types are commonly referred to:

Transitional roosts:

Bats frequently gather early in the season (March to April) before dispersing to summer roosts. Bats can be found in high numbers in these roosts for a very short period. Transitional roosts can also be found shortly before hibernation in August to October when bats (depending upon species) can gather in roosts not used earlier in the season.

Maternity roosts:

These are among the most important roosts and are normally occupied from May to August. Depending on the species involved, some maternity roosts can contain a very significant proportion of the local population.

Summer (non-breeding) roosts

Small groups of non-breeding female and male bats can gather in these roosts or bats from a local population may choose to roost individually. There are normally a large number of suitable locations for summer non-breeding roosts and these may be routinely used or used only on an occasional basis. Irregularly used summer roosts can be very hard to find without unreasonable survey effort.

Mating roosts

Around September bats will gather in roost to mate; these are often in different locations than summer or breeding roosts.

Hibernation roosts

As bats in hibernation roosts are highly vulnerable to disturbance and bats can be present in large numbers these are considered to be among the most important bat roosts. Many species of bats roost in large and nationally important hibernation roosts associated with underground sites, many of which are well known and protected. However, the most common bat in the UK (the common pipistrelle) is largely unaccounted for in winter but thought to disperse and roost individually or in small groups in thermally stable cracks and crevices in thick walls or trees.

Local Status

42. The application site is within the natural range of species of bats listed in Table 2.

Table 2: Bat species recorded within 100km of the application site

Species	National status
Pipistrelles (*Pipistrellus pipistrellus* and *P. pygmaeus*)	widespread/common
Nathusius' Pipistrelle (*Pipistrellus nathusii*)	Widespread/rare
Noctule (*Nyctalus noctula*)	widespread/frequent
Leisler's (*Nyctalus leisleri*)	widespread/rare
Brown long-eared (*Plecotus auritus*)	widespread/common
Natterer's (*Myotis nattereri*)	widespread/frequent
Daubenton's (*Myotis daubentonii*)	widespread/common
Whiskered/Brandt's (*Myotis mystacinus* and *M. brandtii*)	widespread/scarce
Alcathoe's (*Myotis alcathoe*)	Local/unknown

Method

43. A thorough daytime inspection of the site was made in July 2014 in order to look for evidence of bats and assess bat roosting potential. Evidence of bats may take the form of droppings, feeding remains, live bats, dead bats, stains on masonry or timber from the oils in bats' fur and claw marks made by bats regularly roosting in the same location.

44. Bat roosting potential of the building was classified according to the following criteria set out in Table 3, developed with reference to the Bat Mitigation Guidelines (2004), Bat Workers Manual (2004) and the Bat Conservation Trust Good Practice Guidelines (2012).

Table 3 Bat roosting potential in buildings

Roosting potential	Criteria
Good	Buildings that have many areas suitable for roosting with a large number of potential access points. These are normally in sheltered locations, subject to low variation in temperature. Buildings with good potential could be used for a whole range of roosts including maternity roosts.
Moderate	Buildings with a smaller number of areas suitable for roosting, but still supporting features that could be attractive to bats and potentially support maternity roosts.
Limited	Buildings with limited roosting opportunities. These may be in locations that are subject to wide temperature fluctuations and drafts. They could be used as occasional or transient roosts, but are unsuitable for maternity roosts. Buildings that would otherwise be moderate to good potential but have reduced value due to other factors such as exposed location, separation from nearby foraging, or presence of strong lighting.
Very Limited	Buildings that have no obvious places for bats to roost, but could be used on a sporadic or occasional basis for feeding or solitary day roosting.
None	Buildings which appear unsuitable for roosting bats due to clear lack of roosting spaces such as voids etc and/or absence of suitable access points.

Records

45. The local records provider; Barnsley Biological Records Centre was asked to provide all bat records within 2km of the application site. Noteworthy records are detailed below.

46. A leisler's bat roost of unknown size, a common pipistelle roost of 50 individuals, and soprano pipistrelle roost records of up to 61 individuals are all recorded c.1.25km to the south west in Worsbrough hall.

47. Records of a large pipistrelle roost of 467 individuals at its peak (1997) originate from Button Mill Inn, located c.770m to the south west of the site.

48. A roost record of 79 individual pipistrelle bats originate from a former mill building located c.1km to the west of the site.

49. A noctule roost record of 20 individuals originates from a tree c.1km to the south west.

50. Other bat species recorded in the area include daubenton's, brown long-eared and whiskered/brandt's – however no roosts of these species are recorded within 2km of the application site.

51. Records are indicative of high levels of bat activity in the area, and in relatively close proximity to the application site.

Results

52. The majority of the built structures on site consist of large commercial units of a mixture of solid brick walls, metal frames, and corrugated metal/asbestos roofs. These structures are well sealed and present no features likely to be attractive to roosting bats. All are assessed as presenting very limited - no bat roosting potential.



Figure 12a

Examples of character of built structures on site



Figure 12b

Examples of character of built structures on site

53. A single building (building 5 on figure 13) is present which is considered to have greater potential for roosting bats.



Figure 13

General view of building 5.

54. The walls of this building are brick built, with render across the entirety of the outer walls preventing access by roosting bats.

55. The blue slate roof is in relatively poor condition with incidences of missing/displaced tiles which could provide access to the roof lining or loft space, and potential roosting opportunities.

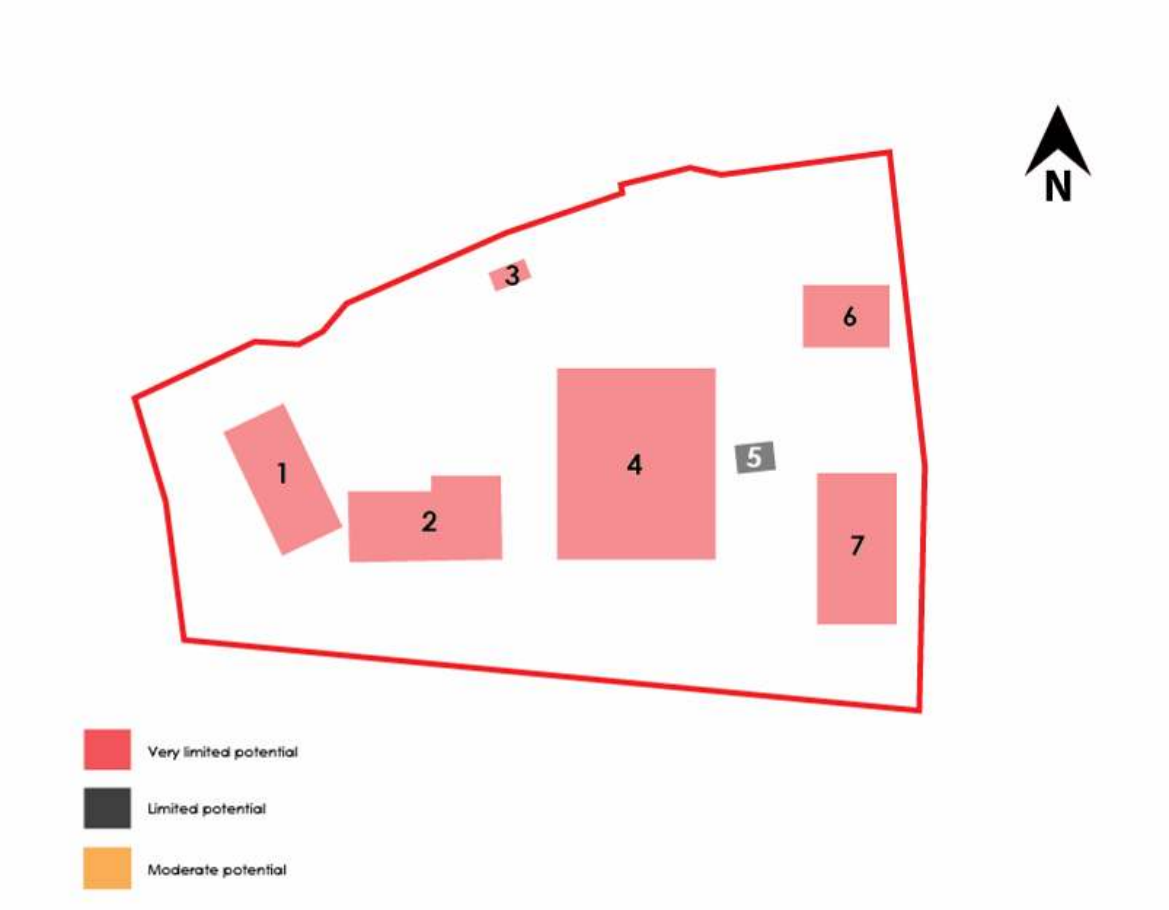


Figure 14

View of poor condition of roof of building 5.

56. The ridges of this building have missing mortar and could be utilised as a roosting feature in them-selves for low numbers of individual bats, or provide access to the loft space, or roof lining. The building is in the centre of a commercial site which is likely to be well lit at night; this will reduce its attractiveness as a roost site.

Figure 15 Bat roost potential of building on site



Method

57. Brooks Ecological specialise in bat surveys ranging from individual buildings through to complex sites requiring numerous visits with large teams. In terms of the survey effort, number of personnel required and number of visits required to be able to properly evaluate the building(s) use by bats we refer to the Bat Conservation Trust, Survey Good Practice Guidelines (2012). However these guidelines are not prescriptive and we approach each site individually as required using our professional judgement and significant experience base.

58. In this case, a single precautionary visit with a team of 2 surveyors was considered necessary to determine the presence / likely absence of roosting. This survey was carried out on the 6th August 2014 with surveyors positioned around the building to cover all aspects where bats could potentially emerge, and to establish activity levels around the site.

59. The surveyors, using heterodyne handheld detectors, were in place at least half an hour before dusk and left once all species of bat would be expected to have left a roost and patterns of activity within the site had been appraised. Conditions and dates are summarised in table 3 below:

Table 3: Survey summary

Date of Survey	Temperature	Weather	Invertebrate activity
06.08.14	20°C	5-10% cloud cover, dry, low wind	Moderate

60. Surveys were directed by Rob Weston BSc (Hons) MSc MIEEM. Rob has many years experience of carrying out bat surveys in a professional capacity and is registered to use the new Class Survey Licence WML CL18 (Bat Survey Level 2). He is a member of the West Yorkshire Bat Group, the Bat Conservation Trust and runs training in bat surveys for student ecologists.

Results

Survey - 8th August 2014 - sunset 20:53

61. No bats were seen during the duration of the survey.

62. At no point were any bats suspected to have emerged from the surveyed building.

Evaluation

63. In evaluating the site the ecologist will take into account a number of factors in combination, such as;

- the baseline presented above,
- the site's position in the local landscape,
- its current management and
- its size, rarity or threats to its integrity.

64. There are a number of tools available to aid this consideration, including established frameworks such as Ratcliffe Criteria or concepts such as Favourable Conservation Status. Also of help is reference to Biodiversity Action Plans in the form of the Local BAP (Appendix 2) and UK BAP to determine if the site supports any Priority habitats or presents any opportunities in this respect.

65. The assessment of impacts considers residential development shown in figure 2 in light of :

- Site preparation including vegetation and habitat removal
- Direct effects on significant faunal groups or protected species
- Effects on adjacent habitats or species such as disturbance, pollution and severance
- Operation effects on wildlife such as noise and light disturbance

On site habitats

66. This brown field site supports a small number of commonly occurring habitats of relatively low ecological value. Development would lead to the loss of very small areas of short ephemeral vegetation and rough grassland and some developing scattered scrub but this would not be of ecological significance in this setting.

67. A number of mature trees on site have an intrinsic ecological value and should be retained in the master-plan where possible. Where retention is not possible loss of mature trees on site should be mitigated by the planting of long lived native species elsewhere on site, and the further enhancement of the southern boundary of the site detailed below.

On site fauna

Amphibians

68. The site represents a small area of marginal terrestrial habitat for this group and it's loss would not be significant to local populations of common amphibian species.

69. eDNA testing of Worsbrough Basin, the only pond in the vicinity from which GCN populations could have spread, yielded a negative result and therefore the risk of the sites development impacting on local GCN populations is negligible.

70. No further survey effort is recommended in support of this conclusion.

Bats

71. A single structure (building 5 on figure 15) on site is assessed as having limited roosting potential and further survey effort was required.

72. Based on assessment of limited roost potential, a single precautionary emergence survey within the active bat season (May - September) was considered sufficient to determine the status of roosting bats within this structure.

73. In line with current guidance a single emergence survey was carried out during optimal conditions and season; this has confirmed likely absence of roosting bats.

74. On this basis, it is concluded that bats are very unlikely to roost in the building and proposals can go ahead with minimal risk of disturbance to bats.

Invasive species

75. Japanese knotweed has been identified as being present on site. A scheme for its removal, following best practice, should be devised and implemented.

Off site

76. Significant impacts on the nearby wildlife sites would not be expected due to lack of habitat connectivity.

77. The southern boundary of the site borders Worsbrough Country Park LNR and a section of the Trans-pennine trail. This feature is likely to provide a commuting and foraging corridor, especially for bats. In light of this, the following recommendations are made –

- Artificial lighting of vegetation on the southern border should be avoided, with any lighting associated with the site being directional and pointed downwards and away from the southern boundary.

- A buffer zone should be created at the southern boundary of the site. This should incorporate the planting of native species such as birch (*betula sp.*), oak (*Quercus sp.),* hazel (*Corylus avellana*), dogwood (*Cornus sp.*) and hawthorn (*Crataegus monogyna*).

- A minimum of 5 bats boxes (2FE Schwegler Wall-Mounted Bat Shelter or similar) should be erected on buildings along the southern boundary, or alternatively bat boxes could be incorporated into structure of the buildings or other permanent structures.

- During construction tree protective fencing to BS 5837 should be erected along the southern boundary in order to prevent any negative impact on the existing tree line.

General precautions

Nesting birds

78. To prevent the proposed works impacting on nesting birds any clearance of vegetation will need to be undertaken outside of the breeding bird season which is 1st March – 31st August inclusive. Any clearance that is required during the breeding bird season should be preceded by a nesting bird survey to ensure that the Wildlife and Countryside Act (1981) is not contravened through the destruction of nests and that any active nests are identified and adequately protected during the construction phase of the development.

Enhancement

79. In line with planning guidance outlined in the National Planning Policy Framework (NPPF) development should take account of the value of ecosystem services and enhance ecological networks.

80. The development will incorporate an area of public open space (POS) that will link the site to the trans-pennine trail to the south.

81. As mentioned, the dingy skipper butterfly is a UK and Local BAP species, and its larvae utilise Birds-foot trefoil as a primary food source. The incorporation of areas of wildflower meadow with a seed mix containing birds-foot trefoil, and an appropriate management schedule, could provide an enhancement which would improve the site for this species.

82. Within this POS a wildlife pond could be incorporated. This pond should ideally be positioned along the southern boundary of the site in order to provide a strong link between the site and water bodies associated with Worsbrough Country Park, and should be subject to an appropriate management plan.

References

IEA. (1995). *Guidelines for Baseline Ecological Assessment*. Chapman and Hall

Nature Conservation Committee (1990). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*. NCC

CIEEM. (2013). *Guidelines for Preliminary Ecological Appraisal*. CIEEM

Bat Conservation Trust (2012) Bat Surveys – Good Practice Guidelines

English Nature (2004) Bat Mitigation Guidelines. English Nature, Peterborough.

JNCC (2004) The Bat Workers Manual. 3rd Edition.

ODPM circular 06/05 (2005) Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System http://www.communities.gov.uk/publications/planningandbuilding/circularbiodiversity

Conservation of Habitats and Species Regulations 2010 http://www.legislation.gov.uk/uksi/2010/490/contents/made

H. L. Andrews (2011) A habitat key for the assessment of potential bat roost features in trees.

Ratcliffe, D.A. (1977) *A Nature Conservation Review*, Cambridge University Press

Hedgerow Regulations (1997) http://www.legislation.gov.uk/uksi/1997/1160/contents/made

Rodwell, J.S. (1992) *British Plant Communities Vol 3 - Grasslands and Montane Communities*, Cambridge University Press

Appendix 2 Local BAP - Leeds Biodiversity Action Plan

Table 1 Species Action Plans

Species/group	Potentially on site	Would development impact significantly on BAP objectives
Hedgehog	Yes	No
Bats	Yes	No
Water Vole	No	N/A
Otter	No	N/A
Grey Partridge	No	N/A
Bittern	No	N/A
Kestrel	No	N/A
Little Ringed Plover	No	N/A
Lapwing	No	N/A
Barn Owl	No	N/A
Skylark	No	N/A
Tree Sparrow	No	N/A
Twite	No	N/A
Great Crested Newt	No	N/A
Salmon	No	N/A
Bullhead	No	N/A
White-clawed Crayfish	No	N/A
Glow Worm	No	N/A
Dingy Skipper	No	N/A
Bluebell	No	N/A

Table 2 lists local Habitat Action Plans and assesses a) whether habitats on site could represent valuable examples of the habitat type within the spirit of the BAP and b) whether loss of the habitat would have a significant bearing on the objectives of the BAP.

Table 2 Habitat Action Plans

Habitat	Valuable examples present on site?	Would development impact significantly on BAP objectives
Upland Oakwood	No	N/A
Lowland Mixed Deciduous Woodland	No	N/A
Wet Woodland	No	N/A
Wood Pasture and Parkland	No	N/A
Hedgerows	No	N/A