



Preliminary Ecological Appraisal

- Land at: Holden Fold, Darwen, Blackburn, Lancashire -

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A report for



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PART 1 INTRODUCTION:

1.1 REASONS FOR SURVEY:

PENNINE *Ecological* have been commissioned by Blackburn with Darwen Borough Council, to undertake an Preliminary Ecological Appraisal and protected species survey / assessment of Land at Holden Fold, Darwen, Lancashire.

The study includes a vegetation, water vole and badger survey, together with assessment for other potential protected species issues.

The report includes a full evaluation of the ecological significance of the survey findings. The surveys are required due to proposals for site development.

1.2 SITE LOCATION:

The site is located on the northern urban edge of Darwen approximately 4.6km south of Blackburn city centre. The sites central National Grid Reference is NGR: SD 6973 2336.

The locations of the habitats surveyed are shown on Map 1, Appendix 1.

1.3 SITE STATUS:

A desk top study was commissioned as part of the survey. This included searches for both statutory protected sites and non-statutory sites within 500m radii of the site survey boundary. The data request also includes records of protected species within 500m radii of the site. Lancashire Environment Record Network (LERN), were consulted to provide details of non-statutory sites and protected species records. LCC now provide data up to a 2km search radii as standard, this is also included in Appendix 2.

1.3.1 Statutory Sites:

Details of statutory sites were sought from the Natural England web site search:

<http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx>

There are no statutory wildlife sites within 500m of the site.

The site falls within a distant SSSI Impact Risk Zones (IRZ's) associated with the West Pennine Moors SSSI which is approximately 1.9km to the south west of the site. However the nature / size and scale of the development does not require notification to Natural England.

1.3.2 Non-Statutory Sites:

There are no County Biological Heritage Sites (BHS) within 500m of the sites boundaries.

1.3.3 Protected Species / Habitat Data:

N.b. Refer to Appendix 2 for full details of protected species records and other species.

The data search reveals no records that can be related directly to the site.

The data search reveals the following records of Lancashire Key Species within 500m of the site these are as follows;

<u>Species:</u>	<u>Distance from site at nearest point:</u>
*Common toad	30m
Corn spurrey	30m
Sweet briar	30m
House sparrow	100m
Dunnock	100m
6 bird records including; Starling,	
Dunnock, Bullfinch, Grey wagtail.	200m
Common frog	230m

**Note this record may relate to an erroneous grid reference since there is a pond on site 30m from this grid reference. It is likely that this record relates to the on site pond in north west corner of the site.*

A full list of species within the wider search area is shown in the interactive .pdf file in Appendix 2.

1.4 SURVEY CONSTRAINTS:

The survey was conducted on 23rd August 2019 which is an optimal time for Extended Phase 1 Habitat Survey and protected species assessment.

PART 2 SURVEY RESULTS:

2.1 EXTENDED PHASE 1 HABITAT SURVEY:

2.1.1 Extended Phase 1 Habitat Survey Methodology:

An Extended Phase 1 Habitat Survey (*Nature Conservancy Council 1990*) of the study area was undertaken on 23rd August 2019. The site's habitats were mapped and higher vascular plant species were recorded and given abundance values according to the standard DAFOR scale, where:

D	=	Dominant
A	=	Abundant
F	=	Frequent
O	=	Occasional
R	=	Rare

Where appropriate these values can be prefixed by the letter L (locally) or V (very), to provide more subtle biogeographical data.

2.1.2 Habitats Present:

- A1.1.2 Woodland, broad-leaved plantation
- A2.1 Dense scrub
- A2.2 Scattered scrub
- A3.1 Scattered broadleaved trees
- B2.2 Semi-improved neutral grassland
- B4 Improved grassland
- B6 Poor semi-improved grassland
- C3.1 Tall ruderal herb
- F2.1 Marginal vegetation
- G1 Standing water (pond)
- J1.2 Amenity grassland
- J1.3 Ephemeral / short perennial
- J2.2.2 Defunct species-poor hedge
- J2.4 Fence
- J2.5 Wall
- J3.6 Buildings
- J4 Bare ground

2.1.3 General Description:

This large elevated site is located on the north east urban edge of Darwen and is approximately 570m by 450m in maximum dimensions.

The site can be divided into three distinct areas to aid description. These areas are shown on Fig. 1 on the following page. The areas can be described as follows;

Area 1:

In the south western quarter of the site a large unmanaged field unit is present dominated by poor semi-improved rank grassland typical of the *Holcus lanatus* – *Deschampsia cespitosa* – *Juncus effusus* rush pasture, NVC grassland types MG9 / MG10. These grasslands are dominated by Yorkshire-fog, tufted hair-grass and soft-rush. However there is considerable variability in the grassland type, which reflects changes in soil moisture. Within drier areas there is dominance of false oat-grass, common bent and cock's-foot. Herbs are present at lower frequency and include species such as common sorrel, creeping buttercup and common cat's-ear. Due to a lack of management peripheral areas of the field particularly along the western and southern margins support colonising bramble scrub and tall ruderal herb such as common nettle. Scattered hawthorn scrub is also colonising the field.

Along the elevated eastern side of the field a narrow strip of semi-improved neutral grassland is present which supports a greater species diversity including species such as meadow vetchling, yarrow, sneezewort, tormentil and common knapweed.

A defunct tall unmanaged hawthorn dominated hedge runs along part of the western boundary. The northern and southern boundaries are walled.

Fig. 1: Aerial view of site showing three distinct areas:



Area 2:

This area accounts for approximately 50% of the site and includes the grounds of the former Darwen Moorland High School. The school buildings were cleared in January 2016. The area

is dominated by former amenity grasslands (*sports fields*) which are now unmanaged and form extensive areas of tall, rank, species-poor grassland dominated by species such as; false oat-grass, Yorkshire-fog and perennial rye-grass with a low herb content.

At the western end a former all weather sports pitch (*Target Note 3*) has a developing short perennial community on cinder substrates, species include; common bird's-foot trefoil, self-heal and yellow rattle. There is a localised stand of the invasive Indian balsam on a steep slope to the west of the former all weather pitch.

Areas of hard standing are present including former school car parks, footpaths and access areas. The areas previously occupied by the school buildings form extensive areas of concrete / hard core rubble which are undergoing natural colonisation and support short perennial vegetation including buddleja and birch saplings with other species such as common ragwort, red fescue and colt's-foot.

Scattered native and non-native trees are present around the former school grounds including species such as; Italian alder, silver birch, whitebeam species, ornamental cherry species and crack willow.

A small area of mature plantation woodland is present on the southern boundary supporting species such as pedunculate oak, beech and hazel. This area is fenced from the site and appears to be within a private garden.

At the eastern end an amenity grassland sports pitch with club house is present.

Area 3:

The northern part of the site is dominated entirely by improved pasture, most of which is horse grazed. The largest of the field units in the central / northern part of the site is a Yorkshire-fog dominated pasture which slopes towards the northern end and includes a damp hollow dominated by Yorkshire-fog, tufted hair-grass and soft-rush.

There are ten separate field units with redundant dry stone walls and or fenced boundaries. There are localised linear stands of tall ruderal herb species on field margins particularly to the west including species such as rosebay willowherb, common nettle, common ragwort and creeping thistle. A reasonably extensive stand of the invasive Indian balsam is present at the northern end of the site, alongside a public footpath between dry stone walls.

A defunct gappy hawthorn dominated hedge forms the eastern site boundary alongside Roman Road. Other species present include; bramble, elder and ash, with intermittent stands of tall ruderal herb including Indian balsam at the northern end.

In the north west corner of the site a pond is present within a garden. The pond includes stands of bulrush and yellow iris. The pond is also choked with the invasive Canadian pondweed.

Part of the northern boundary at the western end has a defunct very gappy former hawthorn hedge which is now effectively a line of scattered scrub.

An off-site pond is present approximately 110m to the west of the site on Goose House Lane.

2.1.4 Target Notes:

Target Note 1: Poor semi-improved grassland:

In the south western quarter of the site a large unmanaged field unit is present dominated by poor semi-improved rank grassland typical of the *Holcus lanatus* – *Deschampsia cespitosa* – *Juncus effusus* rush pasture NVC grassland types MG9 / MG10. These grasslands are dominated by Yorkshire-fog, tufted hair-grass and soft-rush. However there is considerable variability in the grassland type, which reflects changes in soil moisture. Within drier areas there is dominance of false oat-grass, common bent and cock's-foot. Herbs are present at lower frequency and include species such as common sorrel, creeping buttercup and common cat's-ear. Due to a lack of management peripheral areas of the field particularly along the western and southern margins support colonising bramble scrub and tall ruderal herb such as common nettle. Scattered hawthorn scrub is also colonising the field.

The following species were recorded;

<u>Species:</u>	<u>Abundance:</u>
Yorkshire-fog	D
False oat-grass	LD
Common bent	LD
Tufted hair-grass	LA
Soft-rush	LA
Cock's-foot	LA
Bramble	LA
Broad-leaved dock	F
Ribwort plantain	F
Common sorrel	F
Creeping buttercup	F
Common cat's-ear	F/O
Common ragwort	O
Dandelion species	O
Foxglove	R

Target Note 2: Semi-improved neutral grassland:

Along the elevated eastern side of Target Note 1, a narrow strip of semi-improved neutral grassland is present which supports a greater species diversity, including species such as meadow vetchling, yarrow, sneezewort, tormentil and common knapweed.

The following species were recorded;

<u>Species:</u>	<u>Abundance:</u>
Common bent	A
Red fescue	LA
Yorkshire-fog	F
Tufted hair-grass	LF
Meadow vetchling	VLF
Sneezewort	VLF
Yarrow	VLF
Common knapweed	VLF
Sweet vernal-grass	VLF
Common cat's-ear	O
Marsh thistle	O/R
Tormentil	R

Target Note 3: Ephemeral / short perennial vegetation (former all weather sports pitch):

At the western end of the former school grounds an all-weather sports pitch has a developing short perennial community on cinder substrates, species include; common bird's-foot trefoil, self-heal and yellow rattle. There is a localised stand of the invasive Indian balsam on a steep slope to the west of the former all weather pitch.

The following species were recorded;

<u>Species:</u>	<u>Abundance:</u>
Self-heal	F
Ribwort plantain	F
Common bird's-foot trefoil	LF
Yellow rattle	LF
Red fescue	LF
Yorkshire-fog	LF
Common cat's-ear	LF
Perennial rye-grass	LF
Common couch	O
White clover	O
Autumn hawkbit	O

Target Note 4: Ephemeral / short perennial vegetation / scattered trees:

This area forms part of the grounds of the former Darwen Moorland High School. The school buildings were cleared in January 2016.

Areas of hard standing are present including former school car parks, footpaths and access areas. The areas previously occupied by the school buildings form extensive areas of concrete / hard core rubble which are undergoing natural colonisation and support short perennial vegetation including buddleaja and birch saplings with other species such as common ragwort, red fescue and colt's-foot.

Scattered native and non-native trees are present around the former school grounds including species such as; Italian alder, silver birch, whitebeam species, ornamental cherry species and crack willow.

The following species were recorded;

<u>Species:</u>	<u>Abundance:</u>
Buddleaja	LA
Birch species sapling	LA
Red fescue	LA
False-oat grass	LA
Yorkshire-fog	F
Common ragwort	LF
Self-heal	LF
Ribwort plantain	LF
Italian alder	LF
Cock's-foot	VLF
Common cat's-ear	VLF
Colt's-foot	VLF
Crack willow	VLF
White clover	O
Whitebeam species	O
Silver birch	O
Ornamental cherry species	O
Sycamore	O
Non-naïve tree species	O
Rowan	R
Pedunculate oak	R
Hazel	R
Common gorse	R

Target Note 5: Broad-leaved plantation woodland:

A small area of mature plantation woodland is present on the southern boundary, immediately east of the former school grounds. The woodland supports species such as pedunculate oak, beech and hazel. This area is fenced from the site and appears to be within a private garden. It was not possible to access the woodland directly.

The following species were recorded;

<u>Species:</u>	<u>Abundance:</u>
Bramble	LA
Ash	O/F
Beech	O/F
Hazel	LF
Silver birch	O
Sycamore	O
Pedunculate oak	O

Target Note 6: Sports pavilion / Clubhouse with bat roost potential:

This building has bat roost potential. This is discussed further in the following section.

Target Note 7: Electricity sub-station with bat roost potential:

This building (Knowle Fold School sub-station) has bat roost potential. This is discussed further in the following section.

Target Note 8: Garden Pond:

In the north west corner of the site a pond is present within a private garden. The pond includes stands of bulrush and yellow iris. Brooklime is present around some margins. The pond is also choked with the invasive Canadian pondweed.

(see also photographs, Appendix 1)

2.2 PROTECTED SPECIES SURVEYS:

During the Phase 1 Habitat Survey additional surveys were undertaken where appropriate for the presence of other potential protected species. The following surveys were undertaken.

2.2.1 Badger Survey:

Method:

A badger survey was undertaken of the site. The badger survey used standard techniques for establishing the use of the site by badger, and includes searches for evidence of badgers including:

- Setts
- Pathways
- Footprints
- Latrines
- Foraging areas
- Scratching posts
- Boundary searches for runs, pathways and latrines.

The survey results are outlined below.

Results:

Sett Search:

The survey found no setts on site.

Search for Foraging Signs and Pathways:

The site was thoroughly searched for badger pathways and signs of foraging. No sign of badger activity was found therefore it can be concluded that the species is not using this area for foraging or commuting.

Boundary Search:

All of the boundaries of the site were walked and examined for potential runs, pathways and latrines. The search found no evidence to suggest badger activity along any of the site boundaries.

The absence of any activity signs indicates that badgers are not entering the site. The absence of latrines indicates a lack of territorial activity in the near vicinity of the site.

2.2.2 Bats:

During the survey an assessment of bat roost potential and foraging habitats was undertaken.

There were two buildings that are considered to offer potential ingress opportunities for bats. The details are as follows;

Target Note 6: Sports pavilion / Clubhouse with bat roost potential:

The clubhouse is constructed from re-constituted stone with wooden fascias on gable elevations and fascias / soffits along the long lengths of the building. The roof is interlocking concrete tiles.

On both the south east and north west gable elevations the wooden fascia has been cut to match the uneven stone surface. However there are intermittent gaps between the rough stone and fascia that allow potential ingress opportunities for crevice dwelling bats. In addition there are also several holes/weep holes between stone blocks, these also offer potential ingress points.

It was not possible to inspect the building internally, therefore it is unknown whether lofts are present.

Target Note 7: Electricity sub-station with bat roost potential:

Knowle Fold School sub-station is a rendered brick building with a flat roof. The sun-station has a deep wooden fascia on all elevations. This is rotten in parts and has significant and extensive gaps between the fascia and render which offer potential ingress for bats and bat roost potential. No loft is present.

The site is considered to support good potential value as bat foraging habitat, which extends into the wider countryside, particularly to the north.

(see also photographs, Appendix 1)

2.2.3 Water Vole:

Survey Methodology:

A water vole survey was undertaken of the pond (Target Note 8) in the north western part of the site. The survey was based on the standard methodology as outlined in the Dean, M., Strachan, R. Gow, D. and Andrews, R. (2016). *The Water Vole Mitigation Handbook* (The Mammal Society Mitigation Guidance Series).

Searches were made for the following signs;

- Sightings of individual animals
- Latrines
- Feeding stations
- Burrows
- Runs

Survey Constraints:

There were no constraints to the survey.

Survey Results:

No evidence in terms of; burrows, feeding stations/remains, latrines, runs etc. was found associated with the pond. The species is considered to be absent from the pond.

There were several domestic cats on the site during the survey, this further reduces the potential for the species since domestic cats are major predators of water vole.

2.2.4 Other Protected Species:

Issues in relation to other potential protected species where no specific survey was undertaken are assessed in the following section.

PART 3 ECOLOGICAL EVALUATION & RECOMMENDATIONS:

3.1 EVALUATION OF SURVEY & RECOMMENDATIONS:

The following section evaluates the site in relation to statutory/non-statutory sites, protected species and species/habitats listed on the former UK Biodiversity Action Plan Priority List, Section 41 Species/Habitats of Principal Importance in England (NERC) Act 2006, and the Lancashire Biodiversity Action Plan.

3.1.1 Statutory Sites:

There are no statutory wildlife sites associated with the site or within 1km of the site.

3.1.2 Sites Habitats & Higher Plant Species:

The following habitats on site are Section 41 Habitats of Principal Importance in England (NERC) Act 2006. The woodland is also a Lancashire BAP Habitat.

- Pond
- Broad-leaved woodland
- Hedgerows.

The woodland is also a Lancashire BAP Habitat.

The pond on site is located within a private garden, however it supports native aquatic vegetation and has potential to support amphibian species including the protected great crested newt.

The woodland on site is very small and is a poor example of its type.

The hedgerows on site are all defunct / species poor and lack features that would qualify them as 'Important hedgerows' under the Hedgerow Regulations (1997).

Plant species recorded on site are common and widespread and are considered to be of site value only.

Recommendations: Habitats & Higher Plant Species:

There are no requirements for further surveys.

The development should aim to retain the pond, boundary hedgerows and woodland / trees where possible and enhance the boundaries with native hedge and tree species.

The site supports localised stands of the highly invasive Indian balsam. Locations are on the earth bund immediately east of Target Note 3 and in the north of the site alongside the public footpath, near to where it joins Roman Road. The control and eradication of this species is highly problematic. It spreads by a highly efficient seed dispersal mechanism, each

plant produces about 2,500 seeds which fall to the ground, and with several parent plants close together, seeds can occur at a density of between 5000-6000 seeds per square metre. The species can be controlled by various methods including cutting / mowing, herbicide treatment and physical pulling of the plants before they reach seed maturity. Total long term eradication is considered extremely difficult.

The key recommendation is that no spoil / soil or material from infested areas must be removed from the site, including any parts of the plant. The owner/occupier of the site should aim to control and manage the species as best they can following the above guidance. If spoil is to be removed from the site, this will need to be sent to an Environment Agency approved site.

Further more detailed information on the species is provided on the following government website;

<https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants>

3.1.3 Protected Species:

Badgers:

Badgers are protected under Schedule 6 of the Wildlife and Countryside Act 1981, and under the Protection of Badgers Act 1992, which prohibits deliberate interference with the animal or its sett.

The survey found no evidence of historic, recent or current use of the site by badgers for foraging, commuting or occupation and the species is considered to be absent.

Recommendations: Badgers;

There are no issues in relation to badgers arising from the development. No further surveys are required.

Bats:

Bats are comprehensively protected by European legislation.

Two buildings (*Target Notes 6 & 7*) on site comprising a sub-station and clubhouse support features which offer moderate bat roost potential. No other structures or any of the trees offer bat roost potential, these features are regarded as having negligible potential for bats.

The site is considered to have good potential value as bat foraging habitat.

Recommendations: Bats;

Since the above buildings are concluded to possess moderate potential for crevice dwelling bats, it is therefore recommended that if these buildings are affected by development, then

bat activity surveys are required. If this is the case, in order to establish whether or not bats are using the building, and, if present, how they are using it, dusk emergence or/and dawn surveys should be undertaken. The surveys will need to be conducted during the main active season of bats i.e. between May – August as bats, particularly Pipistrelle bats, often alternate between roosts and do not necessarily use one roost over their active season. Two dusk/dawn surveys are accepted as being a reasonable level of survey effort where moderate potential has been identified. The surveys must be spaced between those months, at least 2 weeks and preferably 3 weeks or more apart.

Figure1: Extract from Bat Conservation Bat Surveys: Good Practice Guidelines 2016 3rd edition.

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).		
Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ¹ (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey ²	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ³

¹ Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

² Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

If these buildings are affected by development then due to the requirement for bat activity surveys, work on these buildings must be suspended until the results of the bat activity surveys are known and further recommendations have been made.

Following the completion of these surveys further recommendations will be made in respect of any issues in relation to bats. It should be noted that where bat/s or their roost/place of rest/shelter will be affected by the proposed works, then to allow work at the site to legally commence, an application for European Protected Species Mitigation Licence (EPSML) will be required. Notwithstanding the granting of a licence works that would affect a roost cannot take place if a maternity colony is in occupation.

Natural England provides information and guidance about EPSML and the following extract is included in that guidance:-

If you intend to apply for a licence for development you are advised to seek the guidance of a consultant ecologist. Natural England's view is that:-

- A licence is needed if the consultant ecologist, on the basis of survey information and specialist knowledge of the species concerned, considers that on balance the proposed activity is reasonably likely to result in an offence under the Conservation of Habitats & Species Regulations 2010 (as amended)
- If the consultant ecologist, on the basis of survey information and specialist knowledge of the species concerned, considers that on balance the proposed activity is reasonably unlikely to result in an offence being committed then no licence is required. However, in these circumstances Natural England would urge that reasonable precautions be

taken to minimise the effect on European protected species should they be found during the course of the activity. If European protected species are found, cease the work until you have assessed whether you can proceed without committing an offence.

- A licence should be applied for if offences are unavoidable and the work should not be re-started until a licence is obtained.
- The application should be completed by the developer and a consultant ecologist. The ecologist will need to be able to demonstrate to the satisfaction of Natural England that they have the relevant skills and knowledge of the species concerned.

Water Vole:

Water voles (*Arvicola terrestris*) are protected by the Wildlife & Countryside Act (1981) as amended. In 1998 particular emphasis of protection was given to the water voles burrow in respect of Section 9(4) of the above act.

Water vole is protected under Section 41 of the NERC Act and is a species listed as of principle importance for the conservation of biological diversity in England.

No evidence in terms of; burrows, feeding stations/remains, latrines, runs etc. was found associated with the pond. The species is considered to be absent from the pond.

There were several domestic cats on the site during the survey, this further reduces the potential for the species since domestic cats are major predators of water vole.

Recommendations:

No further surveys or action is required in respect of the species.

Great Crested Newt:

Great crested newt is comprehensively protected under European legislation. There are three ponds within 250m of the site which is the accepted terrestrial range of the species.

There is one pond on site (Target Note 8) and one pond approximately 110 m off the sites western boundary. A pond is also present in Polyphemus Woods, approximately 230m north of the site at its closest point.

The on-site pond and the pond 110m to the west of the site were subject to a Habitat Suitability Index (HSI) Survey, as follows;

Habitat Suitability Index (HSI) Survey:

It is possible to assess whether the species is likely to be present in a pond or waterbody. One survey method that can be used to assist in this evaluation is the **Habitat Suitability**

Index (HSI). In addition to this method the experience of the ecologist and particular site circumstances can be used to assess the likely presence or absence of the species. It must be noted however that the HSI survey method is no substitute for a standard ‘Presence or Absence Survey’. The survey method is summarised as follows:

The great crested newt Habitat Suitability Index (HSI) is quantitative measure of habitat quality (*source: Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000)*). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155). The HSI is number between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of newts. An HSI of 1 is optimal habitat (*high probability of occurrence*), while an HSI of 0 is very poor habitat (*minimal probability of occurrence*). The HSI is calculated on a single pond basis, but takes into account surrounding terrestrial habitat and local pond density.

The following text in italics is an extract from the methodology:

‘Use and limitations of HSI :

The HSI for great crested newts is a measure of habitat suitability. It is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so.

There is also a positive correlation between HSI scores and the numbers of great crested newts observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond.

HSI scoring can be useful in:

- *Evaluating the general suitability of a sample of ponds for great crested newts*
- *Comparing general suitability of ponds across different areas*
- *Evaluating the suitability of receptor ponds in a proposed mitigation scheme.’*

Oldham *et al* (2000).

Categorisation of HSI scores:

Lee Brady has developed a system for using HSI scores to define pond suitability for great crested newts on a categorical scale:

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

HSI Survey Results:

Habitat Suitability Index	On-site pond	Pond 110m west of site
SI1 Location Optimal: 1 Marginal: 0.5 Unsuitable: 0.01	1	1
SI2 Pond Area Graph reading:	0.25	0.95
SI3 Pond Drying Never: 0.9 Rarely: 1.0 Sometimes: 0.5 Annually: 0.1	0.9	0.9
SI4 Water Quality Good: 1 Moderate: 0.67 Poor: 0.33 Bad: 0.01	1	0.01
SI5 Shade Graph reading:	1	0.6
*SI6 Fowl Absent: 1 Minor: 0.67 Major: 0.01	1	0.01
**SI7 Fish Absent: 1 Possible: 0.67 Minor: 0.33 Major: 0.01	0.67	0.67
SI8 Ponds Graph reading:	0.4	0.4
SI9 Terrestrial Habitat Good: 1 Moderate: 0.67 Poor: 0.33 None: 0.01	1	1
SI10 Macrophytes Graph reading:	0.7	0.35
HSI Score	0.73 (Good suitability)	0.29 (Poor suitability)

The presence of great crested newt cannot be discounted at either of the above ponds.

The pond 230m to the north of the site is located within a former landfill site which now supports extensive young plantation woodland, areas of tall coarse grassland, stands of ruderal herbs and wildflower meadows. These habitats provide extensive optimum overwintering and terrestrial refuge habitats for the species should it be present. ¹Research by Natural England has shown that where such habitat exists around GCN ponds the vast majority of the population is likely to be contained within 100m of the breeding pond creating a 'terrestrial sponge' effect. Therefore in relation to this pond and any associated populations of the species, there is no risk from site development. The site is located on the margins of the terrestrial range of the species. Given that the pond is located on a steep hill, its true ground distance from the site almost certainly exceeds 250m.

The on-site pond scores good suitability (0.73 HSI score) for the species.

The pond 110m west of the site scores poor suitability (0.29 HSI score) for the species.

Recommendations: Great Crested Newt;

The on-site pond and the pond 110m west of the site both have potential to support the species. It is considered unlikely that the pond west of the site supports the species but presence cannot be ruled out without definitive survey. The on-site pond has greater potential to support the species.

Therefore the following survey methodology is proposed; 'Presence and Absence Survey' English Nature (2001).

The amphibian surveys must comply with the requirements of English Nature (2001) guidelines as set out in the publication 'Great Crested Newt Mitigation Guidelines', English Nature (August 2001). The survey method is 'Presence / absence survey' as detailed on page 26, section 5.7.1.1 of the above guidelines.

'Presence / absence' surveys may determine presence although it is virtually impossible to demonstrate absence. However the aim of this method is to employ a reasonable level of effort that, at the majority of ponds, will detect the presence of great crested newts.

The 'presence/absence' survey requires that three survey methods (*preferably torch survey, bottle trapping and egg search*) are completed for each visit. There should be four visits in suitable weather conditions, between mid-March and mid-June, with at least two of these visits during mid-April to mid-May.

Any ponds confirmed as supporting the species will need to be surveyed to the Population Size Class Assessment (*English Nature 2001*) level. This is a pre-requisite for any licence application to Natural England. This method involves an additional 2 rounds of survey making 6 in total.

¹ *English Nature Research Report 575 (2004); An evaluation of the effectiveness of great crested newt Triturus cristatus mitigation projects in England, 1990 – 2001. (PENNINE Ecological were contributors to this study).*

The surveys must be undertaken between mid-March and mid-June with at least 3 of these visits during mid-April – mid May.

In order to establish the approximate population size, maximum counts on any one night or from bottle trapping are recorded on each visit. Counts (*on the same visit*) are summed across ponds in close proximity to give a total site count.

The population is then classed as follows;

- **'small'** for maximum counts of up to 10
- **'medium'** for maximum counts between 11 and 100
- **'large'** for maximum counts over 100.

The maximum count figure should only be used to give an approximate indication of the population size class.

Birds:

All birds are offered various levels of protection under the Wildlife and Countryside Act (1981) as amended.

Areas of the site including; scrub, short grasslands, short perennial vegetation, shrubs, hedgerows, trees, buildings and the small woodland area have potential to support breeding birds including ground nesting birds on open grassland and short perennial vegetation.

Recommendations: Birds;

No strategic bird surveys are required. However before any development and in order to minimize impacts on birds any site disturbance including any removal of trees / scrub / shrubs / woodland and disturbance to potential ground nesting bird areas should take place outside of the breeding season, i.e. between the end of August and end of February. Following the felling of trees/scrub etc, piles of brash should be removed from the site, failure to do so could provide potential nest sites if left in situ until the following breeding season.

If removal of vegetation is envisaged during the breeding season (*March to August inclusive*), then checks should be made to establish any nesting or breeding activity, prior to removal.

PART 4 REFERENCES:

4.1 REFERENCES:

Nature Conservancy Council (1990) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit*. Nature Conservancy Council.

Rose, F. (1981) *The Wildflower Key*. Warne.

Stace, C., (1997) *New Flora of the British Isles (Second edition)*. Cambridge University Press.

Web Sites:

Google Earth.

MARIO.

Natural England – Nature on the Map.

APPENDIX 1:

Map 1: Extended Phase 1 Habitat Survey

Site Photographs

Site Photographs: August 23rd 2019



Target Note 1: Rank semi-improved grassland in SW site corner.



Target Note 1: Rank semi-improved grassland in SW site corner. Looking south from northern edge of field.



Target Note 1: Rank semi-improved grassland / ruderal herb in SW site corner, with defunct hedge on western boundary.



Target Note 1: Rank semi-improved grassland.



Horse grazed improved grassland, NE part of the site



Target Note 2: Semi-improved grassland field margin.



Target Note 3: Short perennial vegetation colonising former all weather sports pitch.



Target Note 3: Short perennial vegetation colonising former all weather sports pitch.



Indian balsam on embankment between Target Notes 2 / 3.



Improved grassland in the northern / central part of the site, with damp poor semi-improved depression.



Improved grassland in the northern / central part of the site.



Public footpath in NE part of site with intensively horse grazed improved pasture either side.



Dense stand of invasive Indian balsam on footpath in NE corner of site.



Amenity grassland area / sports pitch with clubhouse in background.



Looking south along the sites hedge boundary with Roman Road.



Target Note 6: Clubhouse with moderate bat roost potential.



New hedge / scrub planting on northern edge of amenity grassland area.



Target Note 6: Clubhouse with moderate bat roost potential; gaps behind fascia's.



Target Note 6: Clubhouse with moderate bat roost potential; gaps behind fascia's.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Former school playing fields / football pitches, now tall rank species-poor grassland.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Car park former school grounds.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Former school ground southern boundary frontage with Moor Lane, looking east.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Former school grounds.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Short perennial plant communities colonising former school grounds and areas of demolished buildings.



Target Note 7: Electricity sub-station with moderate bat roost potential relating to fascia board gaps.



Target Note 8: On site pond within private garden.



Target Note 7: Electricity sub-station with moderate bat roost potential relating to fascia board gaps.



Target Note 8: On site pond within private garden.



Target Note 7: Electricity sub-station with moderate bat roost potential relating to fascia board gaps.



Target Note 8: On site pond within private garden.



Off-site pond 110m west of the site



Off-site pond 110m west of the site.



Off-site pond 110m west of the site.

APPENDIX 2:

Desk Top Study (separate electronic files)