Ecological Assessment of land

at Battlefield,

Shrewsbury,
Shropshire

(SJ514.166)

By Churton Ecology
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SUMMARY

Background

Churton Ecology was commissioned to carry out an Ecological Assessment of land (approximately 3.3ha) proposed for residential development at Battlefield, Shrewsbury, Shropshire (GR SJ514166).

Method of study

A desk study and an Extended Phase 1 habitat survey were carried out in order to assess the current ecological value of the site and to identify potential impacts and ecological constraints and make recommendations for general mitigation, compensation and further surveys, as appropriate.

Baseline Ecological Conditions

There are no statutory sites (SSSI's) or other sites designated for wildlife in the 1km surround. The site belongs to the landscape character 'urban'. In the Shropshire Environmental Network the site is not classed as core habitat but some of its boundary features are corridors (the railway line and the bypass scrub). Some of the site, together with the nearby existing houses and gardens, is considered to be a buffer zone for these corridors.

The site comprises semi-improved grassland (small area), arable land (dominant) hedgerow (remnant), scrub, trees and a very small seasonal pool. The proposed access will run through the seasonal pool area and an existing garden (amenity grassland, hard standing, shrub and trees). None of these are considered to be priority habitats and are of negligible ecological value.

The site provides some opportunities for scrubland nesting bird species.

The two mature Oak trees are of an age and type to have features which may have limited potential to support roosts, but both trees lack obvious potential.

The site offers limited bat foraging habitat and is significantly isolated within a busy urban setting, enclosed by a network of major roads, and there are no specialist habitats present (e.g. significant wetland/woodland areas) or suitable links to these. The site is therefore considered to have an overall low suitability to support bat populations.

The site ‘pond’ was surveyed on two occasions for Great Crested Newt before it dried up; no evidence of this species was found. A pool at 115m distance to the west was found to support a small population of Great Crested Newt (after six surveys).

No evidence of presence or potential for presence of any other protected or priority species was noted on the site.

Ecological issues

The main potential ecological issues associated with the proposed development relate to any scrub and/or tree removal. Such activities could result in the disturbance of nesting birds if works are carried out within the breeding season. Removal or lopping of the Oak trees could disturb or destroy small bat roosts (felling is, however, not envisaged) . In addition, illumination of boundary features could disturb bat foraging & commuting habitat.

Great Crested Newt is considered highly unlikely to occur within the site either as a resident (resting place) or transient (during seasonal migrations). The breeding population to the west may be of local level importance; however, the terrestrial value of the site has no/negligible value to the population.

Key recommendations

- Any clearance of hedgerow or lopping of trees will, where possible, be carried out in the late summer or winter months to avoid the main bird-nesting season.
- The two mature Oak should preferably be left undisturbed but can be lopped or felled taking reasonable avoidance measures e.g. soft felling. Works should cease and advice should be sought in the event bats are found, in order to comply with relevant legislation.
- If the two mature Oak are retained, their root protection zones should be safeguarded and an arboricultural survey is recommended, particularly as the access route will pass close to the larger Oak with a dbh of 1.5m.
- In the construction phase, daytime working hours will be adopted, to commence no sooner than one hour after sunrise and finish no later than one hour before dusk, to avoid disturbance to bats and other nocturnal wildlife through noise and lighting.
- In the operational phase, external lighting will not illuminate the mature trees or any boundary features (existing or new ones planted as part of landscaping). Where used, it will be reduced to its most practical level, see 5.3.1 for further detail. A lighting plan should be drawn up.
- If any trench is left open overnight then it will be left with a sloping end or ramp to provide an escape route for any animal that may fall in.

- If pipe work is left open overnight, then the open end will be capped off to prevent animals seeking refuge and becoming trapped when work resumes.
- Opportunities for enhancement of the site post development will include i) planting of native hedgerow along the south boundary (planned, with a bund likely along its north side) ii) planting of native hedgerow along the west boundary iii) shrub planting (buffer zone) around the two mature Oak iv) siting of bird boxes on or in the new buildings, largely for species typically associated with buildings v) non-native shrubs used in landscaping could be selected to favour wildlife (nectar plants and fruit bearing ones).

1 INTRODUCTION

Churton Ecology was commissioned by Balfours LLP to carry out an Ecological Assessment of land proposed for residential development at Battlefield, Shrewsbury, Shropshire (GR SJ514166). No detailed plan has been provided but the access is likely to pass through the gardens of Battlefield House and/or no 53 Battlefield Rd. Two pools on or near the site were surveyed in detail for Great Crested Newt.

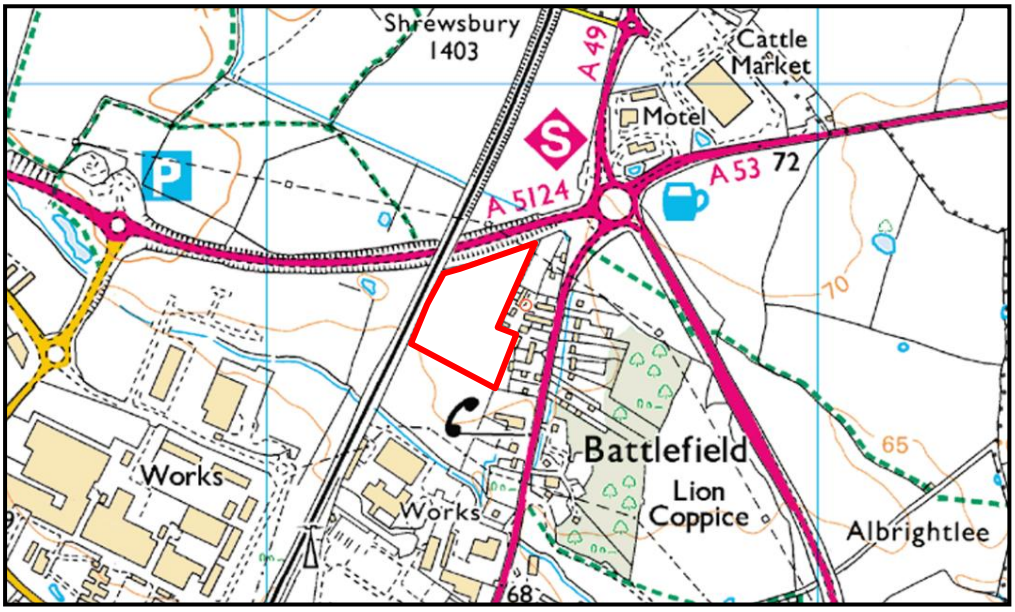


Figure 1: Site location (red)

The survey aimed to provide ecological information with relevance to the proposed works by a) analysing previous biological records and identifying nature conservation sites within a 1km radius of the site centre b) identifying habitats within the site and surrounds and their ecological value and function c) identifying the presence of protected, priority or notable species and habitats or the potential for these d) assessing the likely significant impacts of

the proposed works e) identifying any further ecological survey work or mitigation that might be necessary prior to the submission of a planning application.

2 METHODOLOGY

2.1 Desk study

A desk study was carried out to identify protected species and habitats as well as national and local designated sites within 1km of the site. Searches were conducted using the following sources:

- Shropshire Ecological Data Network
- OS maps.
- MAGIC maps

OS maps and aerial photographs were used to identify landscape features of potential ecological interest including hedgerows, tree-lines, ponds, streams, ditches and areas of likely (semi-) natural value.

2.2 Habitat survey

A habitat survey of the site and immediate surrounds was conducted on 28/05/2015 by Kate Thorne following the JNCC (2010) Phase 1 methodology, see Appendix 1 for habitat map.

2.3 Protected species survey

2.3.1 Bat species

Trees on or immediately bordering the site were assessed from the ground for their potential to support bat roosts, using binoculars and a high powered torch.

A general habitat suitability assessment of the site and surrounds was carried out to determine their value as foraging and commuting habitat.

2.3.2 Great Crested Newt

The habitats on site and in the surrounds were assessed for their suitability to provide resting places or areas suitable for shelter or protection (referred to as terrestrial habitats).The potential for newts to traverse the site and any dispersal limitations that might interrupt such migrations were also considered.

Several potential breeding habitats were noted in the 250m surround; however, only three of these were suitably connected to the site i.e. not isolated by the network of busy roads in the

area. These included the south ditch, the site ‘pond’ and a pond beyond the railway-line to the west.

The south ditch was found to be relatively fast flowing; therefore, detailed Great Crested Newt surveys were only required for the two ponds.

Presence/absence surveys were conducted on both ponds. Additional survey effort was required to estimate the population size class of Great Crested Newt in the pond to the west.

Each pond was surveyed using a combination of bottle trap, egg search and torch-light survey techniques, on a total of six occasions. Surveys of the site ‘pond’ were carried out on two occasions before the pond dried out. Traps were set at 2 metre intervals along the pond margins. Torching was undertaken using a 1,000,000 cp torch. Egg searches were conducted on each survey occasion.

Surveys were undertaken within the recommended peak survey period, which corresponded with breeding peaks observed at other local GCN sites.

All trapping was undertaken in suitable weather conditions (>5 degrees Centigrade with little or no wind and rain).

2.3.3 Badger

Burrows and surface nests were sought on site and within a 50m surround (at least).
Other evidence of site use, such as latrine pits, paths, snuffle holes, feeding remains and hairs (in burrow spoil or snagged along trails) were also sought.

2.3.4 Birds

Habitats with potential to support common, priority or Schedule 1 species of bird were sought within the site and surrounds. A list of bird species using the site and its immediate surrounds was established during the survey and, where possible, old nests were attributed to species.

2.3.5 Other protected or priority species

The presence of protected and priority species was sought, and the habitats on site and in the immediate surrounds were assessed for their suitability to support any such species. The potential for species to traverse the site and any dispersal limitations that might interrupt such migrations were also considered.

3 RESULTS

3.1 Desk study

3.1.1 Designated sites

There are no statutory sites (SSSI's) or other sites designated for wildlife in the 1km surround.

3.1.2 Other sites

The site belongs to the landscape character 'urban'.

In the Shropshire Environmental Network the site is not classed as core habitat but some of its boundary features are corridors (the railway line and the bypass scrub). Lion Coppice and other woodland, at just over 200m to the east, is classed as core habitat; the east side of the site, together with the nearby existing houses and gardens, is considered to be a buffer zone for this woodland.

3.1.3 Protected and priority species

Note: the site falls within the monad SJ5116 (1km square) and the tetrad SJ51D. No protected or priority species have been recorded specifically from the site.

The following is a summary of previous findings:

Protected species

There are bat records (non roost), in the site monad SJ5116, for Noctule (*Nyctalus noctula*). Records for bats (also non roost records) in adjacent monads include Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pigmaeus*) and Noctule (*Nyctalus noctula*).

Records for specially protected birds in the site's monad include Red Kite and Barn Owl, with Barn Owl also recorded in the site's tetrad (SJ51D). Kingfisher and Peregrine Falcon have also been recorded in the site tetrad. All these species have also been recorded in adjacent tetrads – Kingfisher in SJ51H, and Peregrine Falcon, Barn Owl and Red Kite in SJ51C.

There are 2010 records for Great Crested Newt *(Triturus cristatus)* at SJ51181662 (pool south side of bypass, medium population) and SJ51201673 (pool north side of bypass, small population). Population numbers are from surveys carried out by Churton Ecology for ADAS.

Water Vole (*Arvicola terrestris*) has been recorded (SJ510164, 2007) apparently from a ditch west of the railway line (at 270m distance).

Otter (*Lutra lutra*) has been recorded from the area by the River Severn.

Badger (*Meles meles*) has been recorded in the site's monad (2 records, one as roadkill).
There are no records for Dormouse *(Muscardinus avellanarius)* or reptiles.

UK priority species

There are records (largely recent) from the 1km surround for several priority bird species. A few scrubland/hedgerow/tree/woodland species have been noted from the site monad [Song Thrush] and/or the site tetrad [Bullfinch, Dunnock, Song Thrush, Yellowhammer, Linnet, Lesser Redpoll and Spotted Flycatcher]. Several of these species have also been recorded from adjacent monads and/or tetrads with additional species including Marsh Tit and Cuckoo. There are no ground nesting birds recorded in SJ5116 but in the site's tetrad there are records for Skylark, Curlew, Grey Partridge (single record); Lapwing. Skylark, Curlew and Lapwing have also been recorded in adjacent tetrads.
One species, associated with buildings, has been noted in the site monad – Starling, with both Starling and House Sparrow recorded in the site tetrad and adjacent ones.

Wetland and other species recorded from the site tetrad and adjacent ones include Yellow Wagtail and Reed Bunting. Herring Gull has been recorded in the site tetrad only.

There are records for Polecat in the site monad and adjacent monads. Other mammal species recorded only in adjacent monads include Hedgehog (SJ5015, 2005) and Brown Hare (SJ5115, 2010).

There are several recent records for UK (and local) priority moths, largely from Lion Coppice to the east, in SJ5116.
Purple Ramping-fumitory, an arable plant, has been recorded at almost 1km from the site in SJ5016, in 2007.

Local priority species

There are records for several birds with some rarity status (often of Amber and/or local priority status) from the site tetrad (a few from the site monad), with many of the same species also recorded in adjacent monads to the site. Hedgerow/scrub/woodland species include Whitethroat and Willow Warbler; farmland species include Stock Dove and Kestrel; species associated with housing include House Martin and Swift; other species include Mallard, Meadow Pipit, Wheatear, Snipe, Common Sandpiper, Grey Wagtail, Lesser Black-backed Gull and Black-headed Gull. Additional bird species noted in adjacent tetrads are Teal, Mistle Thrush, Sand Martin, Green Woodpecker and Golden Plover (single record).

Several woodland, wetland and grassland axiophytes (local priority status) have been recorded in the surround.

3.2 Habitat survey

The range of habitats on and close to the site can be summarised as follows:

- Semi-improved grassland
- Arable land
- Remnant hedgerow, scrub and trees
- Pool
- Garden (amenity grassland, shrub and hardstanding)

These are represented on the habitat map in Appendix 1, with numbered target notes. In the text species are referred to using their English names. Nomenclature follows Stace, C. (2011) New Flora of the British Isles.

3.2.1 Site habitat descriptions

Arable land

The site is predominantly arable land which is almost weed free and is part of a larger arable field, currently sown with cereal.

Photograph 1: west part of site, viewed from the south-west

Photograph 2: south part of site, viewed from south-west

Poor semi-improved grassland

The arable margins comprise a 1.5m band of grassland; this broadens out into a slightly more diverse small grassland area along the east (TN6). Overall, the grassland supports several grasses [Meadow Foxtail, Red Fescue, Tufted Hair-grass, Rough & Smooth Meadow-grass, Cock's-foot and Timothy], meadow herbs [Dandelion, Common Sorrel, Creeping Cinquefoil, Ribwort Plantain and Cut-leaved Crane's-bill], damp-loving herbs [Great Willowherb, other Willowherbs and Hard Rush], hedgerow herbs [Wood Avens, Bush Vetch and Wood Dock] and 'nuisance' weeds [Nettle, Dock, Cleavers, Barren Brome and Creeping Thistle].

Meadow herbs noted only in the small grassland area include Field Woodrush and Ladies Bedstraw.

Photograph 3: small grassland area

Hedgerow, scrub and trees

The east boundary of the arable field, throughout, is remnant hedgerow, with mature Hawthorn dominant. Other infrequent shrubs include Blackthorn, Hazel, Ivy, Dog Rose and Oak (as shrub), also some Bramble. Fencing (metal or wood) accompanies the hedgerow. Alongside the pool there are short lengths of Cypress hedge. East of this field boundary, there is some trimmed hedgerow between garden and the small grassland area, and additional scrub and immature trees within the grassland and pool areas as follows:

Grassland area (TN6) – Beech (in boundary), Birch, fruit trees, Oak saplings and Hazel (also peripheral Bramble)
Pool area (TN5) - Weeping Willow, Hawthorn, conifers, Holly, Elder, Junjper sp. and a non native creeper.

The site as a whole supports only two mature trees (both Oak). One Oak is on the edge of the pool area; this could almost be classed as a veteran specimen (although it is largely sound) as it is has a dbh of 1.5m. The second mature Oak is an in-field tree which has a dbh of 1m (TN4).

Photograph 4: in-field Oak (TN5)

Photograph 5: veteran Oak by pool hollow (TN X)

Just outside the north boundary fence is a dense area of scrub and young trees, planted along the bypass boundary.

Photograph 6: scrub and young trees just outside the north boundary fence

Pool

An old hollow is present close to a corner of the arable field and is enclosed by hedgerow, scrub and wooden fencing (TN5). The hollow contained water in April and has some wetland vegetation – Floating Sweet-grass and Yellow Iris – but was dry by mid May. The higher ground around the hollow supports trees and scrub (see above), which overshadows much of the pool, and Nettle dominates the ground flora.

Photograph 7: On-site pool

3.2.2 Habitats in the site surrounds

The site is on the north edge of Shrewsbury. Although farmland, it is isolated from open countryside by housing and roads (east), industrial units (south of the whole arable field), railway line (west) and a busy bypass road buffered by scrub and grassland (north).

3.2.3 Flora

All the plant species found on site during the survey are common species.

3.3 Protected species survey

3.3.1 Bats

The two mature Oak trees are of an age and type to have features which may have limited potential to support roosts but both trees lack obvious potential.

The site offers limited foraging habitat and appears to be isolated within a busy urban setting.

3.3.2 Great Crested Newt

Both ponds were surveyed for presence/absence using three methods – egg searches, trapping and torching. The site pond (P1) could only be surveyed twice because it was dry by mid-May. Great Crested Newt was not recorded in this ‘pond’ and given that it dries annually well in advance of the typical pond emigration period, it has a low suitability.

The second pond (P2) at 115m to the west was confirmed as a breeding site (it was already a known site), and therefore two additional surveys were carried out (i.e. a total of six) to estimate the population size class. The pond was found to support a small breeding population of Great Crested Newt (3 individuals) and is surrounded by good immediate and intermediate terrestrial habitat.

The site – within 250m of pond 2 – supports sub-optimal terrestrial habitat (arable) and lies outside the core (50m) terrestrial habitat zone - where in some instances ploughed fields can be of some terrestrial value.

The following results tables include the weather and numbers of other amphibian species captured and/or torched during each survey period. All surveys were carried out in suitable weather between April 21st and May 28th.

Table 1: Great Crested Newt survey results					**Pond 1 (site pond)**
Date	**Method**	**Results**	**Turb 0-5**	**Veg 0-5**	**Weather**
21/4/15	**Torch**	**0**	**1**	**2**	**Clear, min 5^{0}C**
	Trap	**0**			
29/4/15	**Torch**	**0**	**1**	**2**	**Clear and cloudy, min 5^{0}C**
	Trap	**0**			
Key: Lv – Smooth Newt Bb – Toad Rt – Frog					

Great Crested Newt survey results					**Pond 2 SJ51171663**
Date	**Method**	**Results**	**Turb 0-5**	**Veg 0-5**	**Weather**
21/4/15	**Torch**	**3Tc (3M)**	**1**	**2**	**Clear, min 5^{0}C**
	Trap	**3Tc (1M 2F), 5Lv**			
29/4/15	**Torch**	**0**	**1**	**2**	**Clear and cloudy, min 5^{0}C**
	Trap	**1Tc (1F)**			
	Trap	**0**			
15/5/15	**Torch**	**1Tc**	**1**	**2**	**Clear and cloudy, some drizzle, mod winds, min 10^{0}C**
	Trap	**0Tc, 3 Lv**			
17/5/15	**Torch**	**0**	**1**	**2**	**Overcast, still , min 6^{0}C**
	Trap	**0Tc, 2 Lv**			
21/5/15	**Torch**	**0**	**1**	**2**	**Some cloud then overcast, light wind, min 7^{0}C**
	Trap	**3Tc (1M, 2F)**			
27/5/15	**Torch**	**1 Tc (1F), 1Lv**	**1**	**2**	**Cloudy, mod winds, min 7^{0}C**
	Trap	**3Tc (3F)**			
Key: Tc – Great Crested Newt Lv – Smooth Newt Bb – Toad Rt – Frog					

Eggs were noted on *Solanum dulcamara* on 22/4/15, 15/5/15 and 22/5/15 in pond 2

3.3.3 Otter and Water Vole

There is no aquatic habitat on the site suitable to support either of these species.

3.3.4 Dormouse

The site has no potential to support this species.

3.3.5 Badger

No evidence of Badger was noted within the site and no setts were found within at least 50m of the boundary. Small trails near boundaries were attributed to Rabbit.

3.3.6 Reptiles

The small area of rough grassland near the south-east corner of the site would provide suitable habitat were the site suitably connected to a more extensive network of suitable reptile habitats; however, the area is very small and heavily isolated within an urban environment making the presence of this species group highly unlikely.

3.3.7 Birds

The site has some suitability for Skylark but no evidence of this species was noted.

The scrub, hedges and trees are suitable for a number of scrubland birds to breed. Only a few common species were noted.

3.3.8 Other species

A dead Hedgehog was noted in the pools surrounds.

There was no evidence of or potential for other protected or priority species.

4 ECOLOGICAL EVALUATION

4.1 Habitats

4.1.1 Designated and non-designated sites

There are no statutory or non-statutory designated sites for nature conservation in the 1km surround.

4.1.2 Site habitats

Much of the site comprises arable land with some semi-improved grassland (small area), hedgerow (remnant), scrub, trees and a very small seasonal pool**.** The proposed access will run through the seasonal pool and an existing garden (amenity grassland, hard standing, shrub and trees). None of these habitats are considered to be priority ones and are of negligible ecological value.

4.2 Protected species

4.2.1 Bats

Roosts

The two mature Oak trees are of an age and type to have features which may have limited potential to support roosts, but both trees lack obvious potential, and the presence of a significant (maternity) or rare bat roost is highly unlikely for the reasons discussed below. The suitability of the in-field Oak tree is reduced further because there are no supporting linear links.

Foraging and commuting

The site offers limited foraging habitat and is significantly isolated within a busy urban setting, enclosed by a network of major roads, and there are no specialist habitats present (e.g. significant wetland/woodland) or suitable links to these. Furthermore the site boundaries provide only broken links in the locality or site. Direct and diffused lighting may also have an impact on the suitability of the site to support (typically rarer, light intolerant species) bat species. It is likely that occasional use of the site by small numbers of common species occurs e.g. Pipistrelle sp. – which have a high tolerance for artificial lighting, habitat severance and may indeed adapt favourably to the increased (domestic) planting schemes.

The south ditch may provide the best opportunity for localised bat migrations, foraging activity and as a dispersal corridor to the wider landscape; however, this lies some distance from the site and is poorly linked to it.

4.2.2 Great Crested Newt

The pond located at 115m to the west supports a small breeding population of Great Crested Newt (3 individuals) and is surrounded by good immediate and intermediate terrestrial habitat*. The development site – within 250m of pond 2 – supports sub-optimal terrestrial habitat (arable) and lies outside the core (50m) terrestrial habitat zone - where in some instances arable (loosely ploughed) fields can be of some terrestrial value.

It is considered highly unlikely that Great Crested Newt occur within the development site for the following reasons: i) at 115m, the site is well beyond the core (50m) terrestrial habitat zone ii) the site is largely unsuitable, comprising an area of extensive arable land with no suitable (semi-) natural habitats iii) a busy railway-line passing between the site and the pond likely acts as a significant or partial barrier to animal dispersal due to the expanse of unvegetated ballast that requires crossing and the significant vibrations occurring from the regular train traffic that enters Shrewsbury iv) the population is small, limiting the potential for wide ranging dispersal v) *unbroken immediate and intermediate optimum terrestrial habitat (hedgerow/scrub/rough grassland mosaic) surrounding the breeding pond would not encourage animal movements much beyond 50m and much less so over hostile anthropogenic barriers vi) there are no potential breeding ponds or significant areas of terrestrial habitat to the east, limiting opportunities for trans-site migrations associated with the meta-population system or autumn migrations.

*The terrestrial habitat present in the immediate and intermediate surrounds of the breeding pond (pond 2) comprises hedgerow, scrub and rough grassland. Across its European range, deciduous woodland represents one of the key habitats selected by this species during its terrestrial phase. Other important habitats include rough grassland, scrub and hedgerow (Jehle & Arntzen 2000, Latham et al. 1996, Skei et al. 2006, Kuzmin 1999). Furthermore several capture-mark-recapture and radio tracking studies indicate that populations using pools with good immediate terrestrial habitats tend to remain within a 50m radius of it, with less significant occupation rates (typically) noted up to 100m maximally (Mullner 2001, Jehle 2000, Creswell & Whitworth 2004).

English Nature Research Report 576 also states that:

‘The most comprehensive mitigation, in relation to avoiding disturbance, killing or injury is appropriate within 50m of a breeding pond. It will also almost always be necessary to actively capture newts 50-100m away. However, at distances greater than 100m, there should be careful consideration as to whether attempts to capture newts are necessary or the most effective option to avoid incidental mortality. At distances greater than 200-250m, capture

operations will hardly ever be appropriate.....captures on fences (and by other methods) at distances between 100m and 200-250m from breeding ponds tended to be so low as to raise serious doubts about the efficacy of this as an approach, although a small number of projects did report captures on significant linear features (i.e. those connected) at distances of approximately 150-200m from ponds.'

The EPSM Licence template produced by Natural England states that:

"Natural England is concerned about the trend for increasingly risk-averse mitigation for several reasons. Primarily, there is no legal need, and little benefit to great crested newt conservation, in undertaking mitigation where there are no offences through development. Even where there technically is an offence, such as the destruction of a small, distant area of resting place habitat, or even killing low numbers of newts, it is arguable that impacts beyond the core area often have little or no tangible impact on the viability of populations. Mitigation in such circumstances is of questionable value in conservation terms.....Natural England wishes to see newt fencing used more appropriately, i.e. only where there is a reasonable risk of capturing, containing and/or excluding newts."

The 'core area' is ill defined and should be considered on a site specific basis. In this case – given the presence of optimal pond surrounding habitats - it is reasonable to predict that the core habitat is defined as that within 100m, with occasional wider dispersal occurring in any suitably connected habitat beyond this i.e. extensive hedgerow/scrub and rough grassland areas not fragmented by dispersal barriers.

To summarise, Great Crested Newt is highly unlikely to occur within the site either as a resident (resting place) or transient (during seasonal migrations). The breeding population to the west may be of local level importance; however, the terrestrial value of the site has no/negligible value to the population.

4.2.3 Birds

The arable land (cereal) has some suitability to support a breeding priority bird species (Skylark), and this species is known to breed in the surrounds. No evidence of its presence was noted on any visits to the site. The temporary nature of arable land in a farming calendar renders this land of negligible ecological value for this species.

The site has no suitability for any of the other ground nesting birds, specially protected birds or wetland birds previously recorded in the surrounds.

The site offers some suitable habitat for scrubland birds to nest and may support some of the priority species (as well as common ones) that have previously been recorded in the surrounds. However the amount of suitable scrub/hedge is relatively small, species poor and confined to the boundaries. The site is likely to be, at most, only of site value for this species group.

4.2.4 Other protected and priority species

A number of other priority species have been recorded in the 1km surround. However, given the nature and extent of the habitats present within the site, it is considered highly unlikely that the site is key to the viability of populations of any of these species in the locality.

4.3 Survey limitations

There were no significant survey limitations.

4.4 Legal status

Bats

All UK bat species are protected under both UK and European Law. Essentially this makes it unlawful to; deliberately capture, injure or kill a bat; intentionally or recklessly disturb a bat whilst it occupies a roost or deliberately cause disturbance to a bat or group of bats; damage or destroy the roosting site of a bat; intentionally or recklessly obstruct access to a bat roost.

Notably, legal protection gives absolute protection to bat roosts and their continued functionality, regardless of deliberate, intentional or reckless action. Legal protection also extends to seasonal roosts which are not always occupied by bats throughout the year.
Disturbance caused through excessive noise or lighting and/or alterations to the landscape could potentially impact on bat roosting, foraging and/or commuting habitats and may have legal implications with regards European disturbance/roost deterioration laws. It is therefore the duty of the relevant competent authority to take habitat severance, disturbance and land use change issues and their potential for impact on bat populations into consideration when assessing applications for the relevant consent.

Great Crested Newt

Great Crested Newt is protected under both UK and European Law. Essentially this makes it unlawful to; deliberately capture, injure or kill a newt; intentionally or recklessly disturb a newt whilst it occupies a place of rest or deliberately cause disturbance to a newt or group of newts; damage or destroy the resting or breeding site of a newt; intentionally or recklessly obstruct access between terrestrial and/or aquatic habitats.

Disturbance caused through excessive lighting and/or alterations to the landscape could potentially impact on terrestrial or aquatic habitats and may have legal implications with regards European disturbance/roost deterioration laws. It is therefore the duty of the relevant competent authority to take habitat severance, disturbance and land use change issues and their potential for impact on Great Crested Newt populations into consideration when assessing applications for the relevant consent.

Birds

With the exception of Schedule 1 listed bird species, which receive a higher level of protection against breeding disturbance, all common species of bird are protected during their breeding activities under the Wildlife and Countryside Act 1981.

Essentially, this makes it an offence to intentionally take, damage or destroy the nest of any wild bird whilst that nest is occupied or being built; intentionally take or destroy the egg of any wild bird.

5 POTENTIAL IMPACTS AND RECOMMENDATIONS

5.1 Introduction

Wherever possible, negative ecological impacts from developments should be avoided. Where these are unavoidable then mitigation and compensation measures should be proposed. This is of particular importance where there is any presence of or potential for protected species. In addition, it is best practice to seek positive biodiversity benefits through enhancement measures, in particular with regard to Priority Habitats and Species listed on the national and local Biodiversity Action Plans and the NERC Act 2006, and protected species.

The Local Planning Authority is now required to actively seek in development proposals, measures that aim to promote appropriate Priority Habitats and Species listed in the UK Biodiversity Action Plan. The provision of compensation/enhancements helps local planning authorities in meeting requirements as stipulated under the National Planning Policy Framework (2012), which states that sustainable development should seek to achieve net gains in bio-diversity for nature.

5.2 Habitats.

Impacts without mitigation

On site there will be loss of negligible value habitat (species-poor grassland, arable land and scrub/immature trees) with loss of other negligible value habitat (a seasonal pool and amenity grassland) to provide access; any negative impact through this loss is highly likely to be of negligible significance in both the construction and operational phases.

Mitigation

If the two mature Oak are retained, their root protection zones should be safeguarded and an arboricultural survey is recommended, particularly as the access route will pass close to the larger Oak with a dbh of 1.5m.

Enhancement

Planting of native hedgerows along the south and west boundaries will create significant new wildlife corridors linking to existing ones. Buffering of the two mature Oak, with a surround of shrub planting, will enhance the trees for wildlife and protect them. Additional planting over the site could also enhance it for wildlife, if shrubs are used which provide nectar and fruit.
Overall, therefore, there is likely to be a positive impact on wildlife in the operational phase.

5.3 Protected species

No development related impact on Great Crested Newt, Otter, Water Vole, reptiles, Badger or Dormouse can be reasonably predicted and no further survey or assessment is required.

5.3.1 Bats

Impacts without mitigation

Since the main habitat within the site offers limited foraging opportunities, any negative impact on foraging habitat is highly likely to be of negligible significance. In addition, there will be no (significant) loss of bat commuting habitat given the low suitability of the site, its isolation, its surrounding habitats and the fragmentation of hedgerows and/or scrub.

However, since some bat activity is likely over the site, a negative impact of very minor significance (significant at a site level) is probable if hedgerows, scrub and/or trees are illuminated during the bats' active flight period (March – October).

Although highly unlikely for the reasons discussed earlier and since no obviously suitable potential roost sites were observed, tree lopping and felling activities could disturb, injure or kill bats or result in the deterioration, damage or destruction of minor roost sites used by common bat species.

Mitigation

With the following mitigation in place the above negative impacts will be avoided as follows:
In the construction phase, daytime working hours will be adopted, to commence no sooner than one hour after sunrise and finish no later than one hour before dusk, to avoid disturbance to bats and other nocturnal wildlife through noise and lighting.

In the operational phase, external lighting should be avoided or generally minimised throughout the site. Where required lighting should be reduced to its most practical level and located in the least ecologically sensitive areas i.e. away from boundary features or trees etc.
A lighting plan must be drawn up.
Lighting should be fixed on low columns with light spread kept at, or below, the horizontal using cowls, hoods, screens or simply by downward directionality. Bulbs should be low intensity with a narrow or UV reduced spectrum (<150W, high or low pressure sodium types or LEDs). LED lighting, preferably incorporating an orange filter, may be appropriate near all boundary features – LED lamps effectively reduce light spill and are highly directional. PIR systems [if applicable] should be set on a short timer and responsive only to larger moving objects.

Although the two mature Oak should preferably be left undisturbed, either can be lopped or felled taking reasonable avoidance measures e.g. soft felling. Works should cease and advice should be sought in the event bats are found, in order to comply with relevant legislation.

Enhancement

Planting of trees and shrubs in garden areas will ultimately help to diffuse internal and external light spill.

The planting of native hedgerows, the buffering of the two mature Oak, and the additional planting over the site is likely to enhance the site for bats. Bat species that are likely to be using the site, such as Pipistrelle bats, are likely to adapt favourably to the increased (domestic) planting scheme i.e. with an increase in better foraging habitat there may be a positive impact on common species in the operational phase.

5.3.2 Birds

Impacts without mitigation

Potential impacts include the disturbance of nesting birds within the breeding season during hedgerow, scrub or tree removal.

Any negative impact on birds, through habitat loss, is likely to be temporary and of negligible significance. However, development work that may damage or destroy the nest of a wild bird whilst in use may constitute an offence.

Mitigation

The nests of actively breeding birds should be avoided during the works period. If nests are encountered then works should cease or avoid that area until the young have departed the nest. Construction works that may affect nesting birds, including tree and scrub removal, should be carried out as follows:

- During the nesting season between March 1st and July 31st after an ecologist has inspected the hedgerow, tree or shrub for signs of nesting birds. This is highly likely to result in delays to the project and it is not recommended.
- Between 31st July and March 1st - outside the breeding season - when birds are unlikely to be nesting. This is the most suitable or preferred means of mitigation.

- After bird access into the hedgerow, tree or shrub has been suitably obstructed prior to March 1st. This may work better for hedgerow or shrub removal but is impractical for use with trees. Typically connected lengths of debris netting can be draped over the hedgerow/shrub and pegged tightly into the ground either side.

The Local Planning Authority will likely request compensation for the loss of bird nesting sites as part of its biodiversity duty (NERC Act).

Enhancements

The habitat measures outlined above and the erection of some bird boxes are likely to have a positive impact on common bird species in the operational phase.

5.3.3 Other

The following points are generally considered to be good practice procedures:

If any trench is left open overnight then it will be left with a sloping end or ramp to provide an escape route for any animal that may fall in.

If pipe work is left open overnight, then the open end will be capped off to prevent animals seeking refuge and becoming trapped when work resumes.

5.4 Habitat enhancement recommendations

Habitats

Hedgerow

A native hedgerow is planned for the south boundary (with a bund likely along its north side). Native hedgerow should also be planted along the west boundary.

Native shrub species should be used in the planting of these hedgerows (west and south boundaries) using species such as *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Ilex aquifolium* (Holly), *Acer campestre* (Field Maple), *Euonymus europaeus* (Spindle) and *Viburnum opulus* (Guelder Rose).

Shrubs (native and non-native)

A buffer zone of shrubs (native and/or non-native) should be planted around the mature Oak trees. The bund could be planted with shrubs or managed as grassland.

Native and non native shrubs are likely to be planted in future gardens; garden shrubs could be selected to favour wildlife e.g. use scented flowering species to attract insects, and berry producing species to attract foraging birds.

Bird boxes and cups

Several priority birds are dependent on buildings. Bird boxes could be placed on any new building e.g. a Sparrow 'terrace', House Martin nest cups (under eaves) and Swallow cups (inside garages or sheds, provided there will be access to them via permanent openings) and/or traditional boxes for small birds. Internal nest-boxes can be fitted for Swifts, House Sparrow or Starling. Refer to the RSPB website.

Additional bird boxes, placed on buildings or in trees, could include ones suitable for other small birds (e.g. Tit and Robin).

5.5 Further survey recommendations

No further surveys are recommended.

6 REFERENCES

Bat Conservation Trust (2012) *Bat Surveys Good Practice Guidelines 2nd ed.* BCT

Mitchell-Jones A.J. and McLeish A. (2004) *Bat Worker's Manual* Joint Nature Conservation Committee

Mitchell-Jones A.J. (2004) *Bat Mitigation Guidelines* English Nature

English Nature (2009) *Badgers and Development*

Amphibian and Reptile Groups of the United Kingdom (2010) *Great Crested Newt Suitability Index* ARG UK

Langton, T. Beckett, C. and Foster, J (2001) *Great Crested Newt conservation handbook* Froglife

Gent T. and Gibson S. (2003) *Herpetofauna Workers' Manual* Joint Nature Conservation Committee

Bright, P., Morris, P., Mitchell-Jones, T. (2006) *The Dormouse Conservation Handbook 2nd edition* English Nature

JNCC (1993). *Handbook for Phase 1 Habitat Survey. A technique for environmental audit* (reprint). Joint Nature Conservation Committee

Hedgerow Regulations (1997) Crown Copyright.

Stace, C (1991). *New Flora of the British Isles.* Cambridge University Press

IEEM (2006) *Guidance for Ecological Impact Assessment in the UK*

jncc.defra.gov.uk/*page-5705* (2015) UK BAP Priority species and habitats

www.**magic**.gov.uk *Magic (for maps and conservation data)* Natural England

Google Earth aerial photographs and and/or Bing maps

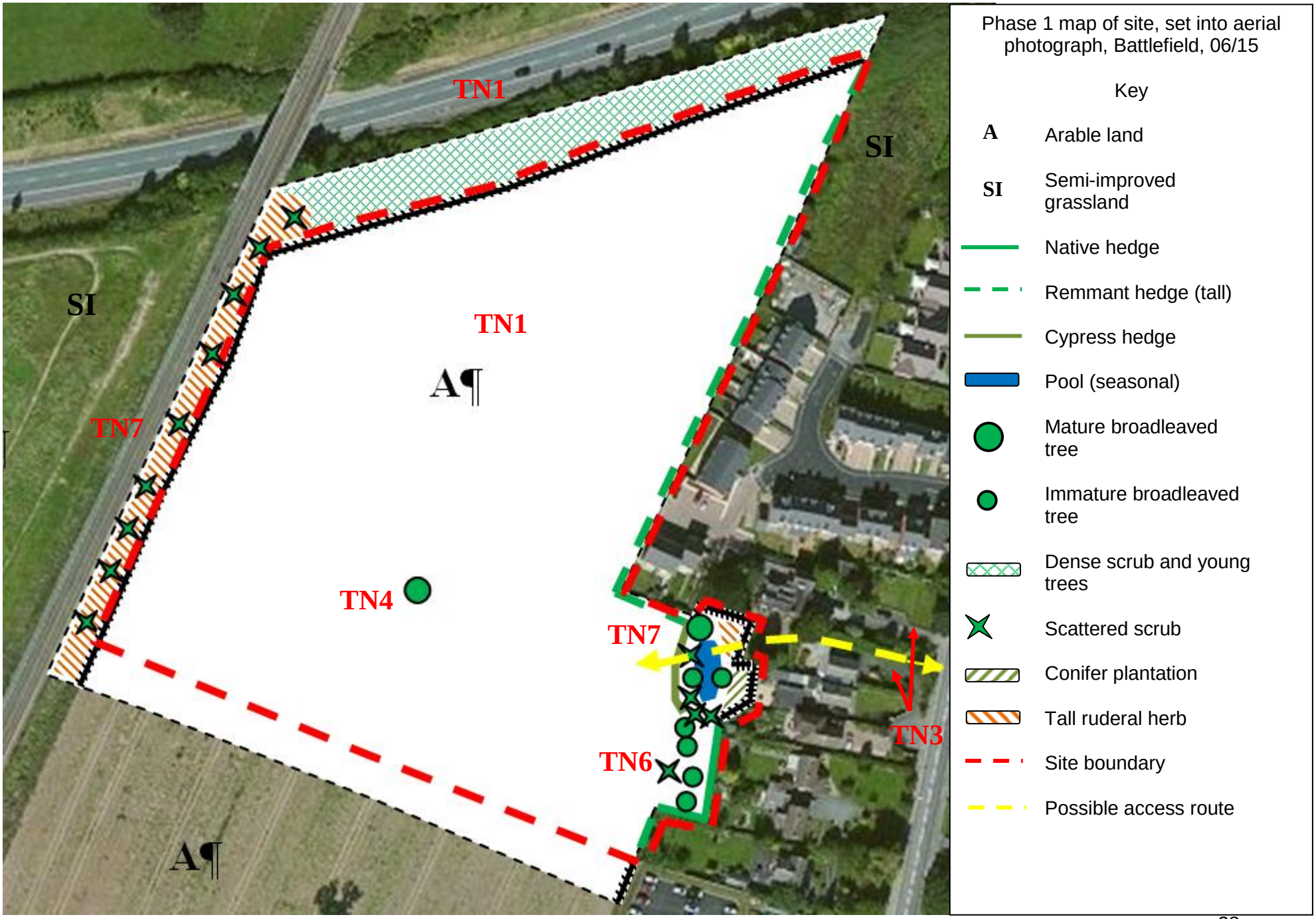
wtp2.appspot.com/**wheresthepath**.htm

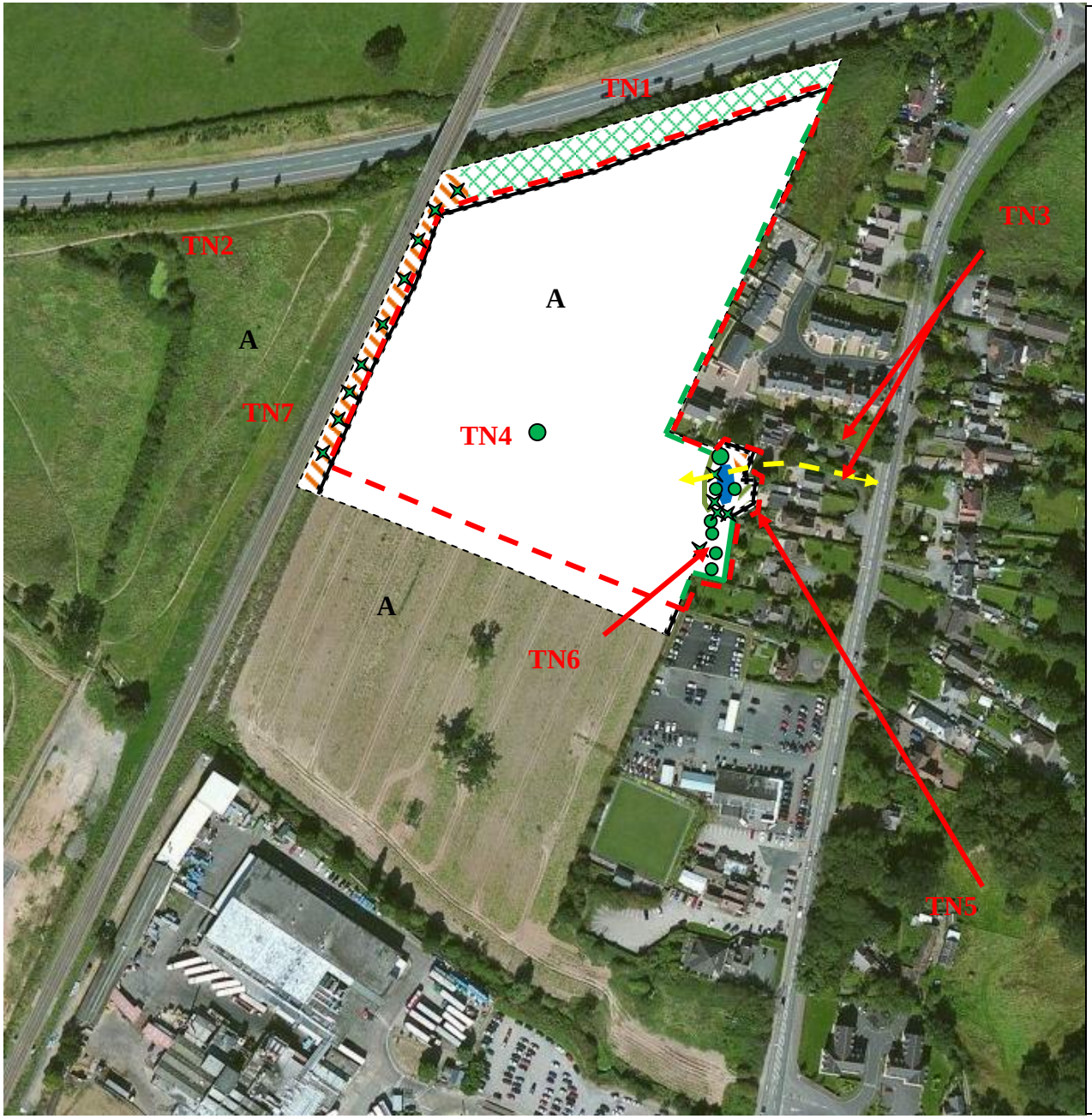
www.**getamap**.ordnancesurveyleisure.co.uk/

Appendix 1

Phase 1 set into aerial photograph with habitat notes

(close up and a more distant view to show the location of the nearby pool (pool 2)


Phase 1 map of site, set into aerial photograph, Battlefield, 06/15
Key
A Arable land
SI Semi-improved grassland
Native hedge
Remmant hedge (tall)
Cypress hedge
Pool (seasonal)
Mature broadleaved tree
Immature broadleaved tree
Dense scrub and young trees
Scattered scrub
Conifer plantation
Tall ruderal herb
Site boundary
Possible access route
TN1
TN1
TN3
TN4
TN6
TN7
TN7
SI
SI
A¶
A¶



Phase 1 map of site, set into aerial photograph, Battlefield, showing location of pool in relation to the site, 06/15

Target/habitat notes

TN1: bypass with scrub and young tree boundary

TN2: pool 2 with small population of GCN

TN3: gardens of Battlefield House and no 53 with amenity grassland, hardstanding, immature trees and shrub

TN4: large in-field Oak (category 2 tree)

TN5: old marl pit with single veteran Oak (category 2 tree) , other planting, tall herb and seasonal pool

TN6: poor semi-improved grassland with some immature and scrub

TN7: railway line with banks of tall herb, grassland, and scattered scrub

Appendix 2

Vascular plant list

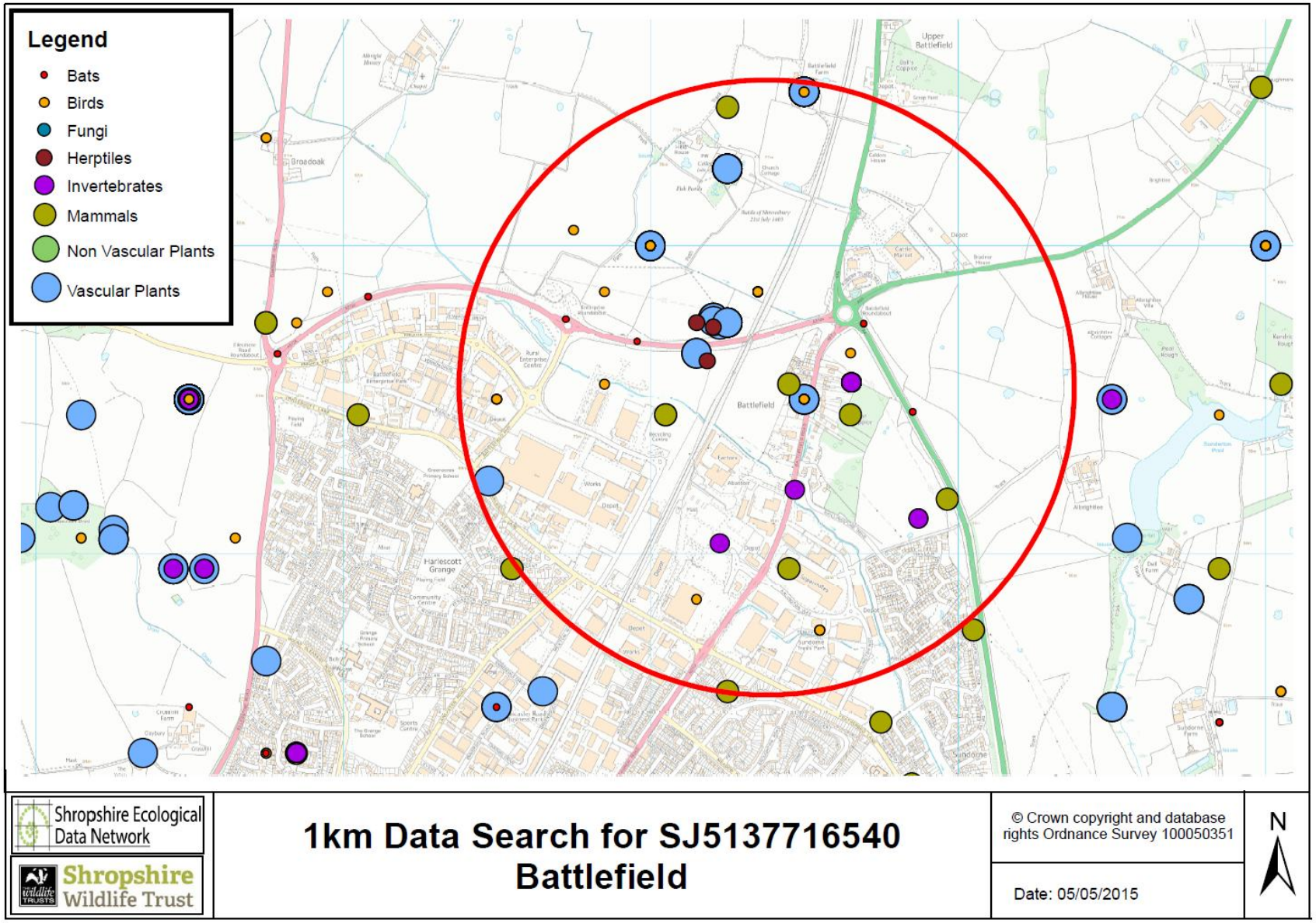
Vascular plant list at Battlefield, SJ5116, recorded by A.K. Thorne, 28/5/2015		
Taxon	Vernacular	Comment
Acer campestre	Field Maple	planted bypass scrub
Alliaria petiolata	Garlic Mustard	field margin
Alnus incana	Grey Alder	planted bypass scrub
Alopecurus pratensis	Meadow Foxtail	grassland
Anisantha sterilis	Barren Brome	field margin
Anthriscus sylvestris	Cow Parsley	field margin
Arrhenatherum elatius	False Oat-Grass	field margin
Atriplex patula	Common Orache	arable land
Betula sp.	a birch	
Cerastium fontanum	Common Mouse-ear	field boundary
Chamerion angustifolium	Rosebay Willowherb	field margin
Cirsium arvense	Creeping Thistle	field margin
Corylus avellana	Hazel	hedgerow
Crataegus monogyna	Hawthorn	hedgerow
Dactylis glomerata	Cock's-foot	grassland
Deschampsia cespitosa	Tufted Hair-grass	grassland
Dipsacus fullonum	Wild Teasel	railway bank, off site
Elytrigia repens	Common Couch	field margin
Epilobium hirsutum	Great Willowherb	grassland
Epilobium parviflorum	Hoary Willowherb	field margin
Equisetum arvense	Field Horsetail	field margin
Fagus sylvatica	Beech	field boundary, planted
Festuca rubra	Red Fescue	grassland
Galium aparine	Cleavers	hedgerow
Galium verum	Lady's Bedstraw	grassland
Geranium dissectum	Cut-leaved Crane's-bill	grassland
Geum urbanum	Wood Avens	hedgerow
Glyceria sp.	a flote-grass	seasonal pool
Hedera helix agg.	Ivy	hedgerow
Heracleum sphondylium	Hogweed	field margin
Holcus lanatus	Yorkshire-fog	field margin
Hyacinthoides non-scripta	Bluebell	pool surround
Ilex aquifolium	Holly	pool surround
Iris pseudacorus	Yellow Iris	seasonal pool
Juncus inflexus	Hard Rush	grassland
Lamium album	White Dead-nettle	field margin
Lonicera periclymenum	Honeysuckle	field boundary
Luzula campestris	Field Wood-rush	grassland
Lysimachia nummularia	Creeping-Jenny	grassland
Myosotis arvensis	Field Forget-me-not	field margin
Phleum pratense	Timothy	grassland
Plantago lanceolata	Ribwort Plantain	grassland

Poa trivialis	Rough Meadow-grass	grassland
Potentilla reptans	Creeping Cinquefoil	grassland
Prunus spinosa	Blackthorn	hedgerow
Quercus sp.	an oak	
Ranunculus acris	Meadow Buttercup	railway bank, off site
Ranunculus repens	Creeping Buttercup	field boundary
Rosa arvensis	Field-rose	railway bank, off site
Rosa canina agg.	Dog-rose	hedgerow
Rubus fruticosus agg.	Bramble	field boundary
Rumex acetosa	Common Sorrel	grassland
Rumex obtusifolius	Broad-leaved Dock	field boundary
Rumex sanguineus	Wood Dock	field boundary
Salix babylonica	Weeping Willow	pool surround
Salix caprea	Goat Willow	field boundary
Salix cinerea	Grey Willow	field boundary
Sambucus nigra	Elder	pool surround
Scrophularia nodosa	Common Figwort	railway bank, off site
Senecio jacobaea	Common Ragwort	field margin
Senecio vulgaris	Groundsel	arable land
Sonchus asper	Prickly Sow-thistle	field margin
Stachys sylvatica	Hedge Woundwort	field margin
Stellaria media	Common Chickweed	arable land
Taraxacum agg.	Dandelion	grassland
Urtica dioica	Common Nettle	boundaries and pool area
Veronica persica	Common Field-speedwell	field boundary
Vicia sepium	Bush Vetch	hedgerow
	Juniper sp	scrub in pool surround
	Cypress sp	hedgerow and scrub around pool

Appendix 3

Map of special sites and records in the 1km surround of Battlefield

Further details of records available on request


Legend
Bats
Birds
Fungi
Herptiles
Invertebrates
Mammals
Non Vascular Plants
Vascular Plants
Broadoak
Upper Battlefield
Battlefield
Harlescott Grange
Shropshire Ecological Data Network
Shropshire Wildlife Trust
1km Data Search for SJ5137716540
Battlefield
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Date: 05/05/2015
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