



PROPOSED NEW VILLAGE BAKERY SITE, ASH ROAD SOUTH, WREXHAM INDUSTRIAL ESTATE: ECOLOGICAL SURVEYS

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1.0 Introduction

Enfys Ecology Limited was commissioned by Design and Planning Associates Ltd to carry out ecological surveys of an area of land off Ash road south, on the Wrexham industrial estate, Wrexham County Borough. The survey area comprises a large field and surrounding hedgerow and fences, plus adjacent woodland to the south and Erlas Black Wood to the west. The area is centred on approximate grid reference SJ 3784 5000.

The surveys were carried out on behalf of The Village Bakery (Wrexham) Ltd, who are proposing to develop a new bakery complex on the site. The purpose of the surveys were to gain baseline ecological data on the species and habitats present on the site, identify any potential ecological constraints to potential development arising from the site or surrounding area, and recommend suitable general mitigation and/or compensation strategies for these issues, as appropriate.

Enfys Ecology carried out a number of ecological surveys including an extended phase 1 habitat survey of the site, a desk study examining local ecological records held for the area by Cofnod, (the ecological record centre for the North Wales region), a badger survey, breeding bird survey, great crested newt surveys of the ponds on site, and an assessment of the site's potential for invertebrate species.

2.0 Site Description

2.1 *Survey area*

The survey area contained a large open grassland field and adjacent large woodland area in the centre of the Wrexham Industrial Estate. The field had a mixture of grass and ruderal vegetation with significant areas of bare ground, and crossed by several well vegetated dry ditches. Immediately south of the open area is a strip of plantation woodland containing several ponds and a large embankment. To the west of the site is a large mature woodland (Erlas Black Wood), connecting to the woodland strip in the south west of the area.

2.3 *Surrounding habitats and features*

The survey area is right in the centre of the Wrexham Industrial Estate, to the east of Wrexham, and as such is surrounded by developed industrial units on the estate. These units form a mosaic of built up area along with substantial amounts of rough grassland, trees and woodland strips within the factory units, as well as several major roads.

The eastern boundary of the site is close to a large drainage ditch to the east, and there are areas with substantial tree cover to the south. Beyond the industrial estate the area is agricultural, with open fields, trees and hedgerows. There is some but limited connectivity with similar habitats outside the industrial estate through scrub and grassland on road verges and the banks of the Redwither brook, which passes approx. 180m to the south of the area.



**FIGURE 1. THE SURVEY AREA WITHIN WREXHAM INDUSTRIAL ESTATE.
THE APPROXIMATE SURVEY BOUNDARY IS SHOWN IN RED.
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3.0 Methodology

3.1 *Desk study*

The desk study comprised consultation with Cofnod, the local records centre for North Wales, to determine the presence of statutory and non-statutory sites for nature conservation, and records of protected, notable, or Biodiversity Action Plan (BAP) species and habitats from within and around the site of the proposed development (to a distance of 1km from the site).

The records were used to inform the survey and recommendations, and provide context for evaluating the species and habitats found during the survey.

3.2 *Extended Phase 1 Habitat Survey*

A survey of the site was conducted by an experienced ecologist walking over the site. All hedgerows and other habitats were thoroughly examined for evidence of protected species. Notes were taken on the habitat types present, and their suitability for protected species, and target notes were used to record any habitats or features of particular note, following the standard methodology (JNCC 2010). A list of floral species was recorded. A search for evidence of protected species was carried out, including amphibians (including great crested newt *Triturus cristatus*), bats, and reptiles. Evidence of badgers (*Meles meles*) including setts, dung pits, hairs, footprints, and scratching posts or trees was searched for. Trees with suitable features for roosting bats, including knot holes and other crevices, hollow trunks and dense ivy (*Hedera helix*) coverage were identified.

The extended phase 1 habitat survey was conducted on the 17th June 2015 by Tim Yardley, a suitably experienced ecologist, accompanied by trainees Alex Falkingham and Jonathan Yearley, both with ecological survey experience.

3.3 *Detailed Protected species surveys.*

Great Crested Newts.

The three ponds on site were surveyed for Great Crested newt under licence, the surveys were undertaken by experienced licenced holders with accredited agents and assistants. The licenced Ecologists were Tim Yardley , (licence number, 65480:OTH:SA:2015) and Rhian Hughes, (54119:OTH:SA:2014) Surveying took place between the 23rd April and the 8th June 2015, three surveys being carried out between mid-April and mid-May following the standard methodology (which requires a minimum of two surveys within this period) (Froglife 2001). All surveys were undertaken when overnight temperatures were above 5 degrees Celsius.

Great crested newt surveys involve undertaking three of the following methodologies: bottle trapping, egg searches, torch surveys or netting. The first three are the favoured survey methods, and these were used at this site. The bottle traps are set at night and collected the next morning, torch searches are also carried out at night. Egg searches take

place during any of the above surveys, usually in the morning when collecting the bottles. A minimum of four surveys are carried out, followed by an additional two or more if Great crested newts are discovered. Bottle trapping was difficult in parts of some ponds due to dense scrub preventing access. The surveyed ponds are identified by numbers illustrated on the phase 1 map; figure 2 in section 4.

Badgers.

Surveys for badger activity were carried out along with the phase-1 habitat survey. A search of the area was made for evidence of badger including sett entrances, and signs of activity including:

- Dung Pits
- 'Snuffle Holes'
- Hairs
- Footprints
- Trails

Breeding birds.

A breeding bird survey was undertaken by experienced ornithologist Julie Rogers during April and May 2015. The survey site comprised the small woodland known as ErLas Black Wood and the adjoining open field on Ash Road South, Wrexham Industrial Estate, Wrexham, at approximate grid reference SJ377501. (As it is not proposed to be developed, ErLas black wood was not specifically included within the survey area for the phase 1 survey, however an inspection of the wood was included as part of the surrounding areas).

The site was surveyed using methodology similar to that of the BTO Common Bird Census, whereby the site was visited during the early morning, at which time bird activity and singing is at its height. The survey was carried out on foot and all birds encountered were marked on a map, together with notes on breeding evidence, such as singing and carrying food.

A roughly circular route was followed through the woodland, which allowed for birds throughout that area to be detected either by song or sight and a route around the perimeter of the field was followed as birds were easily detected in the open areas and birds using the impenetrable scrub at the southern edge could be detected by sound. A slow walking pace was used in the woodland and field. The scrub at the southern edge of the field was surveyed by pausing to listen for calls and song, together with occasional forays into the front edge of the scrub where this was possible.

The site was visited on two occasions, 5 weeks apart, in order to allow an assessment of the breeding status of the species encountered.

Results and recommendations pertaining to birds drafted by Julie Rodgers were incorporated into this report.

Invertebrates.

An assessment of the habitat on site for invertebrates was carried out during the habitat survey. All butterfly species observed on site during the survey were recorded.

3.3 *Limitations*

Extended Phase 1

The extended phase 1 habitat survey took place in June, which is an appropriate time of year for wildlife survey. Descriptions of plant species concentrate on the most obvious and abundant species present, as the most important determinant of habitats present, however where possible an attempt has been made to list all species present, and any rare or notable, protected or invasive species are identified.

The results of this survey consists only of those species encountered at a single point in time during June 2015. Species that use the site infrequently or at different times of the year may not be recorded, and the absence of species from the results of a single survey should not be taken as indicating the species definite absence from the area in question.

Great Crested Newt Surveys

Part of each of the two larger ponds (ponds 2 and 3) could not be accessed for either bottle trapping or torch survey due to very dense scrub. This was approximately 10% of the total area, and as such is not considered likely to significantly affect the results of the survey, especially as newts were found in numbers. Newts are mobile within the ponds and so likely to be picked up on at least one survey away from the small parts of the ponds that could not be reached.

Badger Surveys

Similarly, small parts of the site could not be accessed due to dense scrub, but these areas were small and could largely be examined from the edge of the scrub, plus any trails going into or out of these areas would be seen. The area of the site which could not be accessed was small, and badgers within these areas would almost certainly leave evidence elsewhere.

4.0 Survey Results

4.1 Desk Study

4.1.1 Designated nature conservation sites

According to Cofnod there are no statutory conservation sites within 1km of the survey area boundary.

There are two local wildlife sites within 1km; The Wrexham Industrial Estate (W337) includes the Erlas Black wood within its boundary, as well as many other nearby areas. Cefn Park is 640m to the west. The site also contains Restored ancient woodland according to the Cofnod records.

4.1.2 Protected and notable species

In total, Cofnod hold 406 records of legally protected or UK Biodiversity Action Plan (UKBAP) species from within 1km of the survey area. The majority of these are of birds and other highly mobile species over 1km away, but which are included as they range widely and may occur in the survey area.

While there are no records from within the survey area, some of the closest great crested newt records refer to grid squares which include parts of the site, and may well refer to ponds within the site area. See table 1 below.

The full results of the consultation with Cofnod are included in Appendix E, a companion document to this report. A summary of the closest and most significant results is given in table 1 below.

4.1.3 Protected and notable fauna

There are no records of notable fauna from within the survey area. Of the records, 50 are faunal records from within 1km of the survey area, the majority of the others are records from up to 2km away and species which are considered highly mobile (e.g. birds) and therefore likely to be found close to this site at some point. Species close to the site include: amphibians, bats, Polecat, bird and invertebrate species. A summary of the key records is presented in Table 1, overleaf (however also see Appendix E for the full desk study details).

Table 1: Protected and notable species within 1km of the survey area. (See appendix C for further details)

Species	Details	Date	Legislation / Conservation Status*
<i>Great Crested Newt (Triturus cristatus)</i>	7 separate records from ponds within the industrial estate, are listed as 121 metres or further to the south. However these records refer to the overall grid square so may refer to one of the ponds on site (pond 2). Other records may refer to pond 3 on site. The remaining records are other ponds in the immediate area. There are several records from ponds south of the site.	1992 2007 (most 1998)	Bern, EPS, UKBAP, WCA5, Wrexham County BAP.
<i>Dingy Skipper (Erynnis tages)</i>	4 records from 348m to the north east within the industrial estate.	2004	S42, UKBAP
<i>Grizzled Skipper (Pyrgus malvae)</i>	Also 4 records from 348m to the north east within the industrial estate. Adult seen 400m SW of site, and other sightings including on verge to north.	2004, 2011, 2012	S42, UKBAP
<i>Whiskered Bat (Myotis mystacinus)</i>	Several records from across the estate, the closest 400m south of area.	1998, 1999	S42, WCA5, UKBAP, EPS
<i>Pipistrellus Bat Species (Pipistrellus)</i>	Found in industrial unit, 600m south	2003	WCA5, S42, EPS, Bern, UKBAP
<i>Bat Species, unknown. (Chiroptera)</i>	900m northwest of the area	2003	S42, WCA

Polecat (<i>Mustela putoris</i>)	2 records, all roadkill 900m north of the site	2013, 2014	Bern, S42, Conwy county LBAP
Reptiles: Slow worm (<i>Anguis fragilis</i>) and Adder (<i>Vipera berus</i>)	Recorded at Redwither Brook, over 950m south of site	Listed as before 2009	Bern, S42, UKBAP, WCA
Common Frog (<i>Rana temporaria</i>)	Fields over 950m to west	1992	Bern, WCA

*BA: Protection of Badgers Act

WCA: Wildlife and countryside Act 1981

S42: - Natural Environment and Rural Communities Act 2006 (Section 42)

BAP: Biodiversity Action Plan

EPS: European protected species

Bdir: EU birds Directive

Bern, Bonn: Bern and Bonn Conventions

CITES: Convention on International Trade in Endangered Species

RDB1 –Red Data Book, internationally listed based on IUCN Guidelines.

RDB2 –Red Data Book, nationally rare/scarce

In addition a number of Moth species were recorded across the industrial estate, including Latticed heath, Cinnabar and Shaded Broad Bar. See Appendix E for details

4.1.4 Protected and notable flora

Cofnod hold no records of protected or notable flora from within the survey area, or within 1 km of the site boundary.

4.2 *Extended Phase 1 Habitat Survey*

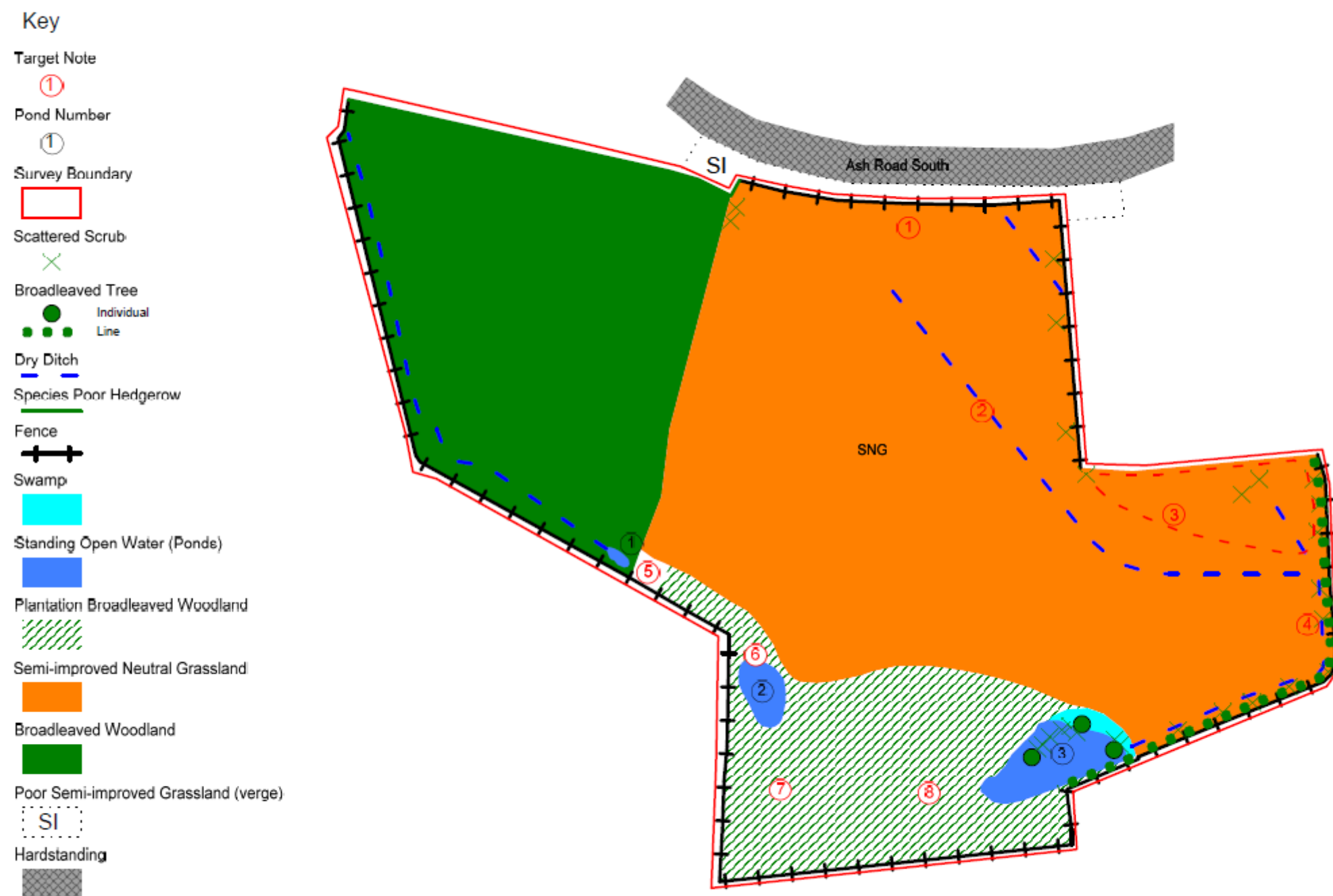
4.2.1 *Habitat Types*

The following phase 1 habitat and feature types were recorded within and adjacent to the site:

- Broadleaved woodland
- Plantation broadleaved woodland
- Semi-improved grassland
- Semi-improved neutral grassland
- Species-poor hedgerows
- Scattered scrub
- Scattered broadleaved trees
- Fence
- Dry ditch
- Standing open water
- Swamp
- Felled woodland

A phase 1 habitat map of the site is provided in figure 2, overleaf. A description of the habitats including some species information and details of target notes from the map are provided below. Photographs of the site are included with the text. Appendix A contains a list of the plant species recorded including scientific names.

FIGURE 2. PHASE 1 HABITAT MAP OF THE SURVEY AREA. TARGET NOTES AND DESCRIPTIONS OF THE HABITATS FOLLOW IN THE SUBSEQUENT SECTIONS.



4.2.2 Target notes.

1. Several small wood piles are found in this area. This appeared to have been cut on site, possibly during the removal of a hedgerow along the line of the northern fence. There are also piles of woodchip (also see photo 13, in section 4.2.3).
2. Several dry ditches crossed the open field area. The vegetation in these was similar to that of the main field in terms of species composition, with all species common in the field being found in the ditches, but taller species including meadowsweet, rosebay willowherb and nettle were dominant in some stretches. For further information see the habitat descriptions in section 4.2.3.



PHOTO 1 DRY DITCH CROSSING THE MAIN FIELD

3. The vegetation in this area (broadly outlined by the red dotted line on figure 2) was substantially longer than that of the rest of the field, reaching up to 1m in height in places. The vegetation was very similar to that of the main field, only larger and taller examples of most species, indicating a very different management regime in the past on this section of the site. There were significant stands of bramble scrub which were not present in the field outside this area. Orchids, greater mullein, meadowsweet and creeping thistle were common in this area, with tall willowherbs and common nettle.



PHOTO 2 TALLER SWARD IN THE EASTERN CORNER OF THE OPEN FIELD.

4. This field boundary from a distance appears to be a hedgerow with trees, but on closer examination proved to be a line of distinct trees and scrub, with gaps of at least a metre between many of them. A tall wire fence runs along behind the trees to enclose the field, along which many of the trees have originally been planted, as evidenced by the plastic tree guards still in place. The trees included ash, silver birch, crack willow, blackthorn, oak, hazel, elder, wild cherry, field maple, and rose (probably downy rose), all of which occur close together to the point that were this a hedgerow it would be classified as species rich.

The majority of the scrub is hawthorn, blackthorn and bramble, with goat willow and roses. A dry ditch runs in front (to the west) of the fence, containing many orchids, as well as willowherbs, meadowsweet, hogweed, and umbelifers

5. This area of the southern plantation woodland had at the time of survey recently been clear felled. The vegetation/brush had been largely removed, but the majority appeared to have been chipped and spread around the surrounding woods, some in the water of pond 1. The resulting area was almost completely devoid of vegetation at the time of survey.



PHOTO 3. CLEAR-FELLED AREA IN SOUTHERN WOODLAND. (NEWT SURVEY EQUIPMENT IN FOREGROUND)

6. A badger sett was found at this location, immediately to the north of pond 2 (and occupying part of the northern bank). There were at least 5 large sett entrances within a small (25m²) area, in a large earth bank on the woodland floor, between the roots of the oak and hawthorn trees making up this part of the woodland. There was no sign of current badger activity, and all the entrances were partially filled with leaf litter and cobwebs. The sett was not judged to be active at the time of survey, though it is likely some rabbits are using it, however it remains intact and it is possible that badgers could return.



PHOTOS 4 AND 5. CURRENTLY DISUSED SETT AT TN6, IN THE WOODLAND NORTH OF POND 2.

7. A second disused badger sett was found within the southern part of the woods. There were at least 3 holes, though possibly more, the area was difficult to access due to a dense stand of bramble and nettles covering most of the area. There was no evidence of current badger activity, but evidence of rabbit use.



PHOTOS 6 AND 7. OVERGROWN DISUSED SETT AT TN 7.

8. A third disused sett, only two holes were observed, very overgrown and full of leaf litter. There was also no evidence of recent badger activity, despite an extensive search being made.

4.2.3 Habitat descriptions

Fields: Semi improved Neutral grassland

The large open field area covering the centre of the site was made up of a diverse grassland community with significant areas of bare ground. The sward was uniformly short, except in an area on the eastern boundary (target note 3) and along the several drainage ditches which cross the site, but which were all dry at the time of survey (target note 2), and from the vegetation cover had been for some time.

The diverse sward contained grass species including cock's foot, rough meadow grass, meadow foxtail, Yorkshire fog, brome, red fescue and creeping bent, along with many flowering plants including daisy, dandelion, ribwort and greater plantain, red and white clover, curled dock, black knapweed, bush vetch, grass vetchling, black medick, birds foot trefoil, hairy tare, cut-leaved cranesbill, herb Robert, creeping and spear thistle, meadow and creeping buttercup, common mouse ear, scarlet pimpernel, barren strawberry and occasional wavy bitter-cress and tufted vetch. Common spotted orchid was found scattered across the entire field, but particularly commonly in the south and east, where densities approached a minimum of 1 per square metre, and along the eastern boundary dry ditch.

Bristly ox-tongue was found in the east of the site, and rushes were scattered across the area, including soft rush, hard rush in the south and east, and jointed rush, particularly in the north of the field. A few isolated examples of oilseed rape are possibly remnants of former agricultural use of the field.

The margins also had ragged robin, oxeye daisy, meadow forget-me-not, broadleaved dock, rosebay willowherb, greater mullein, particularly along the eastern boundary, formed by a high grass bank with taller vegetation. See appendix A for a full list of species present.



PHOTO 8. MAIN FIELD FROM THE NORTHWEST



PHOTO 9. THE FIELD FROM THE NORTHEAST

The frequent areas of bare ground covered an estimated 10% of the area. Some had been created by vehicle tracks, but most was simply uncolonised by plants. This may result from

past disturbance, or it is possible that the area has been sprayed in the past, perhaps targeting grass species. There was some moss, particularly in the south of the area. The areas of bare ground were not individually large (except a few isolated areas), forming more of a matrix of small patches with the grassland, as seen in photo 10, below.



PHOTO 10. DRY DITCH AND BARE GROUND



PHOTO 11. ORCHIDS IN THE SOUTH OF THE FIELD

The several dry ditches had very similar species, but taller, including willowherbs and meadowsweet, oxeye daisy and cow parsley and other umbelifers, which were uncommon elsewhere. There was also wild primrose and orache.

Immediately north of the northern fence, the road verge is made up of many of the same species, including grass vetchling, but is overall less diverse, and classed as semi improved grassland.



PHOTO 12. THE FAR EASTERN SITE BOUNDARY WITH TALL SWARD.



PHOTO 13. THE NORTHERN FENCE BOUNDARY

Field boundaries –Scrub, hedgerow and trees

The northern boundary is a wire fence, along which the original hedgerow has been cleared, leaving piled woodchip and some wood piles (see target note 1). The eastern boundary is also fenced. However the southern part is lined with trees and mixed scrub (see target note 3 for a description).

In the northwest a small hedgerow of copper beech has been planted to span the gap between the northern fence and the woodland, and then runs along the woodland edge. This is still at an early stage of growth. Other plants included Bush vetch, umbelifers, thistles, rosebay and greater willowherb, greater mullein and ragged robin.

Broadleaved Woodland.

Erlas Black wood was a large woodland made up of a mix of mainly mature oak, ash, and horse chestnut, with occasional Scots pine. Below the canopy was a mix of hawthorn, and more rarely blackthorn and holly, above a ground flora including dog's mercury, wood-sorrel, bluebell, wild garlic, violet, lesser celandine and early purple orchid.

Ivy and honeysuckle covered many trees, and there was a good amount of standing and fallen deadwood with woodpecker holes in several standing trunks.

The ground layer was formed in distinct patches of bare ground and vegetation, particularly wild garlic and dog mercury stands.



PHOTOS 14 AND 15. WITHIN ERLAS BLACK WOOD.

The wood boundary with the open field was formed of young trees and scrub species including horse chestnut, hazel, hawthorn, ash, blackthorn, briar rose, willow, (crack willow, goat willow, and a hybrid, -possibly Smith's willow) with willowherb, thistles, cleavers, black knapweed, ragged robin, hedge woundwort, early purple and common spotted orchid, bush vetch, hogweed and common nettle, forming an effective barrier along much of the boundary.

Plantation Broadleaved woodland

The southern woodland was made up of large mature oak and ash, with scots pine, scattered across the area, above the main body of the woodland which was planted hawthorn and blackthorn (as evidenced by the plastic protector still attached to many of the trees. Other species in this lower canopy included hazel, silver birch, crack willow and holly, though the vast majority was hawthorn except right by the ponds. It is likely the hawthorn was planted around pre-existing larger trees some time ago.

The canopy was dense, producing a heavily shaded ground flora, which was made up of patches of dog mercury, nettle, cleavers, wood avens, lords and ladies, bindweed, red campion, Hart's tongue fern and bramble. The majority of the area under the canopy was bare ground.



PHOTO 16. PLANTATION HAWTHORNS IN SOUTHERN WOODLAND.



PHOTO 17. NEAR SOUTHERN FENCE

The woodland lies on a large bank, rising up to a high point south of pond 2, before descending again down to the southern fence.

The eastern part of the woodland, around pond 3, was more diverse. Here there was significant amounts of crack willow, goat willow, curled dock, cut leaved cranesbill, herb Robert, meadowsweet, soft and hard rush, greater and rosebay willowherb, common nettle, hogweed and gorse. Large examples of wood vetch were climbing the fence in the southeast, and the wet areas near the pond contained figwort and wood avens.

There were three unoccupied badger setts within the wood (see target notes 6, 7, and 8), however there was no evidence of current use by badgers. Rabbits were abundant, and there were a few obvious foraging trails through the woodland which are probably the result of their activities.

Standing Open Water –Ponds.

There were three ponds examined within the survey area, in the woodland on the southern part of the site. The location and numbers of the ponds are shown in figure 1.

Pond 1 was a small wet area at the end of a much longer dry ditch. The water was largely clear, with no aquatic vegetation. The water was up to 30cm deep with a further 30cm or more of leaf litter and silt towards the centre of the pond. The water was heavily shaded by surrounding goat willow and hawthorn. The surrounding ground was also very shaded and bare, even in June.



PHOTO 18. POND 1 IN APRIL



PHOTO 19. POND 2 IN APRIL

Pond 2 was much larger, approx. 200m², and also very shaded by surrounding trees. The steep earth banks were well vegetated and dense scrub prevented access to part of the banks, while willow and hawthorn scrub was encroaching on the water itself, with several willows growing in the middle of the pond. The water was at least 1m deep towards the centre, with a bed of thick leaf litter and silt.



PHOTO 19. POND 2 IN JUNE



PHOTO 20. POND 3 LOOKING NORTH

In the centre of the pond was a small stand of reedmace, which was the only aquatic vegetation. The water level fluctuated throughout the survey visits with a variance of about 50cm.

Pond 3 was by far the largest pond on site, with an estimated area of around 1600m². The pond varied considerably in depth and profile, but while in the centre and east parts of the pond were over 1.5m deep, the majority was shallow. The pond is very shaded by encroaching willow and hawthorn scrub, including several large crack willow, and the exposed areas were choked with reedmace, which forms a broad swampy area, particularly on the northern side of the pond, where the depth increases very gradually, averaging 10cm, and probably dries out occasionally.



PHOTO 21. SCRUB ON THE WEST OF POND 3.



PHOTO 22. THICK DUCKWEED AT THE SOUTH WEST END OF POND 3.

On the eastern side of the pond there was occasional water figwort and woody nightshade among the reedmace. The water is thick with leaf litter and dead reedmace stems, making visibility difficult. The western side has less vegetation, but is very shaded by dense impenetrable scrub. Several large crack willow were growing in shallower parts of the centre of the pond.

The south-western end of the pond is also very shaded, and the water is completely covered in common duckweed, which blocks all visibility of the water. The bed here is covered in a deep layer of silt.

4.2.3 *Fauna*

Amphibians

Specific great crested newt surveys were carried out on the three ponds on site. The results of these surveys are given in section 4.2.4. Overleaf.

There was potential breeding habitat for common amphibians on site in all three ponds. If wet, the ditches may also support breeding by common frog and toad, but this does not seem to have been the case for some time. The ponds may have been connected to a larger watercourse intermittently in the past. Certainly pond 1 appears to consist of part of an originally larger channel, now dry, leading into the area from the west.

The area has potential for terrestrial use by amphibian species in the hedgerows and woodland. The site is relatively isolated by major roads and a built up area, however the presence of standing water on site suggests it is very likely common amphibians use the site.

Badger

Several setts were found within the woodland area, but all appeared to be empty. The whole area is suitable for foraging by badgers, but is somewhat isolated by being surrounded by built up areas and busy roads.

The area has limited connections to other habitat, badgers will obviously cross roads though this will be a deterrent, but from the setts present on site it is considered likely that badgers visit this area, but are not resident within the survey area at present or some evidence would have been seen. If badgers visited the area frequently it is likely that at least one of these setts would be occupied, however there has evidently been badger activity on site in the past, and it should be considered that they could return at any time.

Nesting birds

The hedgerows, trees, and woodland on site were all very suitable for nesting bird species. Several nests were seen in trees within the woodland, (likely unoccupied as no activity was seen, but this was not determined). Several species were recorded breeding on site, including an active wren nest was recorded in ivy covering a tree trunk on the northern side of pond 2 during one of the newt survey visits.

The results of the specific breeding bird survey are presented in section 4.2.5 below. All of the woody vegetation on site should be considered potential bird-nesting habitat.

Bats

The site includes many large mature trees in both woodland areas. While none were specifically noted as having exceptional features for roosting bats, many have a good covering of ivy which may have the potential to shelter bat species.

The hedgerows and woodland margins may offer foraging habitat for bat species, which fly along tree lines and hedgerows collecting flying insects that congregate in these locations. The ponds on site also provide a supply of emerging aquatic insects as a useful food source, and bats were seen foraging over pond 2 on three of the newt survey visits.

Reptiles

The site has some potential to support reptile species, as the grassland has a mix of open ground for basking and limited cover, while the piles of wood chippings and woodland leaf litter will provide refugia. The area is however rather cut off by busy roads, and has limited connectivity to suitable habitat areas. The only records of reptiles in the area are 900m away. Therefore it is considered that the presence of reptiles on site is unlikely, though possible.

Invertebrates

While none were observed during the surveys, the grassland provides good habitat for both the dingy and grizzled skipper, as well as many other invertebrate species. The food plant of both species is present on site (though more so for the dingy skipper, the larvae of which eat bird's foot trefoils. For the grizzled skipper, agrimony, creeping cinquefoil and barren strawberry were present, but very infrequent), and there is rough grassland with plenty of flowers to provide nectar, with numerous patches of bare ground surrounding the plants, which the species favour. As there are numerous records of both species across the industrial estate, and the habitat is good, it should be considered highly likely that both species are found on site.

Other species.

The lack of water in the ditches and the isolated nature of the site suggests the presence of otter or water vole is highly unlikely. There were no records of these species within 1km in the desk study.

4.2.4 *Great Crested newts*

The three ponds within the survey area were surveyed by licenced surveyors using bottle trapping and torch searches and egg searches at the optimal time of year (April - early June), when newts are using the ponds for breeding.

The pond locations are shown on the phase 1 map (Figure 2 in section 4) and descriptions of the surveyed ponds are given within the text of the phase 1 survey. Rather than repeat this, a brief description of the ponds with regard to their suitability for great crested newt is given below, with essential factors summarised in Table 2, overleaf.

Pond 1



Photo 23. Pond 1.

The smallest of the ponds, occupying the end of a largely dry channel on the southern edge of the woodland in the south west of the area, possibly a former drainage ditch running into the site from the west. The water was shallow (up to 30cm) and clear, with a silt and mud bottom made up of 30cm or more of accumulated leaf litter and deadwood. There was no aquatic vegetation.

Pond 2.



PHOTO 24. POND 2.

Pond 2 is within the woodland in the centre south of the area. The large pond is completely surrounded and very shaded by dense oak, ash and hawthorn woodland, with willow trees growing within the pond itself. The water is over a metre deep in the centre, the bed is a deep silt from leaf litter accumulation. There was no aquatic vegetation except in the centre area where there was a small but dense stand of reedmace.

Pond 3.



Pond 3 is the largest of the three, with broad shallow margins choked with reedmace, deepening to over 1.5 metres deep in the centre, with a deep silt bed. There is dense vegetation for egg laying and providing dense cover. The surroundings are shaded with dense willow scrub. The southern ends are completely covered with duckweed and consequently could not be torch surveyed effectively.

PHOTO 25. POND 3.

Habitat Suitability index (HSI) calculations were carried out for each pond, (using the standard method (ARG 2010)). This method involves assessing the pond by ten 'factors' including such measures as geographic area, likelihood of drying out, wildfowl presence, and vegetation cover, to arrive at a figure between close to 0 (least suitable) and 1 (highly suitable, would expect to find great crested newts), (to prevent multiply by 0 errors a score of exactly 0 is impossible). The full scores used to calculate the HSI are provided in appendix D.

The HSI scores for the three ponds were: Pond 1: 0.45, Pond 2: 0.70, and Pond 3: 0.87. Looking up these scores in the table in the guidelines gives a suitability of 'poor' for pond 1. 'good' for pond 2, and 'excellent' for pond 3.

Table 2: Description of ponds surveyed for amphibians.

	Pond 1	Pond 2	Pond 3
Fish present	N	N	N
Waterfowl present	N	Y	Y
Non-native aquatic plant species present	N	N	N
Water clarity 1-3 (1 – clear, 3 –Opaque or clouded)	1	2	2-3
Pond suitability for torch surveying 1-3 (1 – most suitable)	1	1-2	3
Reasons	Clear, no vegetation	Cloudy on latter visits	Very overgrown with reed, vegetation in water, dense covering of <i>Lemna minor</i>
% pond edge surveyed	100	85	70
HSI Score	0.45	0.70	0.87

The full results of the surveys are provided in Appendix D. A summary of the results for great crested newts only, is provided in Table 3 below. Other amphibians were recorded (frog, toad, Smooth and Palmate newt) as shown in Appendix D.

Great crested newts were found in ponds 2 and 3. Accordingly, as per the guidelines a full 6 surveys were carried out of these ponds. Surveys at pond 1 stopped following the fourth visit as no great crested newts had been found.

Table 3: Great Crested newt counts per pond over the 6 survey events (combined torching and bottle trapping results).

Survey	Date	Pond 1	Pond 2	Pond 3
1	23/04/2015	0	1 M 2 F	13 M 14 F
2	28/04/15	0	3 M 2 F	13 M 15 F
3	06/05/15	0	3 M 3 F 1 U	10 M 14 F 1 U
4	22/05/15	0	2 M 2 F	5 M 5 F
5	27/5/15	N/S	2 M 2 F	2M 1F
6	08/06/15	N/S	2 F	4 M 3 F
Total GCN		0	25	100

Key

N/S = not surveyed

M = Male Great Crested Newt

F = Female

U= Sex unidentified

Great crested newts were found in 2 of the three ponds with the highest number in pond 3. The species is therefore found on site in numbers. The lack of newts in pond 1 may indicate that this pond dries out occasionally, as does the rest of the channel in which it is found, but may also be affected by the lack of vegetation and consequently reduced egg laying opportunities in the pond (though leaf litter, which will be used if nothing better is available, was present).

Under on the current guidelines (English Nature 2001) (still the standard for GCN survey, including in Wales) this represents a **medium population** of this species, based on the highest nightly count of 33 newts over two ponds (survey 2). At least 30 newts were recorded in this way on each of the first 3 surveys. The ponds are counted as a single unit for the purpose of population assessment as they are within 250m and have no barriers to dispersal between them.

4.2.5 Breeding Bird Survey

All birds encountered in the survey area are summarised in table 4, with birds on the red and amber lists (BOCC 3) and UK BAP/Wrexham LBAP status (JNCC/BARS) indicated where relevant. The field results maps showing all bird records are provided in appendix C.

Table 4. Bird Species recorded on site

Species	Status	Location	Breeding evidence
Mallard (<i>Anas platyrhynchos</i>)	Amber List	1 pair Pond, West end of Scrub	Possible
Buzzard (<i>Buteo buteo</i>)		1 pair West end of Scrub	Possible
Stock Dove (<i>Columba oenas</i>)	Amber List	1 pair Wood	Probable
Woodpigeon (<i>Columba palumbus</i>)		2-3 pairs Wood 1 pair Scrub	Probable
Great Spotted Woodpecker (<i>Dendrocopos major</i>)		1 pair Wood	Probable
Magpie (<i>Pica pica</i>)		1 pair Wood	Possible
Jay (<i>Garrulus glandarius</i>)		1 pair Wood	Probable
Jackdaw (<i>Corvus monedula</i>)		1+ pair Wood	Probable
Carrion Crow (<i>Corvus corone</i>)		1 pair Wood	Possible
Goldcrest (<i>Regulus regulus</i>)		3 pairs Wood	Probable
Blue Tit (<i>Cyanistes caeruleus</i>)		6 pairs Wood 2 pairs Scrub	Confirmed
Great Tit (<i>Parus major</i>)		3 pairs Wood 1 pair Scrub	Confirmed
Marsh Tit (<i>Poecile palustris</i>)	Red List UK BAP	1 pair Wood	Non-breeding
Swallow (<i>Hirundo rustica</i>)	Amber List	Woodland edge	Non-breeding
Chiffchaff (<i>Phylloscopus collybita</i>)		1 pair Wood 2 pairs Scrub	Probable
Blackcap (<i>Sylvia atricapilla</i>)		4 pairs Wood 2 pairs Scrub	Probable
Whitethroat (<i>Sylvia communis</i>)	Amber List	1 pair Brambles East Field	Confirmed
Nuthatch (<i>Sitta europaea</i>)		1 pair Wood	Confirmed
Treecreeper (<i>Certhia familiaris</i>)		2 pairs Wood	Probable

Wren (<i>Troglodytes troglodytes</i>)		6 pairs Wood 4 pairs Scrub	Probable
Blackbird (<i>Turdus merula</i>)		4 pairs Wood 1 pair Scrub	Probable
Song Thrush (<i>Turdus philomelos</i>)	Red List UK BAP Wrexham BAP	1 pair Scrub	Possible
Robin (<i>Erithacus rubecula</i>)		3 pairs Wood 2 pairs Scrub	Probable
Chaffinch (<i>Fringilla coelebs</i>)		2 pairs Wood	Possible
Bullfinch (<i>Pyrrhula pyrrhula</i>)	Amber List UK BAP Wrexham BAP	1 pair scrub	Probable
Greenfinch (<i>Chloris chloris</i>)		1 pair Wood	Confirmed
Goldfinch (<i>Carduelis carduelis</i>)		1 pair Wood	Confirmed

Two distinct areas of the site support a wide range of breeding woodland birds: Erlas Black Wood and the dense, scrubby bank at the southern edge of the site. Birds were encountered using the open ground to forage: Magpie, Jackdaw and Stock Dove. There was also a corvid roost within Erlas Black Wood, with Jackdaws, Carrion Crows and Magpies present in the canopy during all visits, and Woodpigeons also possibly using it to roost in addition to breeding there.

Confirmed breeding in Erlas Black Wood were Blue Tit, Great Tit and Nuthatch. These are hole-nesting species and clearly find plenty of suitable nest sites. While Blue and Great Tits were encountered across the woodland, one Nuthatch pair was encountered in the northern area of the wood during both visits, with one bird seen carrying food during the second visit.

Greenfinch and Goldfinch families were encountered on the second visit, confirming breeding for these two species at the woodland edge.

Species considered probably breeding in the woodland were Stock Dove, Woodpigeon, Great Spotted Woodpecker, Jay, Jackdaw, Goldcrest, Chiffchaff, Blackcap, Treecreeper, Wren, Blackbird and Robin. Compared with the scrub area of the site, there were fewer Chiffchaff records in the wood. This may be due to a lack of dense shrub layer within the wood. The Chiffchaff records were from the north-west corner/edge of the woodland, where there was denser shrub layer present.

Possibly breeding within the woodland were Magpie, Carrion Crow and Chaffinch. As there was a large number of corvids moving around the roost site, it was not clear whether some birds were also nesting nearby and it was felt possible that some might be. A singing Chaffinch at the north woodland edge during the first visit was considered to be in suitable habitat, but it was not encountered on the second visit.

A Marsh Tit (Red List) was heard in the woodland during the site visit but it was not encountered on subsequent visits. While there are many potential nest holes for Marsh Tits, it is possible that the woodland is too small to support them and there may be too much competition from the Blue and Great Tit population here. A single Swallow was observed feeding around the north east edge of the woodland during the second visit.

Breeding confirmation was recorded for Blue Tit only in the scrub area on the south of the site, with a pair observed carrying food into the vegetation. However, it was felt probable that Woodpigeon, Chiffchaff, Blackcap, Wren, Blackbird, Robin and Bullfinch were also breeding there, as all were encountered during both survey visits and were recorded behaving territorially.

In addition, a pair of Whitethroats was confirmed breeding in the patch of brambles at the north end of the bank bordering Ash Road and they were foraging for food amongst the low hawthorns on the bank. A Mallard flushed from the pond at the west end of the scrub was considered to be in suitable breeding habitat and there may have been a female present concealed in the vegetation, but this was not investigated in order not cause unnecessary disturbance. A pair of Buzzards observed flying from the scrub area towards the woodland may also have been breeding in the taller trees on the bank there.

4.2.6 Invertebrates

Despite appropriate but slightly overcast conditions few invertebrates were observed on site during the survey, (though as noted no netting or other protracted effort to catch them was made). The only butterflies observed were a small number of speckled wood *Pararge aegeria* and meadow brown *Maniola jurtina*, plus a small heath *Coenonympha pamphilus*. No skippers were observed. Otherwise observed in the area were bumblebees *Bombus terrestris/lucorum* and a single female common blue damselfly *Enallagma cyathigerum* which was seen in the vicinity of pond 3.

5.0 Discussion and Evaluation

5.1 *Nature Conservation Sites*

The works to the site are extremely unlikely to have an impact on any statutory conservation sites in the area, there being none within 1km of the site. Erlas Black wood is part of the Wrexham industrial estate Local wildlife site, so significant changes to this site would obviously affect this, however the woodland is not expected to be impacted directly by the proposed plans.

5.2 *Habitats*

The woodland at Erlas Black wood dates back to the 17th century, and Lowland mixed deciduous woodland has been adopted as a national priority habitat. (UK BAP 2007) (based on the guidelines from the Institute of Ecology and Environmental Management (IEEM 2006). Woodland and 'derelict industrial land' are priority habitats with action plans under the Wrexham county Borough Biodiversity Action Plan (County BAP).

The most valuable habitat on site is both the woodland and the semi improved neutral grassland, which is botanically diverse and has the potential to support diverse invertebrate communities including rare butterfly species. Works on the field will therefore be damaging this habitat, and steps should be taken to reduce the area affected.

As much of the original grassland as possible should be retained in its original state. Any retained sections should be managed in a way that maintains the present conditions as much as possible, which will include occasional cutting regimes, set out under a management plan.

The creation of a green roof, with a diverse species composition designed to mimic the list habitat as much as possible would also be of significant benefit in replacing the lost habitat, particularly for pollinator and other invertebrate species, such as the dingy and grizzled skipper.

The ponds on site could be enhanced by dredging and scrub clearance to provide improved habitat for newts, other amphibians and invertebrates (see below).

5.3 *Species*

5.3.1 *Floral Species*

Floral diversity of the site was good, and higher than expected for a former agricultural field, resulting in a categorisation as semi improved neutral grassland (SNG). None of the species recorded during the survey are protected by the Wildlife and Countryside Act 1981 (as amended). Grass vetchling is only locally common in Wales, however.

5.3.2 Faunal Species

Amphibians

Great crested and smooth newts were recorded breeding on site, and it is considered almost certain that common amphibian species such as common toad (*Bufo bufo*) and common frog (*Rana temporaria*), also do so. Specific measures which will be required to protect great crested newts will also serve to protect these species.

As the presence of a medium population of great crested newt is known to be on site, the works on the field to the north will cause harm to newts using the field. Therefore to prevent this it will be necessary to fence off the working area with exclusion fencing, and trap the newts out of the area. The exclusion fencing should then be maintained for the duration of the works, and regularly monitored, to prevent newts accessing the area and coming to harm.

In addition specific working measures to reduce the likelihood of killing or injuring amphibians should be put in place during the works as a precaution. If they are found during works, they should be carefully moved to adjacent habitat away from the construction zone.

Badger

While no evidence of current badger activity was found on the site, the area is suitable and has several unoccupied setts in the woodland. However the lack of recent evidence of badger suggests this species is not currently resident on site.

There are records of badger from within 1km, and so it is likely that badgers visit the site to forage, but there are major roads and other obstacles and therefore the frequency is not known. The status of the setts should be monitored, and if works are planned within 30m of the setts then the setts will need to be temporarily closed in advance of the works to prevent their occupation and subsequent disturbance to badgers during the works. Based on recent experience (at an unrelated site) this work will need to be carried out under a licence, unless evidence can be produced (almost certainly from monitoring) that the setts have been empty for at least one year.

Should badgers be reported occupying the sett then a licence for the works from NRW will be required, and potentially the licenced closure of the sett(s).

If however the works do not encroach within this distance it would be better to leave the setts undisturbed. Simple procedures to minimise the risk of harming badgers that may visit the site should be put in place (for example; backfilling trenches, or providing planks to allow animals which may fall in to excavations to escape).

Bats

A number of the large mature trees within the woodland have the potential for bats. It is not known which, if any, of these trees are proposed to be removed (and it is likely that none are). It is recommended that any large mature trees to be removed or damaged are subjected to a specific inspection for bats, including emergence surveys if the specific, identified trees are included. Further surveys may also be required, recommendations for which can be made following the initial inspection.

Birds

A typical assemblage of woodland birds was found to be breeding within the Erlas Black Wood section of the site. The woodland appeared to be largely undisturbed and offered a range of nesting habitats despite its relatively small size. Bird species requiring low, dense shrub/thicket such as Blackcap, Chiffchaff and Robin were encountered mainly around the woodland edge where the shrub layer was more developed. Birds using holes in trees or snags/branches for nesting such as Great Tit, Blue Tit, Goldcrest and Treecreeper were encountered more widely through the woodland where there were widespread nesting opportunities in the mature trees and deadwood.

Of particular interest in the scrub-covered bank to the south of the site were Song Thrush and Bullfinch, both UK BAP and Wrexham BAP species, with Song Thrush on the Red List and Bullfinch on the Amber List (BOCC3).

Reptiles

The survey area overall has potential habitat for reptiles, but no reptiles were observed on site and there are no records from within the area. Based on this the likelihood of reptiles being found is considered unlikely and no further surveys are therefore considered necessary, however the use of specific measures to protect great crested newts and other amphibians will also serve to protect reptile species, should they be present in small numbers.

5.4 Summary of the Main Potential Ecological Issues

The major feature of ecological value in the survey area is the semi improved neutral grassland and ancient woodland habitats within the area. As well as their ecological significance, the population of great crested newts within the ponds on site are the principal legal issue associated with the proposed works, and a licence will be required to trap and exclude them from the proposed work area.

Works which will affect the trees should ideally be avoided, if this is not possible care should be taken to avoid potentially affecting bats or nesting birds which may be using the vegetation. Any clearance required should be carried out over the winter to avoid this, with work outside this period under the supervision of a suitable ecologist. Monitoring of the badger setts or their closure to prevent occupation during the works may be necessary depending on the exact nature of the works.

6.0 Recommendations

6.1.1 Mitigation

Habitats and Invertebrates

The grassland on site is valuable, and should be retained as much as possible and managed to maintain its current form under a suitable management plan. Obviously the retention of large areas of the grassland will be impossible with the construction of a large bakery, however there should be scope to retain areas on the south and east of the site, which were the best parts of the site. A connecting corridor alongside the building from the north down to this area should be included in the plans to maintain contact between this area and similar habitat to the north.

One method of retaining grassland interest would be by the use of a green roof, especially with the use of a possible green wall to lead up to this area, which would benefit invertebrate species trying to locate the habitat. The planting of native species wild meadow, including as many of the species listed here for the grassland area as are practicable on a green roof (following consultation with suitable experts) would be essential. It may be practical to construct the green roof in stages.

A final consideration could be mitigation via the creation of suitable habitat off site. This would require the acquisition of suitable land, which should be close to the site. The area must be close enough to areas of suitable habitat for invertebrate species, including the dingy skipper and grizzled skipper, that it would be reasonable that these species would find the area and establish once the habitat is enhanced. It may be possible to conduct translocations, though the success rate of this is not known, but this is not recommended as the idea is to create additional habitat which ties into the existing network of habitat patches within the industrial estate, allowing species to establish naturally and recolonize following local extinctions. In this way a viable long term population is maintained.

If possible, the creation and maintenance of habitat on site is strongly preferred.

Recommended management for the woodland is to leave this as is. However the southern plantation is of lower value, and could be partially cleared adjacent to the grassland area and ponds. The resulting area should be left to be colonised by the adjacent grassland species. It is recommended that the shrub layer around the woodland edge is maintained to provide habitat for bird species, for both nesting and a buffer to the main woodland. Native hedge species must be used for any shrub planting.

Management of the ponds on site is also advised, please see the amphibian section, below, for advice on this.

Amphibians

As a medium population of great crested newts have been recorded within the ponds on site, they are almost certainly using the habitat within the field. To prevent harming this species it will therefore be necessary to exclude newts from the area of the development during the works.

This should be accomplished by fencing off the entire works area with suitable great crested newt exclusion fencing to prevent newts coming into harms way by entering the area, and by using pitfall traps and refugia to capture any newts within the excluded area, which can then be transferred to a suitable receptor area nearby. All of the above must take place under a licence from Natural Resources Wales (NRW) to capture and disturb newts.

Following the granting of a licence, suitable fencing should be installed on site. Inside the fencing pitfall traps should be installed and refugia placed at intervals adjacent to the fence. The fence acts to intercept animals crossing the area, which are then directed along the fence towards the traps. The exact design of the fencing and trapping layout will be decided as part of the licence application process, but it may be necessary to use internal drift fencing to subdivide the area into smaller sections to increase the capture rate.

Based on the finding of a medium population on site, a minimum of 65 consecutive trapping events will be required to clear newts from the area (following the guidelines set out in Froglife 2001). This can take place in the period February to October. Each trap must be checked by an ecologist daily, and all trap checking must be completed by 10am each day. Suitable monitoring of the fences should also take place, with each section checked a minimum of once a week. Trapping must only take place when overnight temperatures will be 5°C or more, the traps are provided with lids to allow them to be closed to prevent this.

Following the completion of trapping, works within the area may commence. The fencing must be maintained throughout, and any breaches in the fence may require suspension of work and re-trapping the compromised area.

Ponds 2 and 3 are breeding habitat for great crested newt and as such should be retained. There is however scope to improve the habitat quality of the ponds, and it is recommended that the ponds are enhanced as part of this project, principally through dredging and scrub clearance.

Ponds 2 and 3 would benefit from dredging in part of the area to restore depth which has been lost to leaf litter and silt deposition. Great crested newts breed optimally in water with a depth of 1.5 to 3.5 metres, which should be one aim of the enhancement. The entire pond should not be deepened to this extent, but the creation of deeper sections of a third of the pond area would be of benefit. The dense reedmace in pond 3 should be removed, and in its stead suitable aquatic vegetation should be introduced to provide egg laying sites, once shading scrub has been removed. Pond dredging should not be carried out while newts are

breeding in the ponds (i.e. during April-June). All dredged material must be left on the side of the ponds, to allow any animals captured to move back to the pond.

Further aims should be the clearance of scrub from the vicinity of the ponds, to reduce shading. The scrub should be cleared, to be replaced by rough grassland, with the felled wood retained on site and potentially buried under a thin layer of topsoil to create hibernacula for newts in winter. Woodchip or other mulch should also be retained on site, and spread out. A 'buffer zone' of 5m or so of grassland, cleared of woody vegetation around the ponds would serve to enhance the site for newt breeding and foraging. Beyond this the scrub/plantation woodland has other benefits and should be retained. The exception to this is the badger sett at pond 2, (target note 6), where it is recommended the scrub over the sett is retained.

The works should be accompanied by the creation of a suitable management plan setting out a plan to maintain and conserve the habitat on site.

A toolbox talk on the presence of newts, and the methods and constraints this places on the site works, including reference to any licence issued for the work should be given to site staff by an ecologist when works begin. Reference to this issue should form part of site inductions for all staff.

During works

To reduce the potential to impact to reptiles, amphibians, nesting birds or other species that may be found on site, the following procedures are recommended if development takes place:

- Working areas should be kept to the minimum required, and any grassland areas disturbed during the working phase should be subsequently re-created as much as possible in any areas remaining following development.
- Storage of plant or machinery should be restricted as much as practical to hardstanding areas of the site.
- If any amphibians or reptiles are found during the works, they should be removed carefully by hand to areas away from the works, such as under scrub or hedgerow habitat not to be affected by the works. Gloves should be worn.
- Ideally, trenches or pits should be back-filled wherever possible, as soon as possible following the completion of any works in the trench or pit in question. Also, any pipes should be capped off at night time to avoid any amphibians entering them and becoming trapped.
- Should it be necessary to have any excavation left open these excavations should ideally be covered with plywood boards (or similar). The boards are to be bedded on

sand to prevent small animals from taking shelter under exposed edges. If this is not possible, then these trenches must be thoroughly checked prior to back filling.

- Should leaving pits or trenches open be unavoidable, a suitable ramp (such as a plank or branch) must be provided to allow animals to escape the pit. Ramps could be created by grading the slope at the edges or using scaffold boards. Trenches should be checked each morning (by site operatives) prior to works commencing to ensure that amphibians are not present.
- At the end of works each day, the site should be inspected by a responsible individual to ensure that the above protocols are being complied with.
- The watercourses should be carefully fenced off with heras fencing whenever access is not required and out of bounds for site staff except for essential works. Water should not be extracted.
- A suitable plan to avoid run off contamination of the watercourses should be drawn up before works commence

Birds

As the site provides nesting habitat for birds, any tree or shrub removal required should ideally take place outside the bird breeding season, (March to September inclusive), if this is not possible, a thorough search for nesting birds should be conducted prior to any clearance (including tree climbing if required) and if any nests are found or the area cannot be adequately searched all activity must stop until the birds have fledged or outside the nesting period.

It is recommended that the shrub layer around the woodland edge is maintained as far as possible during development of the adjacent site as this would maintain habitat for bird species using it for nesting as well as providing a buffer to the main woodland. It would be desirable to use native hedge species for any shrub planting in order to develop corridors for birds to move around. In particular, it is recommended that the copper beech hedge at the gateway to the site is replaced with a native mix, including hawthorn and holly, for example, in order to create a more natural woodland edge. In addition, the boundary created by a natural hedgerow would eventually provide a desirable deterrent to the dumping of grass clippings from the neighbouring lawn areas on the woodland floor, as this practice is a detriment to the vital ground flora in that part of the woodland.

The tree planting lining the link to the existing Village Bakery site could also provide a continuation of the woodland by planting species reflecting the natural mix present in the wood, such as oak, ash and wild cherry (*Prunus avium*), with shrub layer species such as hawthorn and holly included.

The Song Thrush habitat was in the area immediately behind the proposed landscape mound along the southern edge of the site. This species requires trees and shrub layer on damp ground along with more open foraging areas. In order to continue providing suitable habitat for Song Thrush, it would be desirable to preserve the present mound as far as possible and to include native tree and shrub planting and an unimproved grassland area in a new landscaping scheme. The ponds at either end of the present scrub-covered bank may be providing the necessary damp conditions and if these could be retained they would further increase the likelihood of the habitat remaining favourable for Song Thrush. Additionally, the ponds could be enhanced by profiling them with shallow shores planted with native species, such as rushes. These could potentially enhance the invertebrate population on the site, providing feeding opportunities for many species, including summer visitors such as Swallows and the warbler species recorded on site. However the enhancements for great crested newts should take precedence.

The Bullfinch habitat was in the dense hawthorn thicket at the west side of the scrub area. The presence of the thicket provides both a suitable nesting and feeding habitat for this species and it would be beneficial to retain as much of this dense shrub layer in the landscape plan as possible in order to maintain favourable habitat for this species.

The developing scrub on the bank bordering Ash Road would provide a suitable woodland edge corridor if allowed to develop along with rough grassland at its base and could potentially become favourable breeding habitat for several warbler species such as chiffchaff and Common Whitethroat in addition to resident species such as Blackbird, Wren and Robin. Whitethroat was confirmed breeding in the bramble patch at the north end of this bank and retention of this feature would be favourable.

Badgers

The setts recorded on site are currently unoccupied, however they may become occupied again, and so monitoring of the setts is recommended over the pre-construction phase. Further recommendations depend on the proposed works. If the setts remain empty, no further work is required. Otherwise, if work is proposed within 30m (including pond clearance,) then it would be possible to close the setts temporarily with one way gates and wire mesh, following a suitable period of monitoring. The setts should be reopened and left following works. It is recommended the scrub cover over the setts is retained.

If the setts are found to be active, and works are proposed within 30m, it will be necessary to obtain a licence for the works from NRW. Removal of the setts is unlikely to be required, as this area of the site is not currently proposed for development.

6.2 *Other Survey Recommendations (not including specific works as detailed above)*

If it is planned to remove any large mature trees on site then emergence surveys should be carried out by suitable experienced ecologists to check whether bats are using the trees.

Nesting bird surveys should be conducted by a suitably experienced ecologist in the event that vegetation clearance must take place in the bird breeding season (March-September inclusive).

7.0 References and useful Information Sources

Amphibian and Reptile Groups of the United Kingdom, (May 2010) *Great Crested Newt Habitat Suitability Index*, ARG UK Advice Note 5.

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9.0 Appendices

APPENDIX A – PLANT SPECIES LIST

English Name	Scientific Name
Grassland	
Brome	<i>Bromus sp</i>
Cock's foot	<i>Dactylis glomerata</i>
Creeping bent	<i>Agrostis stolonifera</i>
Meadow foxtail	<i>Alopecurus pratensis</i>
Perennial rye grass	<i>Lolium perenne</i>
Red fescue	<i>Festuca rubra</i>
Rough meadow grass	<i>Poa trivialis</i>
Yorkshire fog	<i>Holcus lanatus</i>
Agrimony	<i>Agrimonia eupatoria</i>
Barren strawberry	<i>Potentilla sterilis</i>
Black knapweed	<i>Centaurea nigra</i>
Black medick	<i>Medicago lupulina</i>
Bristly Ox tongue	<i>Helminthotheca echioides</i>
Broadleaved dock	<i>Rumex obtusifolius</i>
Broadleaved willowherb	<i>Epilobium montanum</i>
Bush vetch	<i>Vicia sepium</i>
Cleavers/Goosegrass	<i>Galium aparine</i>
Common (stinging) nettle	<i>Urtica dioica</i>
Common Bird's foot trefoil	<i>Lotus corniculatus</i>
Common daisy	<i>Bellis perennis</i>
Common mouse ear	<i>Cerastium fontanum</i>
Common ragwort	<i>Jacobaea vulgaris</i>
Common Spotted Orchid	<i>Dactylorhiza fuchsii</i>
Cow parsley	<i>Anthriscus sylvestris</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping thistle	<i>Cirsium arvense</i>
Curled dock	<i>Rumex crispus</i>
Cut leaved cranesbill	<i>Geranium dissectum</i>
Dandelion	<i>Taraxacum officinale</i>

Field forget me not	<i>Myosotis arvensis</i>
Grass vetchling	<i>Lathyrus nissolia</i>
Great willowherb	<i>Epilobium hirsutum</i>
Greater mullein	<i>Verbascum thapsus</i>
Greater plantain	<i>Plantago major</i>
Hairy tare	<i>Vicia hirsuta</i>
Hard rush	<i>Juncus inflexus</i>
Herb Robert	<i>Geranium robertianum</i>
Hogweed	<i>Heracleum sphondylium</i>
Jointed rush	<i>Juncus articulatus</i>
Meadow buttercup	<i>Ranunculus acris</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Oilseed rape	<i>Brassica napus</i>
Orache	<i>Atriplex patula</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Ragged robin	<i>Lychnis flos-cuculi</i>
Red clover	<i>Trifolium pratense</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Rosebay willowherb	<i>Chamerion angustifolium</i>
Scarlet pimpernel	<i>Anagallis arvensis</i>
Soft rush	<i>Juncus effusus</i>
Spear thistle	<i>Cirsium Vulgare</i>
Tufted vetch	<i>Vicia cracca</i>
Umbellifer sp	<i>Umbelliferae</i>
Wavy bitter cress	<i>Cardamine flexuosa</i>
white clover	<i>Trifolium repens</i>
Wild primrose	<i>Primula vulgaris</i>
Woodland and Hedgerows –additional species	
Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Blackthorn	<i>Prunus spinosa</i>
Bramble	<i>Rubus fruticosus</i>
Crack willow	<i>Salix fragilis</i>
Elder	<i>Sambucus nigra</i>
Field Maple	<i>Acer campestre</i>
Goat willow	<i>Salix caprea</i>

Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Hybrid Willow	<i>Salix sp.</i>
Oak	<i>Quercus spp. (petraea, robur)</i>
Scots pine	<i>Pinus sylvestris</i>
Silver Birch	<i>Betula pendula</i>
Wild Cherry	<i>Prunus avium</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Bracken	<i>Pteridium aquilinum</i>
Dog's mercury	<i>Mercurialis perennis</i>
Early Purple Orchid	<i>Orchis mascula</i>
Hart's tongue fern	<i>Asplenium scolopendrium</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Ivy	<i>Hedera helix</i>
Lesser celandine	<i>Ranunculus ficaria</i>
Lords and Ladies	<i>Arum maculatum</i>
Violet sp	<i>Viola sp</i>
Wild garlic	<i>Allium ursinum</i>
Wood avens	<i>Geum urbanum</i>
Ponds	
Common duckweed	<i>Lemna minor</i>
Reedmace	<i>Typha latifolia</i>
Water figwort	<i>Scrophularia auriculata</i>
Woody nightshade	<i>Solanum dulcamara</i>

APPENDIX B – LEGISLATION

Amphibians

Common amphibian species (comprising common frog, common toad, smooth newt and palmate newt) have partial protection under Schedule 5, Section 9 (5) of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way (CROW) Act 2000. This prohibits their Sale; Transportation; an Advertising for the sale of Amphibians. The great crested newt (*Triturus cristatus*) and its habitat are protected under European legislation from wilful harm and disturbance, in addition to the above.

Badger

Badgers are legally protected by The Protection of Badgers Act 1992, designed to protect badgers from baiting and other forms of persecution. This makes it illegal to

Wilfully kill, injure, take, or cruelly ill-treat a badger, or attempt to do so;

- Possess any dead badger or any part of, or anything derived from, a dead badger; and
- Intentionally or recklessly interfere with a sett by disturbing badgers whilst they are occupying a sett, damaging or destroying a sett, causing a dog to enter a sett, or obstructing access to it.

A badger sett is defined as *“any structure or place, which displays signs indicating current use by a badger”*.

Bats

All bats are fully protected under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the CROW Act 2000 and The Conservation of Habitats and Species Regulations 2010 (as amended).

It is therefore illegal to:

- Intentionally or deliberately take, kill or injure a bat;
- Damage, destroy or obstruct access to bat roosts; and
- Deliberately disturb bats.

“Any structure or place which a bat uses for shelter or protection” is considered a bat roost, which is protected whether bats are present or not.

If a development activity is likely to result in disturbance or killing of a bat, damage to its habitat or any of the other activities listed then a licence will usually be required from Natural Resources Wales.

Birds

All wild birds are protected under the WCA 1981 (as amended) and the CROW Act 2000. This legislation makes it illegal, both intentionally and recklessly to:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is being built or in use;
- Take or destroy the eggs of any wild bird; and

- Possess or control any wild bird or egg unless obtained legally.

Birds listed under Schedule 1 of the WCA 1981 (as amended) are afforded additional protection, which makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependent young.

The bird breeding season is usually considered to run from March to September for most species.

Plants

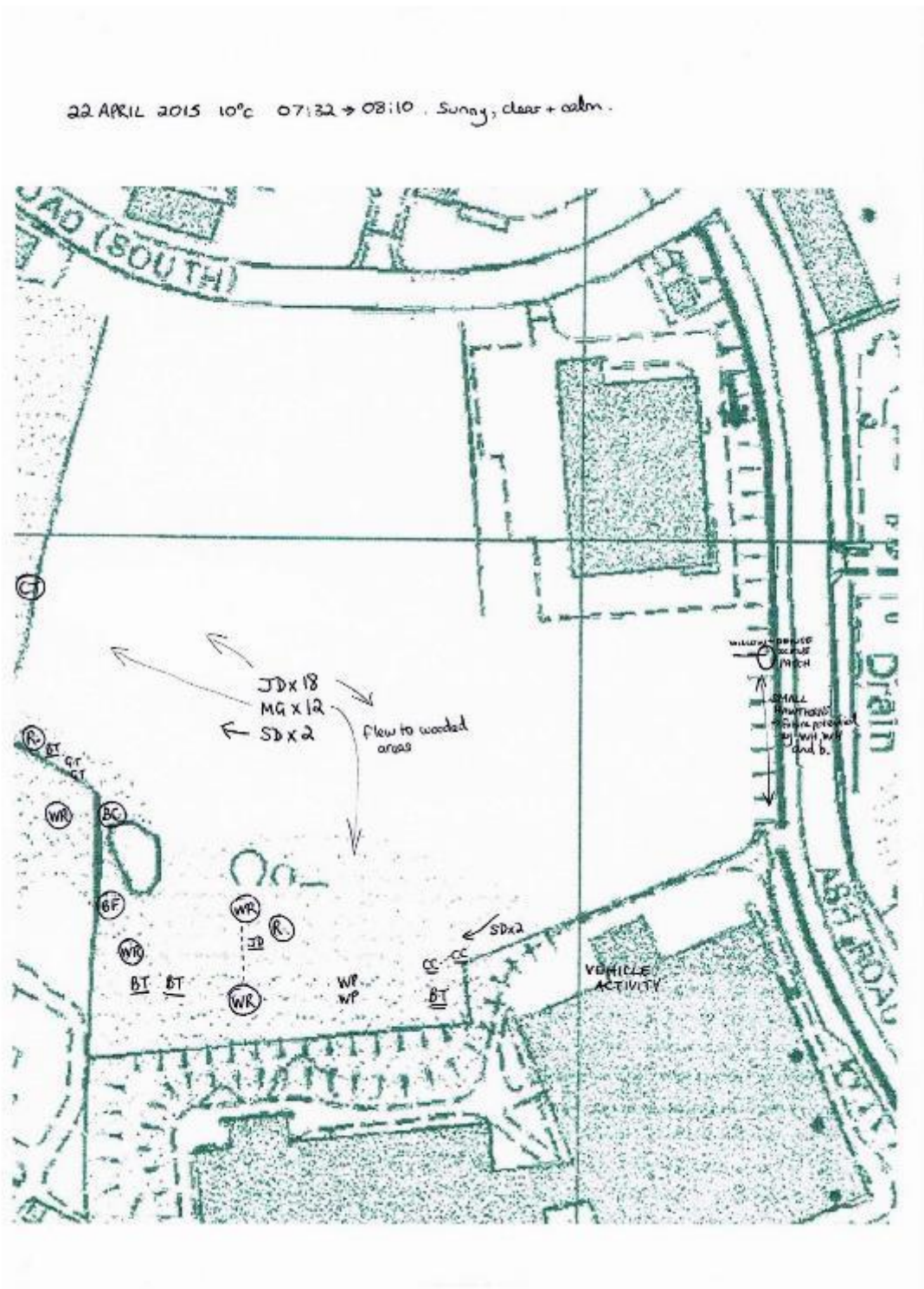
All wild plants are protected from unauthorised removal or uprooting under Section 13 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Plants listed on Schedule 8 have additional protection and may not be picked or otherwise uprooted or destroyed. They are also protected from sale.

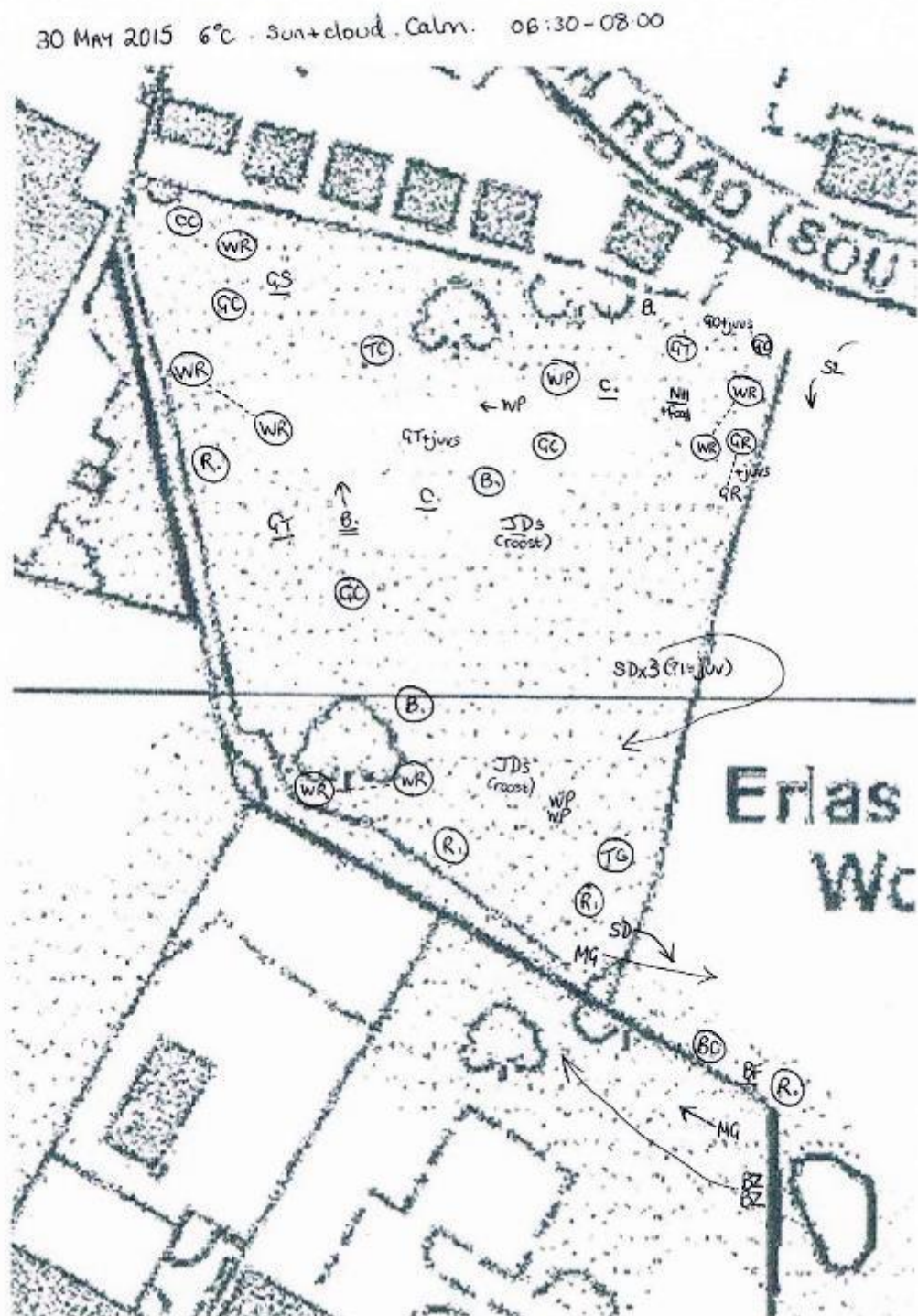
Bluebells are protected from sale by the Wildlife and Countryside Act 1981 (as amended) Section 13(2).

Invasive species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to plant or otherwise cause to grow in the wild any of these species, for example Japanese Knotweed, Himalayan balsam.

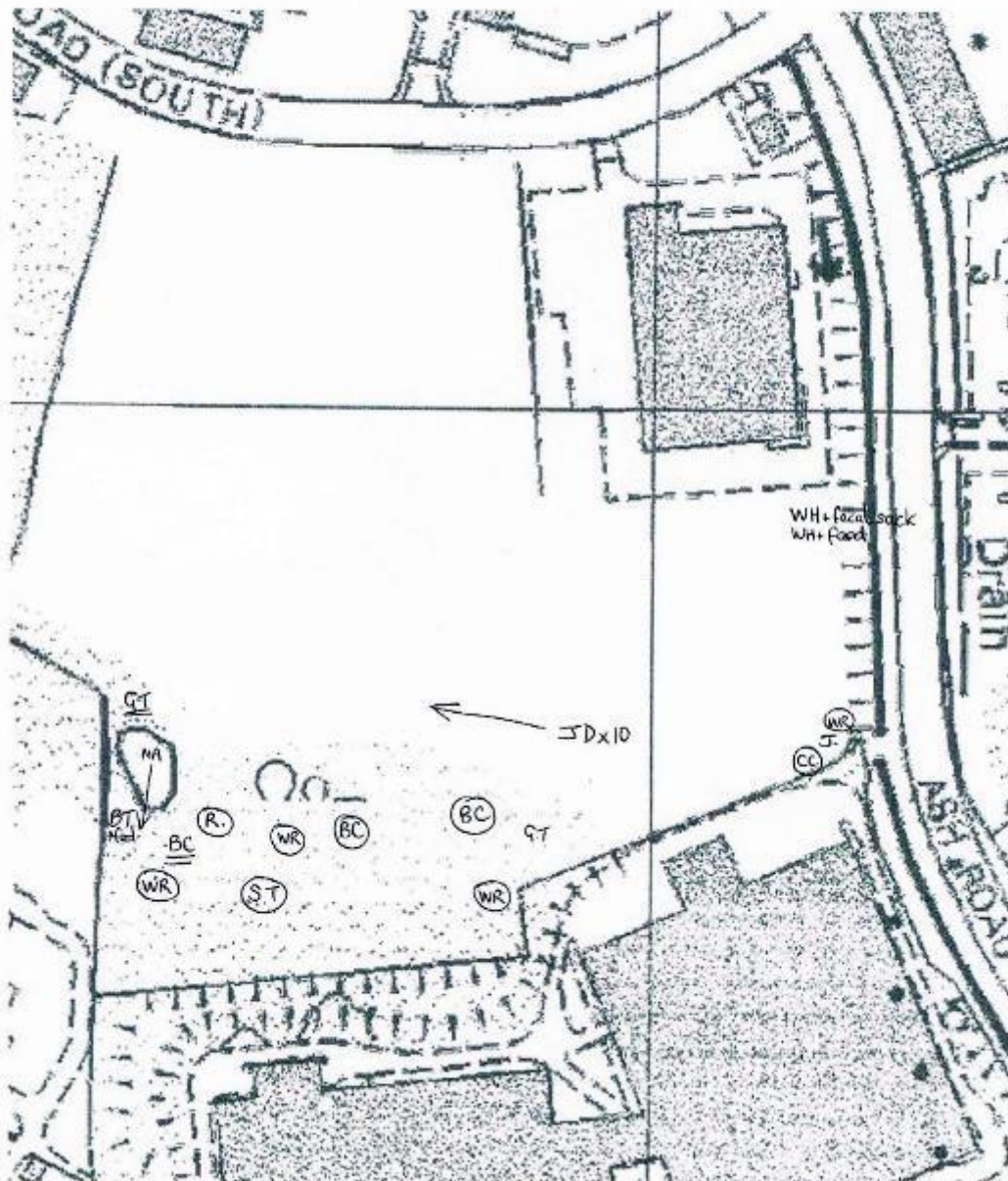
Reptiles

Common reptiles (including adder, slow-worm, common lizard and grass snake) are protected by Schedule 5, Section 9 (1 and 5) of the Wildlife and Countryside Act 1981 (as amended) and the CroW Act 2000 against deliberate or reckless killing and injuring, and from being sold. Other reptiles, e.g. sand lizard, Smooth snake, have higher protection.





30 MAY 2015 6°C. Sun + cloud. Calm. 06:30 - 08:00



APPENDIX D – GREAT CRESTED NEWTS - SURVEY RESULTS.

RESULTS OF TORCH SEARCH SURVEYS. (GREAT CRESTED NEWTS HIGHLIGHTED IN YELLOW).

Survey 1	23/04/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	0	1	13
GCN Female	0	1	7
GCN Unknown	0	0	0
Smooth Male	0	1	5
Smooth Female	0	0	0
Smooth / Palmate U	0	0	0
Frog (Unknown)	0	0	0
Toad (Unknown)	0	0	0

Survey 2	28/04/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	0	2	13
GCN Female	0	1	15
GCN Unknown	0	0	0
Smooth Male	0	1	6
Smooth Female	0	0	5
Smooth / Palmate U	0	0	10
Frog (Unknown)	0	0	0
Toad (Unknown)	0	0	0

Survey 3	06/05/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	0	3	3
GCN Female	0	3	9
GCN Unknown	0	1	1
Smooth Male	0	1	5
Smooth Female	0	0	0
Smooth / Palmate U	0	0	8
Frog (Unknown)	0	0	0
Toad (Unknown)	0	0	0

Survey 4	22/05/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	0	2	5
GCN Female	0	0	3
GCN Unknown	0	0	0
Smooth Male	0	1	2
Smooth Female	0	0	5
Smooth / Palmate U	0	2	0
Frog (Unknown)	0	0	0
Toad (Unknown)	0	0	0

Survey 5	27/5/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	N/A	2	0
GCN Female		1	0
GCN Unknown		0	0
Smooth Male		1	1
Smooth Female		0	0
Smooth / Palmate U		0	3
Frog (Unknown)		0	0
Toad (Unknown)		0	0

Survey 6	08/06/2015		
	Pond 1	Pond 2	Pond 3
GCN Male	N/A	0	2
GCN Female		2	2
GCN Unknown		2	0
Smooth Male		0	1
Smooth Female		0	2
Smooth / Palmate U		1	1
Frog (Unknown)		0	0
Toad (Unknown)		0	0

RESULTS OF BOTTLE TRAPPING SURVEYS.

GCN –Great crested newt, Smooth –Smooth newt

Cells Shaded green indicate GCN found.

	Pond 1	Pond 2	Pond 3
Number of traps	10 (8 on survey 4, due to reduced water level)	20 Throughout	35 (30 on surveys 5 and 6, due to reduced water level)
Results survey 1	NOTHING	1 Female GCN 1 male 1 Female Smooth	7 female GCN 3 female Smooth
Results Survey 2	NOTHING	1 male and 1 female Smooth	5 Male GCN 1 male, 2 female Smooth
Results Survey 3	NOTHING	NOTHING	7 male, 5 female GCN 4 male, 3 female Smooth
Results Survey 4	NOTHING	3 female GCN	2 female GCN
Results Survey 5	NOT TRAPPED	1 female GCN	2 male, 1 female GCN 3 male 3 female Smooth
Results Survey 6	NOT TRAPPED	NOTHING	2 male, 1 female GCN

HSI SCORES OF THE THREE PONDS.

HSI	Pond		
Factor	1	2	3
1. Location	1	1	1
2. Area	0.05	0.6	0.9
3. Permanence	0.5	1.0	0.9
4. Water Quality	0.33	0.33	0.67
5. Shading	0.2	0.4	0.9
6. Waterfowl	1	1	0.67
7. Fish	1	1	1
8. Density	0.8	0.8	0.8
9. Habitat	1	1	1
10. Macrophytes	0.3	0.5	1
SI Score (Geometric mean of above scores)	0.45	0.70	0.87

APPENDIX E – DESK STUDY RESULTS

Due to its size, the data has been provided as a separate document, please refer to the appended Document -Appendix E.