

Report Title	Proposed Development at HTC Management Services Ltd, Redwither Road, Wrexham Industrial Estate, Wrexham - Extended Phase 1 Habitat Survey
Client	HTC Management Services Ltd
Date	July 2010

this report was produced by



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Marches Ecology Ref	C136/HTC/Draft
Date issued	July 2010
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Figure 1 – Site Location

Figure 2 – Extended Phase 1 Habitat Map

1 INTRODUCTION

1.1 Project Background

1.1.1 Marches Ecology was commissioned by HTC Management Services Ltd (HTC) to undertake an Extended Phase 1 Habitat Survey of a small parcel of land at their premises off Redwither Road, Wrexham Industrial Estate, Wrexham (OS Grid Ref. SJ 381 494). This report is provided as supporting information for a planning application to Wrexham County Borough Council (Planning Ref. P/2010/0417) to create a new access, staff car park, disabled access, disabled toilet, new office entrance and diversion of an existing watercourse. The location of the survey site is shown in *Figure 1*.

1.1.2 This survey report has three principal aims:

- to provide an initial appraisal of the ecological value of the site and local ecological resource;
- to detail further surveys that may be required; and
- to identify potential development constraints relating to ecology and outline potential mitigation.

1.1.3 This work comprised a limited review of ecological background data to provide contextual information and an Extended Phase 1 Habitat Survey. The Extended Phase 1 Habitat Survey was undertaken on 5th July 2010. This report presents the findings of this survey and data search.

1.2 The Proposed Development

1.2.1 The proposed development includes formation of a new vehicular access off Redwither Road, car park and other facilities on the north-eastern side of the existing HTC Management Services Ltd premises at Redwither Works. The new vehicular access will cross an adjacent stream/ditch which would also require a short diversion in order to provide the car park. The car park will include 22 new spaces for cars. The proposal also includes for the creation of a new entrance to the office building and provision for disabled access to the building. The proposed development footprint extends to an area of approximately 0.12 hectares.

1.3 Legislation and Policy

Introduction

1.3.1 This sub-section provides a brief summary of key relevant ecological legislation. It should not be considered a comprehensive review and is not meant to be so. It is provided here for information only and is not intended to replace specialised legal advice. It does not replace the text of the legislation, but summarises the salient points.

Badgers

1.3.2 The Badger is protected in Britain under the *Protection of Badgers Act 1992* and *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). The legislation affords protection to Badger and Badger setts, and makes it a criminal offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a Badger, or attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a Badger sett; or
- to disturb a Badger when it is occupying a sett.

1.3.3 The Badger is identified as a priority species in the Wrexham Biodiversity Action Plan (Wrexham County Borough, 2003).

Water Vole and Otter

1.3.4 The Water Vole (*Arvicola terrestris*) is protected under *Section 9* of *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended). This protection was extended by the *CRoW Act 2000*. Under the above legislation it is an offence to intentionally or recklessly:

- damage, destroy or obstruct access to any structure or place that Water Voles use for shelter or protection; or
- disturb a Water Vole while it is using such a place.

1.3.5 Following amendment of this legislation in August 2008 the following offences also apply:

- intentionally kill, injure or take any wild Water Vole;
- possess or control any live or dead wild Water Vole or any part of, or anything derived from, such an animal;
- sell, offer or expose for sale, or have in his possession or transports for the purpose of sale, any live or dead water vole, or any part of, or anything derived from, such an animal; or
- publish or cause to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.

1.3.6 The Water Vole is also a UK BAP priority species and is included in *Section 42* of the NERC Act 2006 as a species of principal importance for the conservation of biological diversity in Wales.

1.3.7 The Otter (*Lutra lutra*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. The 1981 Act was amended by the *Countryside and Rights of Way Act 2000* (the CRoW Act) which further extends the protection. It is also listed on *Annexe IV* of the European Union Directive on Natural Habitats and Wild Fauna and Flora (*Council Directive 92/43/EEC*), which is implemented in the UK by *The Conservation of Habitats and Species Regulations 2010*. It is included on *Schedule 2* of these regulations which gives it full protection under *Regulation 40*. The Otter is therefore a so-called European Protected Species.

1.3.8 Under the above legislation it is an offence to intentionally or recklessly:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;

- damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

1.3.9 The Otter is also a UK BAP and Wrexham BAP priority species and is included in *Section 42* of the NERC Act 2006 as a species of principal importance for the conservation of biological diversity in Wales.

Bats

1.3.10 All species of British bat are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. They are also listed as European Protected Species on *Schedule 2* of *The Conservation of Habitats and Species Regulations 2010* which gives them full protection under *Regulation 40*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRoW Act).

1.3.11 Under the above legislation it is an offence to intentionally or recklessly:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

1.3.12 Several species of bat are included as Priority Species in the UK Biodiversity Action Plan (UK BAP) and also as species of principal importance for the conservation of biological diversity in Wales under *Section 42* of the *Natural Environment and Rural Communities Act 2006* (NERC Act 2006).

1.3.13 All species of British bat are also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species.

Great Crested Newts

1.3.14 Great Crested Newts are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. The 1981 Act was amended by the *Countryside and Rights of Way Act 2000* (the CRoW Act) which further extends the protection. It is also listed on *Annexes II and IV* of the European Union Directive on Natural Habitats and Wild Fauna and Flora (*Council Directive 92/43/EEC*), which is implemented in the UK by *The Conservation of Habitats and Species Regulations 2010*. It is included on *Schedule 2* of the *Habitats Regulations* which gives it full protection under *Regulation 41*. The Great Crested Newt is therefore a so-called European Protected Species. The legislation applies to all life stages of the Great Crested Newt, including eggs, larvae, juveniles and adults.

1.3.15 Under the above legislation it is an offence to intentionally or recklessly:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;

- damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

1.3.16 The Great Crested Newt is a priority species in the UK Biodiversity Action Plan (UK Biodiversity Steering Group 1995, 1998a & b), which includes objectives and targets to protect and restore newt habitats and to create new sites through habitat management and re-creation. *Section 42 of the Natural Environment and Rural Communities Act 2006 (NERC Act 2006)* provides a list of habitats and species of principal importance for the conservation of biological diversity in Wales. The Great Crested Newt is included on this list. The Great Crested Newt is also identified as a priority species in the Wrexham Biodiversity Action Plan (Wrexham County Borough, 2003). The Wrexham BAP is a supplementary planning guidance document.

Reptiles

1.3.17 Viviparous Lizard, Grass Snake, Slow-worm and Adder are all listed under *Schedule 5 of the Wildlife and Countryside Act 1981* (as amended), in respect of *Section 9(5)* and part of *Section 9(1)*. This protection was extended by the CRow Act.

1.3.18 Under the above legislation it is an offence to:

- intentionally or recklessly kill or injure any individual of such a species; or
- sell or attempt to sell any part of the species alive or dead.

1.3.19 All four of the above listed reptiles are UK BAP priority species and are also included in *Section 42 of the NERC Act 2006*.

Birds

1.3.20 All species of bird are protected under *Section 1 of the Wildlife and Countryside Act 1981* (as amended). The protection was extended by the *Countryside and Rights of Way Act 2000*.

1.3.21 The legislation makes it an offence to intentionally or recklessly:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

1.3.22 Certain species of bird are listed on *Schedule 1 of the Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4) and 1(5)* of the Act. The legislation confers special penalties where the above mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

1.3.23 *Section 74(2) of the Countryside and Rights of Way Act 2000* (now under *Section 42 of the Natural Environment and Rural Communities Act 2006*) requires the government to prepare and publish a list of species and habitats that it considers to be of principal importance for

the conservation of biological diversity in Wales. This list includes several birds. *Section 74* places a duty on the government to have regard, in exercising all its functions, to conserve biological diversity in accordance with the United Nations Convention on Biodiversity.

- 1.3.24 *Sections 40 to 42 of the Natural Environment and Rural Communities Act 2006 (NERC Act)* replace *S74* of the CRow Act. *Section 40* of the *NERC Act* extends to all public authorities (includes local planning authorities) the existing *S74* duty to have regard to biodiversity as far as is consistent with the proper exercise of their functions.

1.4 Structure of this Report

- 1.4.1 The remainder of this report is structured as follows:

Section 2 describes the methodology;

Section 3 describes the results;

Section 4 provides the conclusions and outlines ecological issues including potential mitigation; and

Section 5 contains the target notes.

Further sections give references and tables of data.

2 METHODOLOGY

2.1 Contextual Information

- 2.1.1 A limited background data search was undertaken to provide contextual information. This did not constitute a full ecological background data search. This desk-study involved requesting site and species records from the Countryside Council for Wales (CCW) and the Wrexham County Borough Council (WCBC) Ecologist/ Biodiversity Officer. In addition biodiversity information held on the internet was consulted, namely CCW's 'Protected Sites Map'¹, the National Biodiversity Network (NBN)² and the MAGIC environmental database³.

2.2 Extended Phase 1 Habitat Survey

- 2.2.1 The Extended Phase 1 Habitat Survey was carried out on 5th July 2010 by Tom Knight of Marches Ecology. The weather was cloudy with sunny spells and warm with a light breeze. The survey focussed on land within the site boundary (referred to henceforth as the 'survey site'). Immediately adjacent habitat was considered where this was possible to view from the site boundary.
- 2.2.2 The standard initial habitat survey method is Phase 1 Habitat Survey. It involves identifying areas or features of particular interest either in terms of their botanical interest, and/or habitat potential for protected or other notable species.
- 2.2.3 The Phase 1 Habitat Survey has been adapted in this instance as an 'extended' Phase 1 Habitat Survey, where more information has been obtained to inform site assessment. The methods used centre on the Phase 1 Habitat Survey approach (JNCC 2003) as extended for use in Environmental Impact Assessment (Institute of Environmental Assessment 1995). Extended Phase 1 Habitat Survey is necessarily a more holistic approach than Phase 1 Habitat Survey and provides an understanding of habitat use by faunal groups (IEEM 2005). This involves the following elements:
- Habitat mapping using a set of standard colour codes to indicate habitat types on a Phase 1 Habitat map.
 - Description of features of ecological or nature conservation interest in notes relating to numbered locations on the Phase 1 Habitat map, called target notes. Target notes are recorded for habitat and features of possible botanical interest and features relating to animals including protected vertebrates.
- 2.2.4 In addition to the habitat map and target notes, a plant species list was compiled (provided in *Table 1, Section 7*). Plant nomenclature in this report follows Stace (1997).
- 2.2.5 July is a good time of year for general botanical recording. However it is unrealistic to suppose that walk-through surveys can generate completely exhaustive species lists at any

¹ <http://www.ccw.gov.uk/interactive-maps/protected-sites-map.aspx>

² www.searchnbn.net

³ www.magic.gov.uk

time of year. It is considered that the list in this report indicates the character of the vegetation and the ecological value of the area inspected.

- 2.2.6 Habitats and other features were assessed for protected and other notable vertebrates that are likely to occur in the region and within the survey site, as per the Extended Phase 1 Habitat Survey approach (Institute of Environmental Assessment 1995). Evidence of activity was noted when encountered. In addition a subjective assessment of the relative ecological value of the survey site (for protected species), based on professional experience, was completed. Further information describing the methods employed for particular species where deemed relevant to the site are provided in the following sections. Target notes were made for features of interest, and these are given in *Section 5* and mapped in *Figure 2*.

Badger

- 2.2.7 Areas that might be used by Badger (*Meles meles*) for foraging and sett building were assessed during the Extended Phase I Habitat Survey. Incidental foraging signs, tree scratching, paths, latrines and setts were recorded if found (Harris *et al.*, 1989). The survey site was fully accessed and immediately adjacent land was viewed from within the access boundaries wherever possible.

Water Vole and Otter

- 2.2.8 Watercourses/ water bodies were assessed for their suitability for Water Vole (*Arvicola terrestris*) during the Extended Phase 1 Habitat Survey. The assessment method was adapted from that described in Strachan & Moorhouse (2006) as recommended by IEEM (2005), and JNCC (2004). The key environmental factors are as follows:

- water level regime;
- channel management regime;
- bank material/ substrate;
- availability of food (year-round);
- channel dimensions;
- predation (presence of Mink *Mustela vison* and possibly domestic cats);
- bank-side/ emergent vegetation and cover (cover should usually be at least 60%);
- level of disturbance;
- size and continuity of habitat;
- livestock access;
- water quality; and
- competition (particularly the presence of Brown Rat *Rattus norvegicus*).

- 2.2.9 The habitat within the site was assessed for its suitability for Otter (*Lutra lutra*) during the Extended Phase 1 Habitat Survey. A similar assessment [to that used for Water Vole] was used to determine the potential value of the habitat for Otter.

Bats

- 2.2.10 The survey for bats during the Extended Phase 1 Habitat Survey involved making an assessment of the habitat for foraging, and assessing locations for roosting. Trees and built structures are briefly described and features that increase the likelihood of them being used for bat-roosting are identified (given as Target Notes in *Section 5*). If any definite signs of bats had been found (such as droppings and feeding remains), they would have been recorded.

- 2.2.11 The trees within the survey site were not individually assessed although features of potential value for roosting bats were recorded where found. No ladders or other climbing equipment were used during this inspection. Cracks were not inspected internally and it is therefore possible that bats or evidence of bats could have been overlooked if located out of view. The methodology for the bat assessment was carried out from surveyor experience and followed methodologies adapted from Bat Conservation Trust (2007).

Assessment of Bat-roost Potential - Trees

- 2.2.12 Trees were classified on roosting opportunities for bats, and the general condition of the tree. Potential bat roosting features including any significant cracks, splits, hollows or holes in the trunk or branches, areas of loose bark, and features such as dense *Hedera helix* (Ivy) cover, or branches that overlap were also recorded. This information enabled each tree to be categorised as follows.

- *High Bat Roost Potential.* Trees with good bat roost potential have numerous or extensive cavities, such as major sections of hollow trunk. They are likely to be used by bats and could be suitable for a maternity roost.
- *Moderate Bat Roost Potential.* Trees with moderate bat roost potential are those with small holes such as woodpecker nest-holes, or cracks. They could be used by individual bats and might be suitable for a maternity roost or other types of roost.
- *Limited Bat Roost Potential.* Trees with limited bat roost potential are those with superficial cracks and holes or small sections of loose bark and/or dense growths of *Hedera helix* (Ivy). They might be used as occasional or transient roosts, but are unlikely to be suitable for large colonies.
- *No Bat Roost Potential.* Trees with no bat roosting potential are those with no holes or cracks, often young trees in good condition. This category was used to identify and discount features or locations of a type which can in some cases potentially be suitable for roosting bats.

- 2.2.13 Inspection of built structures followed a similar assessment procedure to that outlined above for trees.

Great Crested Newt

- 2.2.14 The quality of terrestrial and aquatic habitat for Great Crested Newt (*Triturus cristatus*) was assessed during the Extended Phase 1 Habitat Survey. The assessment of aquatic habitat was based on the Habitat Suitability Index (Oldham, *et al.* 2000) that identifies several criteria that influence the suitability of ponds for Great Crested Newts. These criteria are as follows:

- Geographic location;
- Pond area (Dimensions);
- Pond permanence (Will it dry out?);
- Water quality (Clarity, eutrophic status and substrate);
- Pond shading (Percentage of the pond that is shaded);
- Presence of wildfowl and/ or fish;
- Pond density/ isolation (Is the pond isolated or near other water bodies?);

- Surrounding terrestrial habitat ("newt friendly habitat");
- Macrophyte content (Including marginal and aquatic vegetation); and
- Barriers to the proposed works (Major roads, rivers, large expanses of developed land).

Reptiles

2.2.15 The Extended Phase 1 Habitat Survey concentrated on qualitative assessment of the habitat for reptiles. The survey involved identifying areas that are suitable for reptiles; potential basking areas, hibernation sites and foraging habitat. English Nature (2004) provides further information on the distribution and ecology of the four widespread species. Habitat requirements differ between species but can be summarised as follows after Beebee & Griffiths (2000):

- Viviparous Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland.
- Slow-worms (*Anguis fragilis*) use similar habitats to Viviparous Lizards, and are often found in rough grassland, gardens and derelict land.
- Grass Snakes (*Natrix natrix*) have broadly similar requirements to Viviparous Lizards with a greater reliance on ponds and wetlands for their food source.
- Adders (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath.

Birds

2.2.16 Birds observed during the Extended Phase 1 Habitat Survey were recorded and notes were made on the suitability of the survey site for nesting birds. Breeding and wintering bird assemblages can only be described by specific surveys at appropriate times of year.

3 RESULTS

3.1 Contextual Information

Statutory Designated Sites

- 3.1.1 There are no statutory designated sites within 1 km of the survey site. The closest such site is the Afon Dyfrdwy (River Dee) Site of Special Scientific Interest (SSSI). This protected site is located approximately 3 km to the east of the survey site at its closest point. The River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid (Wales) Special Area of Conservation (SAC) is 3.45 km to the east of the survey site at its closest point. SACs are areas of European importance designated under *The Conservation (Natural Habitats, etc.) Regulations 1994*. SSSIs are of national importance and are designated under *The Wildlife and Countryside Act 1981 (as amended)*, and are also affected by the *CROW Act 2000*.

Non-statutory Designated Sites

- 3.1.2 There is one non-statutory designated site within 1 km of the survey site: Wrexham Industrial Estate County Wildlife Site (CWS). This CWS is divided into three separate land parcels: Erlas Black Wood, an area adjacent to Bryn Lane and 'The Oaks' off Oak Road. The Oaks site is the closest of these land parcels to the survey site being approximately 200 m to the east at its nearest point. Redwither Brook flows through part of this CWS. The following description is taken from the citation sheet provided by Emma Broad (WCBC Biodiversity Officer):

The Oaks site 'consists of a complex mosaic of scrub, grassland and tall herb. Species-rich grassland occurs where there is rabbit grazing with cowslip, restharrow, yellow-wort, common centaury and bird's-foot trefoil. Other species of interest include dyer's greenweed in among scrub and grass vetchling in rank grassland. Worn paths and motorbike track criss-cross the site and many species present such as prickly lettuce, smith's pepperwort and bristly ox-tongue typify disturbed ground. A mosaic of woodland and damp grassland occurs adjacent to the River Clywedog. The woodland is dominated by mature hawthorn with alder and crack willow along the river. The ground flora is sparse but dog's mercury, hart's tongue and male fern do occur. Meadowsweet, great willowherb, and canary reed grass occur in the damper patches.'

Species Records

- 3.1.3 The following records from the National Biodiversity Network Gateway (<http://www.searchnbn.net>) may be of particular relevance to the site:
- A large number of Great Crested Newt (*Triturus cristatus*) records from SJ 34. This is the same 1km square within which the survey site is located. The closest of these records is from approximately 200 m to the south of the survey site. The most relevant records to the site are as follows:
 - Wrexham Industrial Estate 'drainage ditch' SJ 381 492, dated 1998.
 - Wrexham Industrial Estate 'field corner pond' SJ 381 496, dated 1998.
 - Wrexham Industrial Estate 'water treatment pond' SJ 381 487, dated 1998.
 - Firestone Factory SJ 377 489, dated 1994.
 - Wrexham Industrial Estate 'typha pond' SJ 379 498, dated 1998.
 - Wrexham Industrial Estate 'woodland corridor pond' SJ 379 497, dated 1998.

- Wrexham Industrial Estate 'core site pond' SJ 381 489, dated 1998.
 - SJ 388 496, dated 2005.
 - SJ 388 499, dated 2007.
 - One record for Slow-worm (*Anguis fragilis*) from SJ 38 49, dated 1999. This is the same 1km square within which the survey site is located.
 - One record for Adder (*Vipera berus*) from SJ 38 49, dated 1999. This is the same 1km square within which the survey site is located.
 - One record of bats (*Chiroptera*) from SJ 38 49, dated 1981. This is the same 1km square within which the survey site is located.
 - One record of Pipistrelle (*Pipistrelle* sp.) from SJ 38 49, dated 2003. This is the same 1km square within which the survey site is located.
 - One record of Common Pipistrelle (*Pipistrellus pipistrellus*) SJ 38 49, dated 1981. This is the same 1km square within which the survey site is located.
 - One record of Whiskered Bat (*Myotis mystacinus*) from SJ 38 49, dated 1999. This is the same 1km square within which the survey site is located.
 - Two records of Otter (*Lutra lutra*) from SJ 396 483, the most recent dated 2002. The location is given as 'Afon Clywedog, Higher Oak'.
- 3.1.4 CCW provided a map showing all records (that they hold) of protected species within approximately 1 km of the survey site. Records were provided for bats (three records), Great Crested Newts (twelve records) and Slow-worm (One record). The closest records for each of these species/ species groups are from approximately 85 m, 175 m and 420 m away respectively. No dates or other details (e.g. breeding location, terrestrial or aquatic record, date, number of animals, etc) were provided with these records. One of the bat records appears to be from a building on the Spectrum Industrial Park to the southwest of the survey site. Most of these records replicate those provided by the NBN Gateway.

3.2 Wrexham Biodiversity Action Plan

- 3.2.1 Three habitats identified as priority habitats in the Wrexham Biodiversity Action Plan (WBAP⁴) are of potential relevance to the survey site – Derelict and Industrial Land, Woodland, and River, Steam and Canal. The WBAP states that 22 UK priority species were selected for Wrexham County Borough of which seven currently have Species Action Plans (SAPs). Those of potential relevance to the site are Badger, Great Crested Newt, Otter and Song Thrush. The WBAP also includes a 'Provisional List of Locally Important/ Endangered Species'.

3.3 Extended Phase 1 Habitat Survey

Site Description

- 3.3.1 The survey site is located immediately to the south of Redwither Road and is shown in *Figure 2*. The area subject to survey extends to approximately 0.12 hectares. It is located approximately 4.7 km to the east of Wrexham town centre. Wrexham *Landmap* identifies the survey site as being within character area 11: Wrexham Industrial Estate. This extensive area is characterised by mixed manufacturing and business uses. The eastern part of the Industrial Estate (within which the survey site is located) is within the flat landscape of the

⁴ http://www.wrexham.gov.uk/english/planning_portal/biodiversity/wxmbap.htm

Dee Terraces. Species-rich grassland, scrub and wetland habitats are noted as a feature of this area. It also describes '*small watercourses, ditches, and ponds*' as being '*frequent, providing good habitats for water voles, great crested newts and other aquatic species*'.

- 3.3.2 The survey site is directly bordered to the north by Redwither Road and on the opposite side of this there is part of the Redwither Brook corridor including areas of scrub and grassland habitat. Beyond the Redwither Brook there is a range of industrial premises and associated infrastructure. Immediately to the west there is a small stand of semi-natural broad-leaved woodland located between the survey site and Bridge Road South. To the south there is a small private service road and on the opposite side of this there are a number of industrial premises at Spectrum Industrial Park. To the east the ditch that flows through the survey site joins the Redwither Brook and there is a range of industrial premises.

Habitat and Flora

The Survey Site

- 3.3.3 The survey site (*Target Notes 1 to 11 and 14*) is dominated by the existing office building and associated hard-standing with areas of grassland and semi-natural broad-leaved woodland adjacent to a ditch to the northeast of the building. The Extended Phase 1 Habitat map is provided as *Figure 2*. Habitat types recorded within the survey site are as follows:

- Semi-natural broad-leaved woodland;
- Semi-improved neutral grassland/ tall herbs;
- A pond;
- A ditch; and
- Ephemeral vegetation/ hard-standing.



Woodland

- 3.3.4 The woodland (*Target Note 10*) is almost entirely located to the northeast of the ditch (*Target Note 9*) with a few trees and shrubs on the southern bank. This broad-leaved semi-natural

woodland appears to be secondary in nature. The canopy is dominated by *Quercus robur* (Pedunculate Oak), *Alnus glutinosa* (Alder) and *Acer pseudoplatanus* (Sycamore). The largest of these trees has an approximate diameter at breast height (dbh) of 0.4 m although most are approximately 0.2 m-0.3 m. The woodland is approximately 10-15 m wide including both banks of the ditch.

- 3.3.5 The shrub layer contains locally frequent *Ulmus procera* (English Elm), occasional-frequent *Crataegus monogyna* (Hawthorn), occasional *Rosa canina* agg. (Dog-rose), *Prunus spinosa* (Blackthorn), *Ulmus glabra* (Wych Elm) and lesser amounts of *Prunus avium* (Wild Cherry), *Corylus avellana* (Hazel) and *Viburnum lantana* (Wayfaring-tree). The field layer is dominated by *Hedera helix* (Ivy) or *Rubus fruticosus* agg. (Bramble) and *Galium aparine* (Cleavers) with lesser amounts of *Arum maculatum* (Lords-and-ladies), *Dryopteris dilatata* (Broad Buckler-fern) and *Dryopteris filix-mas* (Male-fern). The remnants of a possible *Crataegus monogyna* (Hawthorn) hedge are located along the road frontage.

Semi-improved neutral grassland/ tall herbs

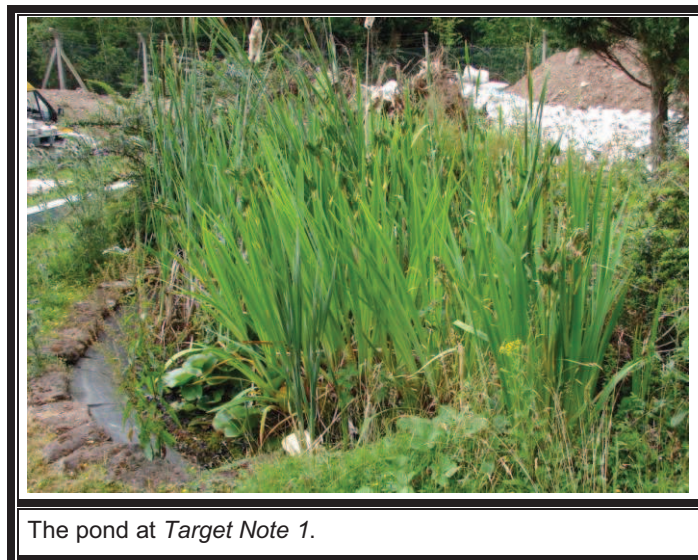
- 3.3.6 A thin strip of semi-improved neutral grassland is located on the southwest, west and northeast sides of the existing building (*Target Notes* 3, 5 and 6 respectively). This grassland has been mapped as semi-improved neutral grassland (largely due to a cessation of management) although it could equally have been mapped as amenity grassland.
- 3.3.7 The grassland at *Target Note* 3 is browsed by Rabbits and as such is approximately 0.1-0.2 m high. The sward contains abundant *Festuca rubra* (Red Fescue), *Potentilla reptans* (Creeping Cinquefoil), frequent *Carex hirta* (Hairy Sedge), *Prunella vulgaris* (Selfheal), *Agrostis capillaris* (Common Bent), *Lolium perenne* (Perennial Rye-grass), locally frequent *Holcus lanatus* (Yorkshire-fog) with lesser amounts of *Cerastium fontanum* (Common Mouse-ear), *Senecio jacobaea* (Common Ragwort), *Ranunculus repens* (Creeping Buttercup) and *Senecio erucifolius* (Hoary Ragwort).
- 3.3.8 The grassland at *Target Note* 5 is similar to that described at *Target Note* 3 but is taller to 0.5 m high and is located on a low earth bank. It has also been subject to some recent disturbance. The sward is dominated by *Lolium perenne* (Perennial Rye-grass) and *Holcus lanatus* (Yorkshire-fog) with frequent *Prunella vulgaris* (Selfheal), *Agrostis capillaris* (Common Bent), *Potentilla reptans* (Creeping Cinquefoil), occasional *Senecio jacobaea* (Common Ragwort), *Galium palustre* (Common Marsh-bedstraw), *Trifolium repens* (White Clover), *Ranunculus repens* (Creeping Buttercup) and lesser amounts of *Cynosurus cristatus* (Crested Dog's-tail), *Primula veris* (Cowslip) and *Dactylorhiza fuchsii* (Common Spotted-orchid). The top of the bank is largely bare or characterised by tall herbs, particularly *Urtica dioica* (Common Nettle).
- 3.3.9 The grassland at *Target Note* 6 is unmanaged, is relatively species-poor and is up to approximately 1 m high. It is dominated by *Holcus lanatus* (Yorkshire-fog) with frequent *Agrostis capillaris* (Common Bent), *Ranunculus repens* (Creeping Buttercup), *Prunella vulgaris* (Selfheal), *Dactylis glomerata* (Cock's-foot), locally frequent *Geranium robertianum* (Herb-robert), occasional *Senecio jacobaea* (Common Ragwort), *Cerastium fontanum* (Common Mouse-ear), *Ranunculus acris* (Meadow Buttercup), *Rumex crispus* (Curled Dock), *Epilobium hirsutum* (Great Willowherb) and lesser amounts of *Rumex acetosa*

(Common Sorrel), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Centaurea nigra* (Common Knapweed) and *Leucanthemum vulgare* (Oxeye Daisy).

- 3.3.10 The southern ditch bank is largely lined with a narrow band of tall herb vegetation (*Target Note 8*). Further detail is provided below.

Pond

- 3.3.11 A small ornamental pond is located just to the southwest of the existing building at *Target Note 1*. It has a butyl liner and measures approximately 5 m by 4 m. The centre of the pond is entirely choked by *Typha latifolia* (Bulrush) and *Iris pseudacorus* (Yellow Iris) with a small amount of *Epilobium hirsutum* (Great Willowherb). These plants appear to have virtually dried out the pond. The water level is approximately 0.4 m below the stone-lined top of the bank. There is a small area of open water in the centre that measures approximately 1m by 0.3 m and 0.3 m deep. Several large ornamental lilies are also present. The adjacent ornamental shrub/ perennial planting is currently not managed and as such is characterised by tall ruderals such as *Cirsium arvense* (Creeping Thistle), *Epilobium hirsutum* (Great Willowherb) and *Rumex crispus* (Curled Dock) amongst the plantings. This planting is also lined with rocks.



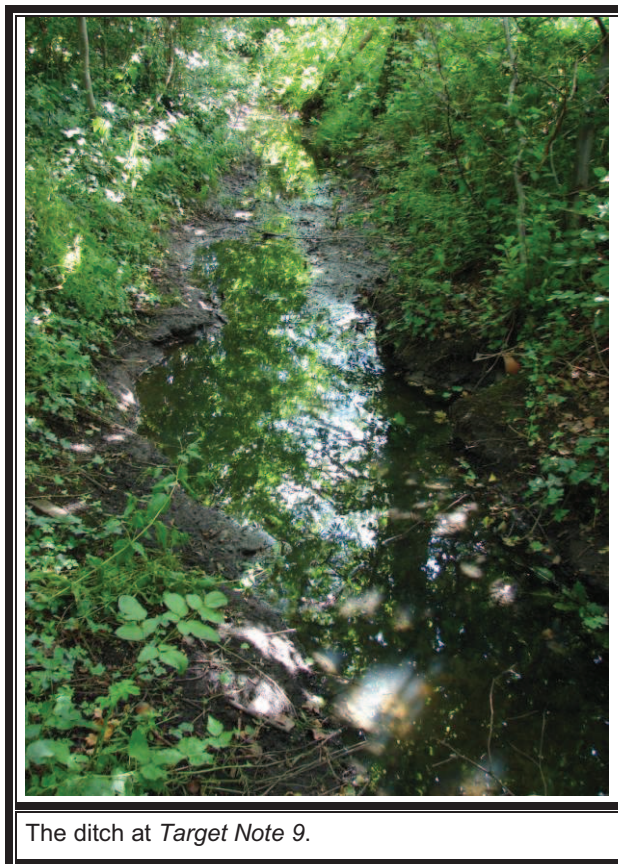
The pond at *Target Note 1*.

Ditch

- 3.3.12 There is a minor ditch (*Target Note 9*) to the northeast of the existing building that flows roughly northwest to east across the survey site. It is approximately 0.5-1.5 m wide and largely 0.05 m deep. There is a slow but perceptible flow although it is full of silt, and woody debris has created a dam in places. No aquatic vegetation was visible at the time of the survey. Marginal vegetation was limited to a small amount of *Epilobium hirsutum* (Great Willowherb) and *Solanum dulcamara* (Bittersweet). The water quality in the ditch may be poor. It currently receives run-off from the hard surfaced areas within the survey site. In some places the ditch has ponded due to silt build up.
- 3.3.13 The south/ southwest bank of the ditch (*Target Note 8*) supports tall herbs and or shrubs/ trees. The trees are mostly *Salix caprea* (Goat Willow) with *Alnus glutinosa* (Alder), *Quercus*

robur (Pedunculate Oak) and *Salix cinerea* (Grey Willow). The ditch bank has a slope of approximately 45-60° and the top of the bank is approximately 2-2.5 m above the water level. Beneath the trees there is a mixture of woodland and grassland forbs and grasses. Species present include locally abundant *Rubus fruticosus* agg. (Bramble), locally frequent *Geranium robertianum* (Herb-robert), *Epilobium hirsutum* (Great Willowherb), frequent *Galium aparine* (Cleavers), *Heracleum sphondylium* (Hogweed), occasional *Geum urbanum* (Wood Avens), *Ranunculus acris* (Meadow Buttercup), *Anthriscus sylvestris* (Cow Parsley) and lesser amounts of *Brachypodium sylvaticum* (False Brome) and *Hypericum hirsutum* (Hairy St. John's-wort).

- 3.3.14 The north/ northeast bank of the ditch (*Target Note 10*) extends to approximately 0.5 m above the water level and has a slope of 30-45°. It is dominated by *Hedera helix* (Ivy) beneath the woodland canopy. The channel is likely to have been re-profiled in the past. Immediately outside the southeast site boundary the ditch enters two approximate 0.5 m diameter concrete pipes beneath the site access road. Both pipes are almost entirely blocked with woody debris.



Other habitat

- 3.3.15 Adjacent to the northeast corner of the existing building there is small area of disused hard-standing with ephemeral/ perennial plants encroaching along the edges. These species of plant are all present within the adjacent grassland. To the south/ southwest of the building there is a large area of hard-standing that forms the operational yard for the business. At *Target Note 2* there is an area of bare earth with a pile of soil and a separate pile of largely broken breeze-blocks located just outside the survey site.

- 3.3.16 There is a line of shrubs and semi-mature trees along the eastern boundary fence (*Target Note 11*) including *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn), *Rubus fruticosus* agg. (Bramble) and *Clematis vitalba* (Traveller's-joy). The trees are a *Fraxinus excelsior* (Ash) with an approximate dbh of 0.3 m and a *Quercus robur* (Pedunculate Oak) with an approximate dbh of 0.25 m. There is a lot of rubbish in the base of this 'hedge' as well as piles of logs/ branches and concrete fence-posts. Two further semi-mature trees are located at *Target Note 7*.

Adjacent Habitat

- 3.3.17 An area of semi-natural broad-leaved woodland borders the northwest survey site boundary (*Target Note 4*). Although this was viewed from the site boundary it does appear to be secondary woodland. The canopy is characterised by *Quercus robur* (Pedunculate Oak) and *Salix cinerea* (Grey Willow) with *Ulmus glabra* (Wych Elm) and *Crataegus monogyna* (Hawthorn). *Alnus glutinosa* (Alder) is more prevalent near the ditch.
- 3.3.18 To the south of the HTC land-holding there is a narrow band of scrub that is approximately 5 m wide (*Target Note 15*). It is dominated by *Crataegus monogyna* (Hawthorn) with occasional to frequent *Salix caprea* (Goat Willow) and occasional *Quercus robur* (Pedunculate Oak). The scrub is located adjacent to a private service road/ track that is surfaced in tarmac. There is a narrow strip of species-rich grassland/ tall herb vegetation on both sides of the track.
- 3.3.19 Between the northeast site boundary and Redwither Road there is a verge that supports amenity grassland (*Target Note 13*). This grassland is relatively species-rich. It is dominated by *Lolium perenne* (Perennial Rye-grass) and *Festuca rubra* (Red Fescue) with frequent *Trifolium repens* (White Clover), *Taraxacum officinale* (Dandelion), *Bellis perennis* (Daisy), *Dactylis glomerata* (Cock's-foot), *Potentilla reptans* (Creeping Cinquefoil), *Plantago lanceolata* (Ribwort Plantain), locally frequent *Leucanthemum vulgare* (Oxeye Daisy) and lesser amounts of *Lotus corniculatus* (Common Bird's-foot-trefoil), *Trifolium pratense* (Red Clover), *Centaurea nigra* (Common Knapweed) and *Viola riviniana* (Common Dog's-violet).
- 3.3.20 The ditch and associated shrubs/ trees continue to the east/ southeast of the site (*Target Note 12*). The confluence of the ditch and the Redwither Brook is approximately 40 m downstream of the survey site boundary. There is an approximate 1 m vertical concrete step at the confluence. The ditch corridor here at *Target Note 12* includes scattered trees and shrubs on the road side of the ditch and on the opposite bank; scattered *Crataegus monogyna* (Hawthorn) over tall herbs/ rough grassland. The tall herbs/ rough grassland had recently been cut to approximately 0.1 m high right up to the top of the ditch bank. The adjacent site access road is approximately 8 m wide at this point and the canopy gap is approximately 25-30 m. Further downstream the line of trees along the watercourse is narrow and contains several gaps.

Fauna

Badger

- 3.3.21 No setts were recorded within the survey site. It is possible that a sett could be constructed within the woodland at *Target Note 10*. However this woodland is narrow, subject to relatively high levels of disturbance and is close to Redwither Road. No signs of Badger activity were recorded within the survey site. The woodland to the northwest of the site at

Target Note 4 may provide cover and potential opportunities for sett construction. However the ground largely appears to be flat and no Badger setts were visible from the survey site boundary. The grassland at *Target Notes 3, 5 and 6* provides potential foraging habitat.

Water Vole and Otter

- 3.3.22 The short section of ditch at *Target Note 9* provides potential, though sub-optimal quality, habitat for Water Voles. It provides some vegetative cover on the banks, a food resource, and the potential for animals to burrow into the earth banks. However there is no aquatic vegetation, very little marginal vegetation, the water is shallow, the water quality is likely to be poor and Brown Rats (*Rattus norvegicus*) are known to be present. No signs of Water Vole were recorded during the Extended Phase 1 Habitat Survey. This stretch of ditch may also be relatively isolated as, for example, it is culverted beneath the site access road and this culvert is virtually blocked (*Target Note 10*). Upstream of the site the ditch appears to end within the woodland at *Target Note 4* near Bridge Road South or may enter another culvert. There are no Water Vole records from SJ34 on the NBN Gateway. It is considered highly unlikely that Water Voles might access the ditch within the site and as such this species will not be considered further in this report.
- 3.3.23 Otters could potentially include the ditch within their territory. The ditch flows into the Redwither Brook approximately 40 m downstream; Redwither Brook is a tributary of the River Clywedog, the confluence being approximately 820 m downstream from the site and latterly the River Clywedog is a tributary of the River Dee. The confluence with the River Dee is nearly 5 km downstream of the survey site boundary. Both the River Dee and River Clywedog are well used by Otters (e.g. NBN records). It is therefore possible that part or all of Redwither Brook might be used by Otters. However during a survey (for an unrelated project) of a land parcel immediately to the north of Redwither Road in August 2009 no signs of Otter or Water Vole were recorded from Redwither Brook or a small tributary ditch/stream.
- 3.3.24 Otters have very large territories and it is possible that Otters may travel along the Redwither Brook. While Otters could traverse along the ditch within the survey site it is unlikely to represent an important habitat resource for this species if used. However as indicated previously there are several obstacles along the ditch (*Target Notes 10 and 12*) that may prevent Otters from travelling along it and it is relatively isolated from other potentially suitable habitat. It is considered unlikely that Otters might access the ditch within the site and as such this species will not be considered further in this report.

Bats

- 3.3.25 The trees within the survey site (*Target Notes 7, 10, 10a, 10b and 11*) are largely young/semi-mature and do not contain any features of potential value for roosting bats. There are a small number of *Alnus glutinosa* (Alder) and *Quercus robur* (Pedunculate Oak) trees within the woodland at *Target Note 10* (e.g. *Target Notes 10a and 10b* that support dense *Hedera helix* (Ivy) on their trunks. As such these trees are considered to be of low potential value for roosting bats.
- 3.3.26 The front of the existing building where the new access doors will be installed is a two-storey brick elevation and has a flat roof (*Target Note 14*). There are no cracks/ crevices or other features visible that might be utilised by roosting bats.

- 3.3.27 The semi-natural broad-leaved woodland and ditch corridor (*Target Notes 9 and 10*) provides habitat of potential value for foraging/ commuting bats. This woodland is also connected to a larger resource at *Target Note 4* and to the ditch corridor further to the east. However there are a number of canopy gaps along the corridor to the east of the site (e.g. *Target Note 12*). The edge of the woodland may offer some potential foraging opportunities and a linear feature for species that prefer to forage/ commute along such landmarks. Some of the grassland may also provide a limited foraging resource.
- 3.3.28 The band of scrub adjacent to the private service road and south of the HTC site (*Target Note 15*) is more-or-less continuous all the way along the track. It provides a potential link with the Redwither Brook corridor (although there are a few small gaps towards the southeast end). This service track and associated habitat may provide a valuable resource for foraging/ commuting bats. It is also linked with the woodland at *Target Note 4*.

Great Crested Newts

- 3.3.29 There is one pond within the survey site (*Target Note 1*) described above. At the time of the survey this pond held very little water. Due to the size and extent of the emergent vegetation particularly the *Typha latifolia* (Bulrush) it is considered likely that this pond may not hold much water for extended parts of the year. As such it may not provide suitable conditions for breeding Great Crested Newts. It may provide potential foraging habitat.
- 3.3.30 The ditch at *Target Note 9* is also described in detail above. As the ditch has a flow, very shallow water and contains virtually no aquatic/ marginal vegetation it is considered unlikely to be suitable for breeding Great Crested Newts in its present condition.
- 3.3.31 The woodland and grassland within the survey site provide potential terrestrial habitat of high value for this species particularly as they are linked to other areas of suitable habitat (e.g. *Target Note 4*). The woodland and ditch corridor (*Target Notes 9 and 10*) may be of value for dispersal. There are also a number of piles of rubble, logs/ branches, other materials and other features around the survey site that provide potential refugia/ hibernacula.
- 3.3.32 An initial review of the OS map 1:25, 000 scale, relevant internet-based mapping and from previous surveys undertaken by Marches Ecology in the area indicates that there are five waterbodies (including ditches but excluding streams) within approximately 500 m of the survey site. This includes two separate ditches. Great Crested Newts are present/ have been recorded from four of these five waterbodies. The closest of these waterbodies (other than the ditch within the site) is a large balancing pond adjacent to Bridge Road North which is approximately 175 m to the north at its closest point. The next closest waterbody is a ditch that is located approximately 200 m away to the south of the survey site (on the opposite side of Spectrum Industrial Park) at its closest point. No detailed pond scoping exercise has been undertaken.

Reptiles

- 3.3.33 Most of the habitat within the survey site is not suitable for any species of reptile. However the small areas of grassland (*Target Notes 3, 5 and 6*) provide habitat of sub-optimal potential value for reptiles. This grassland is subject to relatively high levels of disturbance and it is also possible that it may have been managed for amenity in the past. It is therefore considered unlikely that the survey site is of particular value for reptiles. The Grass Snake is

known to have a large home range and often travels along watercourses and as such could utilise the ditch corridor. However as stated previously this area is relatively isolated from other suitable habitat patches.

Birds

- 3.3.34 Nine species of bird were recorded during the survey either within the survey site or flying over it (*Table 2, Section 7*). No species listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) was recorded during the Extended Phase 1 Habitat Survey. The Bullfinch (*Pyrrhula pyrrhula*) is a UK BAP priority species, NERC Act species of principal importance and is also included on the Birds of Conservation Concern Amber List (Eaton *et al.*, 2009). The Swallow (*Hirundo rustica*) is included on the Amber List.
- 3.3.35 Potential nesting opportunities within the survey site are presented by trees (*e.g. Target Notes 7 and 10*), shrubs (*e.g. Target Note 11*) and possibly the building itself (*Target Note 14*). However most of the trees are young and as such contain few features of potential value for nesting birds. The Bullfinch could potentially nest within the survey site although it is considered that suitable opportunities are limited. There is no potential nesting habitat for the Swallow within the survey site.

4 CONCLUSIONS AND ECOLOGICAL ISSUES

4.1 Introduction

- 4.1.1 The proposed development is illustrated on a drawing entitled '*Proposed New Access and Landscaped Frontage*' (Dwg. No. 2253/01 rev. B, dated 27th April 2010). This drawing along with the Arboricultural Impact Assessment (Shields Arboricultural Consultancy 2010) have been used to provide an assessment of ecological issues as follows:

- further survey requirements; and
- potential development constraints and associated mitigation requirements.

These are dealt with in turn for habitats and flora, and specific species groups in the section below.

4.2 Further Survey and Mitigation

General

Wrexham Local Planning Guidance Note 29

- 4.2.1 Wrexham Local Planning Guidance Note 29 (Wrexham Industrial Estate: Employment Development and Nature Conservation) was adopted by Wrexham County Borough Council (WCBC) in August 2009. This document states that '*The Council will permit development affecting less valued habitats on a site only where appropriately designed on-site mitigation/ compensation would enhance the nature conservation value of the site and/ or the network of wildlife habitats of which it forms a part*'. Furthermore it continues '*in providing mitigation or compensation, an equivalent area of land must be provided unless it can be demonstrated that a smaller area of better quality would enhance the ecology of the site or the wider area*'.
- 4.2.2 An Ecological Method Statement is required to guide all mitigation and compensation measures detailed below. It is assumed that this requirement would be attached as an appropriate condition should planning permission be provided, and further that this condition would need to be discharged prior to the start of the development.

Protected Sites

- 4.2.3 No statutory sites will be directly impacted by the proposed development. The nearest statutory site; Afon Dyfrdwy (River Dee) Site of Special Scientific Interest (SSSI)/ River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid (Wales) Special Area of Conservation (SAC) is located approximately 3 km and 3.45 km respectively to the east at its closest point. The ditch that is to be realigned as part of the proposed development is a minor tributary of the River Dee. This ditch flows initially into the Redwither Brook which then flows into the River Clywedog; the confluence of the River Clywedog and the River Dee is nearly 5 km downstream of the site. Due to the distance involved it is considered unlikely that there would be any indirect impacts on this protected site.
- 4.2.4 It is suggested that a precautionary approach be adopted and that the watercourse be protected during the work phase through implementation of best practice. Measures to protect the watercourse from sediment release, sediment run-off, pollution by fuel and oil and

other accidental spillage's during construction will be confirmed. This could, for example, include the use of straw bales across the ditch channel downstream of the work site to minimise dispersal of suspended solids. In addition, the general advice contained in the Pollution Prevention Guidance (PPG) leaflets produced by SEPA, EA and the Environment and Heritage Service (Northern Ireland) will be adhered to, particularly the following:

- PPG1: General Guide to the Prevention of Pollution.
- PPG5: Works in, Near or Liable to Affect Watercourses.
- PPG6: Working at Demolition and Construction Sites.
- PPG7: Refuelling Facilities.

4.2.5 It is understood that an interceptor tank is to be installed as part of a new drainage system. Currently surface water is collected from areas of hard-standing and flows directly into the ditch. The new drainage system will collect surface water from both the existing hard-standing and the new car park, and will deliver this water to the ditch via the new interceptor. As such the surface water entering the ditch from the site should be cleaner and the sediment-load will be reduced subsequently improving the water quality of the adjacent ditch.

4.2.6 No non-statutory sites will be directly impacted by the proposed development. The Redwither Brook flows through part of The Oaks site (a constituent of the Wrexham Industrial Estate CWS). Potential indirect impacts due to the diversion of the ditch and associated mitigation measures are detailed above.

Habitat and Flora

4.2.7 There are considered to be no further survey or associated mitigation requirements although proposed habitat creation is briefly covered under '*Great Crested Newts*' below. It is understood that all of the trees within the proposed development footprint would be lost (Shields Arboricultural Consultancy 2010). The woodland at *Target Note 10* is secondary, contains young or semi-mature trees and may, at least partly, be of planted origin. As such it is likely to be re-creatable in the medium-term. This woodland is considered to be of local value⁵ as it provides a small area of woodland that complements adjacent habitat and is linked with a part wooded watercourse corridor. Its value as part of a possible 'wildlife corridor' is further considered under separate species/ species groups below.

4.2.8 The Arboricultural Impact Assessment proposes the planting of fifteen specimen trees and fifteen minor trees all of local native origin/ provenance. The specimen trees are to be *Quercus robur* (Pedunculate Oak) and *Alnus glutinosa* (Alder) while the minor trees will be *Crataegus monogyna* (Hawthorn) and *Salix cinerea* (Grey Willow). These trees are largely to be planted on one bank of the ditch which appears to form a more-or-less continuous line. While this proposal is unlikely to provide a like-for-like replacement in terms of area it does present the opportunity to enhance this habitat and positively manage it for nature conservation.

4.2.9 It is suggested that the planting arrangement ensures a continuous line of specimen trees along the ditch with no canopy gaps; where necessary this may require a double row. It is also suggested that the linear nature of this feature is strengthened through increased planting of minor trees (shrubs) along the southwest edge of these specimen trees.

⁵ Local value – areas of habitat that enrich the habitat resource within the context of the parish or neighbourhood (after IEEM 2006).

Furthermore the planting should incorporate greater diversity perhaps with the inclusion of some or all of the following species: *Prunus avium* (Wild Cherry), *Fraxinus excelsior* (Ash), *Ulmus glabra* (Wych Elm), *Corylus avellana* (Hazel), *Ilex aquifolium* (Holly), *Prunus spinosa* (Blackthorn) and *Rosa canina* agg. (Dog-rose). Shields Arboricultural Consultancy (2010) suggests that the Willow and Alder could be managed through coppicing in the future. While such management is likely to diversify the available habitat resource care should be taken to avoid any large canopy gaps. The use of species such as Hazel and Ash would also lend themselves more readily to such a management regime.

- 4.2.10 The ditch within the site (*Target Note 9*) is a minor tributary of the Redwither Brook. It is full of silt and the water quality is likely to be poor. No aquatic vegetation was recorded and marginal vegetation is limited. The ditch is contained within an engineered channel with little variation in depth, slope of the bank, etc. By itself this ditch is unlikely to be of greater than local value. The ditch is to be realigned approximately 5-6 m to the northeast of its current location and close to the survey site boundary. Realignment of the ditch presents the opportunity to add some, limited, diversity to the channel form and also to remove the build-up of silt. This could include varying depths, different angles of slope (of the banks) and perhaps features such as small marginal shelves where possible. It is suggested that the ditch is allowed to re-vegetate through natural regeneration and that the bank-side vegetation is left unmanaged.
- 4.2.11 Five plant species of note were recorded within the survey site: *Viburnum lantana* (Wayfaring-tree), *Carex muricata* (Prickly Sedge), *Hypericum hirsutum* (Hairy St. John's-wort), *Picris echioides* (Bristly Oxtongue) and *Senecio erucifolius* (Hoary Ragwort). The former species is identified as 'rare'⁶ while the latter four species are 'scarce'⁷ in VC50 – Denbighshire (Green 2006). The status of *Viburnum lantana* (Wayfaring-tree) is given as 'planted' in Green (2006) and this is likely to be the origin of those plants recorded within the survey site. The four locally scarce species are considered to be under-recorded and are generally frequent throughout the Industrial Estate. For example, *Hypericum hirsutum* (Hairy St. John's-wort) is frequent along the private service road to the south of the survey site. Both Cheffings & Farrell (2005) and Dines (2008) categorise these plants as of 'Least Concern' in the most recent Vascular Plant Red Data Lists for Great Britain and Wales respectively.
- 4.2.12 It is likely that both *Picris echioides* (Bristly Oxtongue) and *Senecio erucifolius* (Hoary Ragwort) would persist in parts of the site outwith the proposed development area. However it is likely that the other three species would be lost due to the development. It is equally likely that *Carex muricata* (Prickly Sedge) and *Hypericum hirsutum* (Hairy St. John's-wort) would re-colonise landscaped areas of the site following the construction period from nearby populations. Habitat creation, which would include an area of wildflower grassland (considered further below), is also likely to offset the loss of plant diversity from the site. No other notable plant species was recorded within the survey site. The wildflower grassland should be sown with an appropriate seed mix (e.g. British Seed Houses WFG3, WFG4 or WFG6).

⁶ In Vice County 50, a rare plant is described as being recorded in 1-3 10 km squares.

⁷ In Vice County 50, a scarce plant is described as being recorded in 4-15 10 km squares.

Fauna

Badger

- 4.2.13 No setts were recorded within the survey site, and opportunities for sett construction are limited. No signs of activity were recorded within the survey site during the Extended Phase 1 Habitat Survey. No records of Badger within the local area are retained on the NBN gateway. As such should development proceed in the near future it is considered that there is no requirement for further survey. However should development of the site be delayed for any reason consideration may need to be given to undertaking a pre-construction check for any Badger setts.

Bats

- 4.2.14 There are a small number of trees within the survey site that are of low potential value for roosting bats (e.g. *Target notes 10a* and *10b*) largely due to dense *Hedera helix* (Ivy) on the trunks. Although it is considered unlikely that these trees support a roost it is suggested that a precautionary approach be adopted. Trees with any potential value for roosting bats should be inspected in detail by a licensed bat surveyor prior to felling or any other work on the site. The results of this inspection would be used to formulate an appropriate approach to the work; if deemed necessary an emergence survey should be undertaken to determine whether or not the trees are being utilised by roosting bats. The results of this survey would be used to design mitigation/ compensation measures if required.
- 4.2.15 It is considered that the proposed limited works to the building exterior have no implications with regards potential bat roost sites.
- 4.2.16 The woodland and ditch corridor (*Target Notes 9* and *10*) may provide foraging habitat and or a commuting route for bats. It is part of a linear feature that links the woodland to the west of the survey site with the Oaks site. The woodland to the west of the survey site is also located adjacent to a building from which CCW provided a bat record. However this apparent 'wildlife corridor' is already much fragmented. As well as the access road to the survey site there are two further site access roads that cross this corridor between the survey site and the Oaks site. Downstream of the survey site the corridor is mostly narrow, often restricted to a single line of trees adjacent to the stream/ ditch. There are also a number of canopy gaps, for example the access road to the survey site is approximately 8 m wide and the gap between trees within the site and the next tree downstream is approximately 25-30 m. As such it is possible that species of bat that commute along such linear features may already be prevented from doing so due to the size of these gaps and the nature of the intervening habitat.
- 4.2.17 The band of scrub along the service road (*Target Note 15*) to the south of the survey site also provides a linear feature that connects the woodland at *Target Note 4*, the building associated with the CCW record and the Oaks site. Unlike the ditch/ stream corridor this linear feature is largely continuous although the canopy is formed by mature shrubs rather than trees. It is also associated with species-rich grassland adjacent to the service road. This feature is likely to provide an alternative commuting route and potentially valuable foraging habitat (see photo below).



- 4.2.18 The loss of the woodland will reduce potential foraging habitat in the short to medium-term and it is possible that some species of bat may commute along this feature (although its value is already much reduced as discussed above). This loss of habitat will be offset by the proposed planting along the ditch. Furthermore all of the planted trees/ shrubs are to be located along one bank and as such the ditch will be more open. This may create a feature of potentially greater comparative value for foraging/ commuting bats in the short to medium-term as it will provide a clear flight-line. Shields Arboricultural Consultancy (2010) suggests that the proposed specimen trees will have a stem girth of 8-10 cm at the time of planting. As such a new linear feature will quickly be established.
- 4.2.19 To offset the loss of potential roost sites the installation and maintenance of a small number of bat-boxes could be considered. These bat-boxes could be erected on the planted trees once they have gained sufficient size.
- 4.2.20 The potential impact of lighting (both during construction and operation) on bats that may use the area should also be considered. Lighting at the proposed development site should follow guidance provided by The Bat Conservation Trust and Institution of Lighting Engineers (2008). No details are currently available concerning proposed lighting. Should security/ external lighting be installed on the building it should utilise low pressure sodium lamps or similar, be fitted with baffles if necessary and point straight down into the site or to where it is needed to avoid light spillage. The brightness of these lamps should be as low as legally possible and they should be placed as low as possible on the new building. No lighting should be located near to the new ditch/ tree corridor; this area should be kept as dark as is possible.

Great Crested Newts

- 4.2.21 There is no aquatic habitat (suitable for breeding Great Crested Newts) within the survey site. The pond at *Target Note 1* may provide foraging habitat and the ditch at *Target Note 9* is considered to be unsuitable for this species. The terrestrial habitat throughout most of the survey site is of high potential value for Great Crested Newts.
- 4.2.22 The potential presence of Great Crested Newts in terrestrial habitat is governed more by the proximity of a suitable breeding pond than by the quality of the terrestrial habitat. There are

five known waterbodies (including ditches but excluding streams) within approximately 500 m of the survey site. This includes two separate ditches. Great Crested Newts are present/ have been recorded from four of these five waterbodies. The closest waterbody is approximately 175 m to the north of the site but is on the opposite side of the Redwither Brook, Redwither Road and Bridge Road North. Redwither Brook in particular may form something of a barrier to the movement of this species. There is also a ditch located approximately 200 m to the south on the opposite side of Spectrum Industrial Park. There are at least two other waterbodies within this same land parcel that support/ have supported Great Crested Newts. The NBN gateway indicates the number of Great Crested Newt records from the area.

- 4.2.23 As Great Crested Newts may utilise the terrestrial habitat present on the proposed development site, at least for dispersal, a Welsh Assembly Government (WAG) 'development' licence is likely to be required in order for works to be legally carried out. The associated licence application would be required to consider in detail maintenance of the Favourable Conservation Status (FCS) of the species in this area both during construction and operation phases.
- 4.2.24 A Welsh Assembly Government licence is usually only granted if detailed information on population size has been obtained, because this is needed to devise appropriate mitigation. Detailed survey of all ponds within 500 m of a development is the best-practice protocol (English Nature 2001) used to gain the level of information required for a licence application. However, CCW may accept that further survey is unnecessary due to the level of information already available for this area.
- 4.2.25 Mitigation that is likely to be required (and would be detailed in the Ecological Method Statement and any licence application) would include the following:
- Subject to granting of the WAG licence; translocation of Great Crested Newts (and other amphibians) from the proposed development footprint ahead of any preparatory or construction works. This is likely to require enclosing all work areas (including the footprint of the proposed pond (refer below) and other associated works) in amphibian exclusion fencing. Although 30 days (in suitable weather conditions) is usually the minimum trapping requirement it may be possible to reduce this or, for example, include a review mechanism after 15-20 days (dependant on capture rates) subject to discussion with the Countryside Council for Wales.
 - Creation of a suitable area of compensatory terrestrial habitat. The southwest corner of the HTC landholding has been identified for this purpose. This will include the provision of areas of planted scrub (using locally native species) and the establishment of rough/ wildflower grassland. Furthermore the existing pond will be enhanced/ extended or a new pond provided and at least one hibernaculum created. Such created habitats will be required to be subject to newt-friendly management practices in the long-term. Long-term management of the compensation area would be funded by the applicant, long-term security of the compensation area (in perpetuity) would be secured via an appropriate mechanism with all development rights relinquished, and monitoring of the compensatory habitat would be undertaken as required. Commitment to long-term (normally 21 years) appropriate newt-friendly management of the compensation area will need to be secured; this will be guided by a management plan with a 5-year review

mechanism. The detail of the compensatory provision would be discussed with CCW and included within the licence application.

- 4.2.26 Following completion of construction and landscaping the newt fence would be removed. As such the landscaped areas, including the ditch corridor, would again be available for Great Crested Newts.
- 4.2.27 New drainage features incorporated in the proposed development would incorporate an amphibian-friendly arrangement, such as the ACO wildlife kerb⁸. The aim of the ACO wildlife kerb is to provide a gap between it and the gully-pot grill so that amphibians following the kerb-line will not fall into the gully-pot and drown. In addition 'dropped' kerbs should be provided along the line of the ditch corridor (potential dispersal route) so that newts can climb over them more easily.

Reptiles

- 4.2.28 Although it is considered unlikely that any species of reptile might utilise the site to any great extent it is possible that some species (e.g. Grass Snake) might traverse across it. A simple watching brief protocol would be provided (by the Ecological Method Statement) to check for reptiles during translocation of Great Crested Newts. Herptile exclusion fencing will be maintained around the development site during the construction phase.

Birds

- 4.2.29 At present no further survey is envisaged, however should any vegetation clearance or other preparatory work be scheduled for the nesting period (March to August inclusive) further survey may be required.
- 4.2.30 The destruction of any bird nests that are in use is illegal. The simplest option to avoid issues arising from the presence of nesting birds is to schedule work that affects nesting habitat (e.g. removal of trees, shrubs and other vegetation) outside the nesting period.
- 4.2.31 If it is not possible to undertake vegetation clearance outside the nesting season all such areas should be checked by a suitably qualified ecologist prior to commencement of works. If a nest is found a buffer zone of no less than 5 m should be retained and fenced off around the nest until any chicks have fledged.
- 4.2.32 The proposed development would result in the loss of potential nesting opportunities associated with the trees and shrubs. While it has not been confirmed that Bullfinch nested within the survey site this species usually nests within dense scrub/ undergrowth and could potentially have nested here. To offset any impact on nesting birds, particularly key species such as the Bullfinch, it is suggested that an area of native shrub planting (including species such as Blackthorn, Hawthorn, Dog-rose and Hazel) is provided (this is also part of the compensatory provision for Great Crested Newts mentioned above). Furthermore the installation of a small number of nest-boxes either on the planted trees when they obtain sufficient size could be considered. Where nest-boxes are provided it is important to consider and provide for their long-term maintenance.

⁸ ACO Wildlife kerb, see <http://www.acowildlife.co.uk/>

5 TARGET NOTES

Target Note 1. A small ornamental pond that has a butyl liner. It measures approximately 5 m by 4 m. The centre of the pond is entirely choked by *Typha latifolia* (Bulrush) and *Iris pseudacorus* (Yellow Iris) with a small amount of *Epilobium hirsutum* (Great Willowherb). These plants appear to have virtually dried out the pond. The water level is approximately 0.4 m below the stone-lined top of the bank. There is a small area of open water in the centre that measures approximately 1m by 0.3 m and 0.3 m deep. Several large ornamental lilies are also present. There is little obvious potential egg-laying substrate. The adjacent ornamental shrub/ perennial planting is currently not managed and as such is characterised by tall ruderals such as *Cirsium arvense* (Creeping Thistle), *Epilobium hirsutum* (Great Willowherb) and *Rumex crispus* (Curled Dock) amongst the plantings. This planting is also lined with rocks.

Target Note 2. A large pile of soil and an adjacent pile of largely broken breeze blocks. There are various piles of logs/ branches/ rubble/ concrete fence-posts both in this area and elsewhere around the survey site.

Target Note 3. Grassland mapped as poor semi-improved neutral grassland although it may have been amenity grassland prior to recent cessation of management. This area is browsed by rabbits and as such is approximately 0.1-0.2 m high. The sward contains abundant *Festuca rubra* (Red Fescue), *Potentilla reptans* (Creeping Cinquefoil), frequent *Carex hirta* (Hairy Sedge), *Prunella vulgaris* (Selfheal), *Agrostis capillaris* (Common Bent), *Lolium perenne* (Perennial Rye-grass), locally frequent *Holcus lanatus* (Yorkshire-fog) with lesser amounts of *Cerastium fontanum* (Common Mouse-ear), *Senecio jacobaea* (Common Ragwort), *Ranunculus repens* (Creeping Buttercup) and *Senecio erucifolius* (Hoary Ragwort).

Target Note 4. Broad-leaved semi-natural woodland located outside the survey site. The woodland appears to be secondary in nature. The canopy is characterised by *Quercus robur* (Pedunculate Oak) and *Salix cinerea* (Grey Willow) with *Ulmus glabra* (Wych Elm) and *Crataegus monogyna* (Hawthorn). *Alnus glutinosa* (Alder) is more prevalent near the ditch. This woodland may provide cover and potential opportunities for sett construction. However it largely appears to be flat and no Badger setts were visible from the survey site boundary.

Target Note 5. Grassland that is similar to that described at *Target Note 3* but is taller to 0.5 m high. The sward is dominated by *Lolium perenne* (Perennial Rye-grass) and *Holcus lanatus* (Yorkshire-fog) with frequent *Prunella vulgaris* (Selfheal), *Agrostis capillaris* (Common Bent), *Potentilla reptans* (Creeping Cinquefoil), occasional *Senecio jacobaea* (Common Ragwort), *Galium palustre* (Common Marsh-bedstraw), *Trifolium repens* (White Clover), *Ranunculus repens* (Creeping Buttercup) and lesser amounts of *Cynosurus cristatus* (Crested Dog's-tail), *Primula veris* (Cowslip) and *Dactylorhiza fuchsii* (Common Spotted-orchid). It is currently unmanaged. It is located on an earth bank that rises to approximately 2.5 m above the car park level. The top of the bank is largely bare or characterised by tall herbs, particularly *Urtica dioica* (Common Nettle), as two or three trees/ shrubs have been removed here.

Target Note 6. The grassland at this location is unmanaged, is relatively species-poor and is up to approximately 1 m high. It is dominated by *Holcus lanatus* (Yorkshire-fog) with frequent *Agrostis capillaris* (Common Bent), *Ranunculus repens* (Creeping Buttercup), *Prunella vulgaris* (Selfheal), *Dactylis glomerata* (Cock's-foot), locally frequent *Geranium robertianum* (Herb-robert), occasional *Senecio jacobaea* (Common Ragwort), *Cerastium fontanum* (Common Mouse-ear), *Ranunculus acris* (Meadow Buttercup), *Rumex crispus* (Curled Dock), *Epilobium hirsutum* (Great Willowherb) and lesser amounts of *Rumex acetosa* (Common Sorrel), *Anthoxanthum odoratum* (Sweet Vernal-grass), *Centaurea nigra* (Common Knapweed) and *Leucanthemum vulgare* (Oxeye Daisy).

Target Note 7. A *Salix* sp. (Willow) tree with an approximate diameter at breast height (dbh) of 0.4 m. The adjacent *Acer platanoides* (Norway Maple) has an approximate dbh of 0.25 m. Neither of these trees contains visible features of potential value for roosting bats.

Target Note 8. The south/ southwest bank of the ditch supports tall herbs and or shrubs/ trees. The trees are mostly *Salix caprea* (Goat Willow) with *Alnus glutinosa* (Alder), *Quercus robur* (Pedunculate Oak) and *Salix cinerea* (Grey Willow). The ditch bank has a slope of approximately 45-60° and the top of the bank is approximately 2-2.5 m above the water level. Beneath the trees there is a mixture of woodland and grassland forbs and grasses. Species present include locally abundant *Rubus fruticosus* agg. (Bramble), locally frequent *Geranium robertianum* (Herb-robert), *Epilobium hirsutum* (Great Willowherb), frequent *Galium aparine* (Cleavers), *Heracleum sphondylium* (Hogweed), occasional *Geum urbanum* (Wood Aven), *Ranunculus acris* (Meadow Buttercup), *Anthriscus sylvestris* (Cow Parsley) and lesser amounts of *Brachypodium sylvaticum* (False Brome) and *Hypericum hirsutum* (Hairy St. John's-wort).

Target Note 9. The ditch is approximately 0.5-1.5 m wide and largely 0.05 m deep. There is a slow but perceptible flow although it is full of silt and woody debris has created a dam in places. No aquatic vegetation was visible at the time of the survey. Marginal vegetation was limited to a small amount of *Epilobium hirsutum* (Great Willowherb) and *Solanum dulcamara* (Bittersweet). The water quality in the ditch may be poor. It currently receives run-off from the hard surfaced areas within the survey site. In some places the ditch has ponded due to silt build up.

Target Note 10. Broad-leaved semi-natural woodland that appears to be secondary in nature. The canopy is dominated by *Quercus robur* (Pedunculate Oak), *Alnus glutinosa* (Alder) and *Acer pseudoplatanus* (Sycamore). The largest of these trees has an approximate dbh of 0.4 m although most are approximately 0.2 m-0.3 m. A small number have trunks that are covered in dense *Hedera helix* (Ivy) such as the *Alnus glutinosa* (Alder) and *Quercus robur* (Pedunculate Oak) at *Target Note 10a*. These trees are of low potential value for roosting bats. No other features of potential value for roosting bats were recorded. The woodland is approximately 10-15 m wide including both banks of the ditch. There are three multi-stemmed *Alnus glutinosa* (Alder) trees at *Target Note 10b*. The largest trunk has a dbh of approximately 0.5 m and is covered in *Hedera helix* (Ivy). These trees are of low potential value for roosting bats.

The shrub layer contains locally frequent *Ulmus procera* (English Elm), occasional-frequent *Crataegus monogyna* (Hawthorn), occasional *Rosa canina* agg. (Dog-rose), *Prunus spinosa* (Blackthorn), *Ulmus glabra* (Wych Elm) and lesser amounts of *Prunus avium* (Wild Cherry), *Corylus avellana* (Hazel) and *Viburnum lantana* (Wayfaring-tree). The field layer is dominated by *Hedera helix* (Ivy) or *Rubus fruticosus* agg. (Bramble) and *Galium aparine* (Cleavers) with lesser amounts of *Arum maculatum* (Lords-and-ladies), *Dryopteris dilatata* (Broad Buckler-fern) and *Dryopteris filix-mas* (Male-fern).

The bank on this side of the ditch extends to approximately 0.5 m above the water level and has a slope of 30-45°. It is dominated by *Hedera helix* (Ivy). The channel is likely to have been re-profiled in the past. The remnants of a possible *Crataegus monogyna* (Hawthorn) hedge are located along the road frontage. Immediately outside the southeast site boundary the ditch enters two approximate 0.5 m diameter concrete pipes beneath the site access road. Both pipes are almost entirely blocked with woody debris.

Target Note 11. A line of shrubs and semi-mature trees along the boundary fence including *Crataegus monogyna* (Hawthorn), *Prunus spinosa* (Blackthorn), *Rubus fruticosus* agg. (Bramble) and *Clematis vitalba* (Traveller's-joy). The trees are a *Fraxinus excelsior* (Ash) with an approximate dbh of 0.3 m and a *Quercus robur* (Pedunculate Oak) with an approximate dbh of 0.25 m. Neither tree contains any features of potential value for roosting bats. There is a lot of rubbish in the base of this 'hedge' as well as piles of logs/ branches and concrete fence-posts.

Target Note 12. The ditch corridor here (outside the survey site) includes scattered trees and shrubs on the road side of the ditch and on the opposite bank; scattered *Crataegus monogyna* (Hawthorn) over tall herbs/ rough grassland. The tall herbs/ rough grassland had recently been cut to approximately 0.1 m high right up to the top of the ditch bank. The adjacent site access road is approximately 8 m wide at this point and the canopy gap is approximately 25-30 m. At the confluence of the ditch and the Redwither Brook there is an approximate 1 m vertical concrete step. Further downstream the line of trees along the watercourse is narrow and contains several gaps. The access road to ASH also crosses the stream.

Target Note 13. The road verge directly outside the survey site boundary supports relatively species-rich amenity grassland. It is dominated by *Lolium perenne* (Perennial Rye-grass) and *Festuca rubra* (Red Fescue) with frequent *Trifolium repens* (White Clover), *Taraxacum officinale* (Dandelion), *Bellis perennis* (Daisy), *Dactylis glomerata* (Cock's-foot), *Potentilla reptans* (Creeping Cinquefoil), *Plantago lanceolata* (Ribwort Plantain), locally frequent *Leucanthemum vulgare* (Oxeye Daisy) and lesser amounts of *Lotus corniculatus* (Common Bird's-foot-trefoil), *Trifolium pratense* (Red Clover), *Centaurea nigra* (Common Knapweed) and *Viola riviniana* (Common Dog's-violet).

Target Note 14. The front of the HTC building where the new access doors will be installed is a two-storey brick elevation. It has a flat roof. There are no cracks/ crevices or other features visible that might be utilised by roosting bats.

Target Note 15. A band of scrub to approximately 5 m wide that is dominated by *Crataegus monogyna* (Hawthorn) with occasional to frequent *Salix caprea* (Goat Willow) and occasional *Quercus robur* (Pedunculate Oak). This scrub is more-or-less continuous all the way along the track to the Oaks site and the Redwither Brook corridor (there are a few small gaps towards the southeast end). The track is surfaced in tarmac. There is a narrow strip of species-rich grassland/ tall herb vegetation on both sides of the track. The scrub provides potential cover for a Badger sett although none was visible from the public footpath.

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7 DATA

Table 1 – Vascular plant species recorded within the survey site during the Extended Phase 1 Habitat Survey

Plant species
<i>Acer platanoides</i> (Norway Maple)
<i>Acer pseudoplatanus</i> (Sycamore)
<i>Alnus glutinosa</i> (Alder)
<i>Betula pubescens</i> (Downy Birch)
<i>Corylus avellana</i> (Hazel)
<i>Cotoneaster</i> sp. (Cotoneaster)
<i>Crataegus monogyna</i> (Hawthorn)
<i>Fraxinus excelsior</i> (Ash)
<i>Ilex aquifolium</i> (Holly)
<i>Prunus avium</i> (Wild Cherry)
<i>Prunus spinosa</i> (Blackthorn)
<i>Rosa arvensis</i> (Field-rose)
<i>Rosa canina</i> agg. (Dog-rose)
<i>Quercus robur</i> (Pedunculate Oak)
<i>Salix</i> sp. (Willow)
<i>Salix caprea</i> (Goat Willow)
<i>Salix cinerea</i> (Grey Willow)
<i>Salix fragilis</i> (Crack Willow)
<i>Sambucus nigra</i> (Elder)
<i>Ulex europaeus</i> (Gorse)
<i>Ulmus glabra</i> (Wych Elm)
<i>Ulmus procera</i> (English Elm)
<i>Viburnum lantana</i> (Wayfaring-tree)
<i>Aegopodium podagraria</i> (Ground-elder)
<i>Agrostis capillaris</i> (Common Bent)
<i>Agrostis stolonifera</i> (Creeping Bent)
<i>Anagallis arvensis</i> (Scarlet Pimpernel)
<i>Angelica sylvestris</i> (Wild Angelica)
<i>Anthriscus sylvestris</i> (Cow Parsley)
<i>Anthoxanthum odoratum</i> (Sweet Vernal-grass)
<i>Arrhenatherum elatius</i> (False Oat-grass)
<i>Arum maculatum</i> (Lords-and-ladies)
<i>Bellis perennis</i> (Daisy)

Plant species
<i>Brachypodium sylvaticum</i> (False Brome)
<i>Bromus ramosus</i> (Hairy-brome)
<i>Calystegia sepium</i> (Hedge Bindweed)
<i>Carex hirta</i> (Hairy Sedge)
<i>Carex muricata</i> (Prickly Sedge)
<i>Carex otrubae</i> (False Fox-sedge)
<i>Carex remota</i> (Remote Sedge)
<i>Centaurea nigra</i> (Common Knapweed)
<i>Cerastium fontanum</i> (Common Mouse-ear)
<i>Chamerion angustifolium</i> (Rosebay Willowherb)
<i>Circaea lutetiana</i> (Enchanter's-nightshade)
<i>Cirsium arvense</i> (Creeping Thistle)
<i>Cirsium vulgare</i> (Spear Thistle)
<i>Clematis vitalba</i> (Traveller's-joy)
<i>Crocsmia</i> sp. (Montbretia)
<i>Cynosurus cristatus</i> (Crested Dog's-tail)
<i>Dactylorhiza fuchsii</i> (Common Spotted-orchid)
<i>Dactylis glomerata</i> (Cock's-foot)
<i>Deschampsia cespitosa</i> (Tufted Hair-grass)
<i>Dryopteris dilatata</i> (Broad Buckler-fern)
<i>Dryopteris filix-mas</i> (Male-fern)
<i>Elytrigia repens</i> (Common Couch)
<i>Epilobium hirsutum</i> (Great Willowherb)
<i>Epilobium montanum</i> (Broad-leaved Willowherb)
<i>Epilobium parviflorum</i> (Hoary Willowherb)
<i>Festuca rubra</i> (Red Fescue)
<i>Filipendula ulmaria</i> (Meadowsweet)
<i>Galium aparine</i> (Cleavers)
<i>Galium palustre</i> (Common Marsh-bedstraw)
<i>Geranium robertianum</i> (Herb-robert)
<i>Geum urbanum</i> (Wood Avens)
<i>Hedera helix</i> (Ivy)
<i>Heracleum sphondylium</i> (Hogweed)
<i>Holcus lanatus</i> (Yorkshire-fog)
<i>Holcus mollis</i> (Creeping Soft-grass)
<i>Hypochaeris radicata</i> (Cat's-ear)
<i>Hypericum hirsutum</i> (Hairy St. John's-wort)
<i>Hypericum tetrapterum</i> (Square-stalked St. John's-wort)

Plant species
<i>Iris pseudacorus</i> (Yellow Iris)
<i>Juncus effusus</i> (Soft-rush)
<i>Juncus inflexus</i> (Hard Rush)
<i>Lathyrus pratensis</i> (Meadow Vetchling)
<i>Leucanthemum vulgare</i> (Oxeye Daisy)
<i>Lolium perenne</i> (Perennial Rye-grass)
<i>Lotus pedunculatus</i> (Greater Bird's-foot-trefoil)
<i>Picris echioides</i> (Bristly Ox-tongue)
<i>Plantago lanceolata</i> (Ribwort Plantain)
<i>Plantago major</i> (Greater Plantain)
<i>Poa annua</i> (Annual Meadow-grass)
<i>Poa pratensis</i> (Smooth Meadow-grass)
<i>Potentilla anserina</i> (Silverweed)
<i>Potentilla reptans</i> (Creeping Cinquefoil)
<i>Primula veris</i> (Cowslip)
<i>Prunella vulgaris</i> (Selfheal)
<i>Pulicaria dysenterica</i> (Common Fleabane)
<i>Ranunculus acris</i> (Meadow Buttercup)
<i>Ranunculus repens</i> (Creeping Buttercup)
<i>Ribes rubrum</i> (Red Currant)
<i>Rubus fruticosus</i> agg. (Bramble)
<i>Rumex acetosa</i> (Common Sorrel)
<i>Rumex crispus</i> (Curled Dock)
<i>Rumex conglomeratus</i> (Clustered Dock)
<i>Rumex obtusifolius</i> (Broad-leaved Dock)
<i>Scrophularia nodosa</i> (Common Figwort)
<i>Senecio erucifolius</i> (Hoary Ragwort)
<i>Senecio jacobaea</i> (Common Ragwort)
<i>Senecio squalidus</i> (Oxford Ragwort)
<i>Solanum dulcamara</i> (Bittersweet)
<i>Sonchus arvensis</i> (Perennial Sowthistle)
<i>Stachys sylvatica</i> (Hedge Woundwort)
<i>Stellaria holostea</i> (Greater Stitchwort)6
<i>Taraxacum officinale</i> (Dandelion)
<i>Torilis japonica</i> (Upright Hedge-parsley)
<i>Tragopogon pratensis</i> (Goat's-beard)
<i>Trifolium repens</i> (White Clover)
<i>Typha latifolia</i> (Bulrush)

Plant species
<i>Urtica dioica</i> (Common Nettle)
<i>Veronica arvensis</i> (Wall Speedwell)
<i>Veronica chamaedrys</i> (Germander Speedwell)
<i>Veronica persica</i> (Common Field-speedwell)

Table 2 - Bird species recorded during the Extended Phase 1 Habitat Survey

Species	Notes
<i>Corvus corone</i> (Carrion Crow)	Flying over.
<i>Erithacus rubecula</i> (Robin)	
<i>Hirundo rustica</i> (Swallow)	Flying over.
<i>Parus caeruleus</i> (Blue Tit)	
<i>Pica pica</i> (Magpie)	
<i>Pyrrhula pyrrhula</i> (Bullfinch)	
<i>Sylvia atricapilla</i> (Blackcap)	
<i>Troglodytes troglodytes</i> (Wren)	
<i>Turdus merula</i> (Blackbird)	



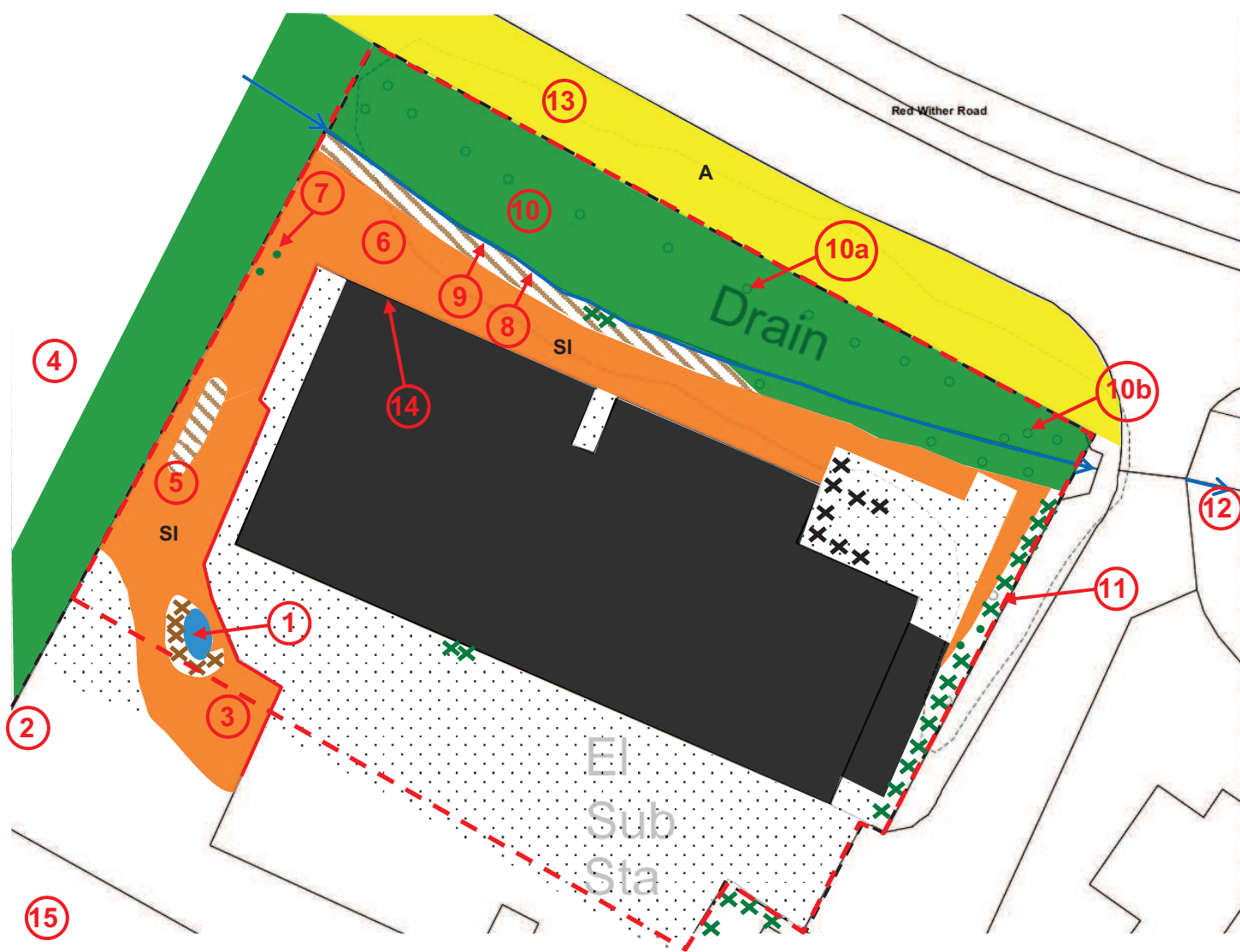
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**C136 Proposed Development at HTC Management Services Ltd,
Redwither Road, Wrexham Industrial Estate, Wrexham – Extended Phase
1 Habitat Survey**

Figure 1 – Site Location

Drawn by: ME
Checked by: TK
Date: 02.07.10



Base mapping provided by Shields Arboricultural Consultancy drawing no. ESP/HTCMS/06/10/01



C136 Proposed Development at HTC Management Services Ltd, Redwither Road, Wrexham Industrial Estate, Wrexham – Extended Phase 1 Habitat Survey

Figure 2 – Extended Phase 1 Habitat Survey

Drawn by: ME
Checked by: TK
Date: 07.07.10

Key

	Semi-natural broad-leaved woodland		Amenity grassland
	Individual broad-leaved tree		Standing water
	Scattered scrub		Running water
	Semi-improved neutral grassland		Building
	Tall ruderal		Hard standing
	Scattered introduced shrub		Fence-line/ wall
	Ephemeral/ short perennial		Target Note
			Survey boundary