Report Title	Proposed Residential Development, Glan Gors, Caia Park, Wrexham - Extended Phase 1 Habitat Survey
Client	Ainsley Gommon Architects Ltd
Date	November 2012

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Marches Ecology Ref	C200/Glan_Gors/EP1HS
Date issued	November 2012
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CONTENTS

1 INTRODUCTION 4

1.1 PROJECT BACKGROUND 4
1.2 LEGISLATION AND POLICY 4
1.3 STRUCTURE OF THIS REPORT 6

2 SURVEY METHODOLOGY 7

2.1 EXTENDED PHASE 1 HABITAT SURVEY 7

3 RESULTS 10

3.1 CONTEXTUAL INFORMATION 10
3.2 EXTENDED PHASE 1 HABITAT SURVEY 10

4 CONCLUSIONS AND RECOMMENDATIONS 13

4.1 INTRODUCTION 13
4.2 CONCLUSIONS AND MITIGATION 13
4.3 RECOMMENDATIONS/ ENHANCEMENTS 15

5 TARGET NOTES 18

6 REFERENCES 19

7 DATA 20

Figure 1 – Extended Phase 1 Habitat Survey

1 INTRODUCTION

1.1 Project Background

1.1.1 Marches Ecology was commissioned by Ainsley Gommon Architects Ltd to undertake an Extended Phase 1 Habitat Survey of a parcel of land at Glan Gors, Caia Park, Wrexham (OS Grid Ref. SJ 352 498); the location is shown in *Figure 1.*

1.1.2 Planning permission is to be sought from Wrexham County Borough Council (WCBC) for a residential housing development at the site. As such this Extended Phase 1 Habitat Survey report is provided as background information to inform the design of the proposed development and to detail any associated potential ecological constraints; it will be submitted in support of the planning application.

1.1.3 The 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.

1.1.4 In addition to the above the development is to be assessed in accordance with the Code for Sustainable Homes (CfSH) and would aim to meet the requirements of Code Level 3 (in accordance with the current Technical Guide – November 2010). As such this report includes some evidence regarding Category 9: Ecology, Issues Eco 1 to Eco 3 inclusive. It also includes recommendations relevant to Eco 2 and 3. However as it does not include specific assessment required under the CfSH approach it should not be considered a full CfSH ecology report. In order to relate this report to the CfSH, the CfSH Ecology Report Template would need to be completed.

1.1.5 The work detailed within this report comprises an Extended Phase 1 Habitat Survey of the site completed in September 2012. The results of this survey are presented in *Section 3*. *Section 4* presents enhancements/ protection measures for ecological resources in accordance with the CfSH process.

1.2 Legislation and Policy

Introduction

1.2.1 This sub-section provides a brief summary of key relevant 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.

Bats

1.2.2 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(1)*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRoW Act).

1.2.3 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.

1.2.4 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). Several species of bat are identified as a priority species or species of conservation concern within the WBAP (Wrexham County Borough, 2003).

1.2.5 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 Newt

1.2.6 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 40(1)*. 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.

1.2.7 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.

1.2.8 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).

Birds

1.2.9 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*.

1.2.10 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.

1.2.11 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.

1.2.12 *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.

1.2.13 *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.

1.3 Structure of this Report

1.3.1 The remainder of this report is structured as follows:

Section 2 presents the survey methodology;
Section 3 presents the results;
Section 4 presents the conclusions and recommendations;
Section 5 presents the target notes;
Section 6 provides references; and
Section 7 provides tables of data.

2 SURVEY METHODOLOGY

2.1 Extended Phase 1 Habitat Survey

2.1.1 The Extended Phase 1 Habitat Survey was carried out on 05th September 2012 by Max Ellson of Marches Ecology. The weather was dry and breezy. The survey focussed on land within the proposed development site (as referred to henceforth) and immediately adjacent habitat where this was possible to view from the site boundary.

2.1.2 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.

2.1.3 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.

2.1.4 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 (2010).

2.1.5 September is reasonable time of year for general botanical recording, although spring flowering species may not be evident and some plants are beginning to die back. It is however unrealistic to suppose that walk-through surveys can generate completely exhaustive species lists at any 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.

2.1.6 Habitats and other features were assessed for protected and other notable vertebrates that are likely to occur in the region and within the proposed development site. Due to the character of the site (amenity grassland) and its isolated location (on the edge of a well-used park surrounded by residential housing), the potential presence of Badger (*Meles meles*) and reptiles were discounted further to the survey visit and will not be considered in this report.

2.1.7 Evidence of activity was noted when encountered. In addition a subjective assessment of the relative ecological value of the survey area, 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 1*.

2.1.8 In addition to this survey widely available contextual information was consulted as follows:

- the National Biodiversity Network Gateway (http://data.nbn.org.uk);
- CCW's protected areas maps (http://www.ccw.gov.uk/interactive-maps/protected-areas-map.aspx);
- UK Biodiversity Action Plan (UKBAP); and
- Wrexham BAP (http://www.wrexham.gov.uk/english/planning_portal/biodiversity/wxmbap.htm).

Bats

2.1.8 An assessment was made of the habitat for foraging, and potential locations for roosting. Trees 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.

2.1.9 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. It should not be considered an exhaustive survey of the trees. The methodology for the initial bat assessment was carried out from surveyor experience and followed methodologies adapted from Hundt (2012). There are no built structures on the site.

Assessment of Bat-roost Potential – Trees

2.1.10 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.

Great Crested Newt

2.1.11 There is no aquatic habitat within the survey site. The quality of terrestrial habitat for Great Crested Newt (*Triturus cristatus*) was assessed during the Extended Phase 1 Habitat Survey; this followed a similar methodology to that provided by the Habitat Suitability Index (Oldham, *et al*. 2000) for aquatic habitat.

Birds

2.1.12 The habitat within the survey site was assessed for its potential value for breeding birds during the Extended Phase 1 Habitat Survey. Breeding and wintering bird assemblages can only be described by specific surveys at appropriate times of year.

3 RESULTS

3.1 Contextual Information

3.1.1 There are no statutory designated sites within 1 km of the proposed development site.

3.1.2 A review of species records on the National Biodiversity Network (NBN) website for the 10 km grid-square SJ34 provided the following relevant species records (the proposed development site is located in SJ 3549):

- Seven records of Brown Long-eared Bat (*Plecotus auritus*) including one from SJ 3549 (1991), the same 1 km grid square as the proposed development site.
- A large number of records for Common Pipistrelle (*Pipistrellus pipistrellus sensu lato*), including one from SJ 3449 (1999), an adjacent 1 km grid square to the proposed development site.
- Sixteen records of Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*), including from SJ36P (1990), the same 2 km grid square as the proposed development site.
- A large number of records for Chiroptera bat species, including one from SJ 3449 (1988), an adjacent 1 km grid square to the proposed development site.
- Three records of a *Myotis* bat species, five records of a Long-eared Bat species (*Plecotus* sp.), two records of Noctule Bat (*Nyctalus noctula*), seven records of a Pipistrelle bat species (*Pipistrellus* sp.), a single record of Soprano Pipistrelle (*Pipistrellus pygmaeus*), two records of Whiskered Bat (*Myotis mystacinus*) and one record of Daubenton's Bat (*Myotis daubentonii*) (none of which are within the same 1 km grid-square as the proposed development site, or an immediately adjacent square).
- A large number of records of Great Crested Newt (*Triturus cristatus*). Only one record is from within approximately 1 km: SJ 357 497 (Cefn Palmer (otherwise known as Cefn Park), dated 1992), a location approximately 550 m east of the proposed development site.

3.1.3 No priority habitats in the Wrexham Biodiversity Action Plan (WBAP) are of potential relevance to the survey site. 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 limited to Great Crested Newt. The WBAP also includes a 'Provisional List of Locally Important/ Endangered Species'.

3.2 Extended Phase 1 Habitat Survey

Site Description

3.2.1 The site is located in an urban landscape (dominated by residential housing) within Caia Park, Wrexham. It extends to approximately 0.7 hectares and forms the southern extremity of a larger area of parkland (dominated by amenity grassland) that extends north/ north-west of the site. The eastern boundary of the site is formed by Coed Aben, on the opposite side of which is residential housing. The southern and western boundaries are formed by hard-surfaced paths which separate the amenity grassland from adjacent residential housing; these houses are fronted by small gardens which mostly support grass. The northern boundary of the site is not delineated by any particular feature.

3.2.2 An area referred to as 'St. Anne's Wood' is located to the north-west of the site; this is fenced and appears to have been recently planted with young trees/ shrubs (with the previous amenity grassland resource reverting to species-poor unmanaged grassland).

Habitats and Flora

Proposed Development Site

3.2.3 The proposed development site is dominated by amenity grassland – the only other feature present is a line of (semi)-mature trees located adjacent to the eastern boundary. The Extended Phase 1 Habitat map is provided as *Figure 1*.

3.2.4 The amenity grassland (*Target Note 1*; refer to photos below) is dominated by *Lolium perenne* (Perennial Rye-grass) with a small number of associated grasses. The forb component of the sward is dominated by *Trifolium repens* (White Clover), *Taraxacum* sect. *Ruderalia* (Common Dandelion) and locally (especially in more disturbed areas), *Plantago major* (Greater Plantain); a variety of other common grassland forbs are present at low levels of abundance. The vast majority of the grassland had been subject to tractor mowing immediately prior to the survey – as such the sward was approximately 0.02 m high with fresh arisings scattered across. Embankments are located on the south and west sides, the lower zone of which largely supports a sward to 0.2 m in height – additional species to those recorded in the main sward include the grasses *Dactylis glomerata* (Cock's-foot) and *Holcus lanatus* (Yorkshire-fog), and a range of common forbs/ tall-herbs.

Amenity grassland at *Target Note 1*. LHS looking southeast from northwest corner of site. RHS looking west along southern embankment.

3.2.5 A row of seven (semi)-mature *Populus ×canadensis* (Hybrid Black-poplar) trees is located adjacent to Coed Aben on the eastern side of the proposed development site; these are further described with regards bats below.

Immediately Adjacent Land

3.2.6 A short length of species-poor garden hedge (*Target Note 3*) is located to the immediate south of the proposed development site. *Target Note 4* describes a small stand of unmanaged rough grassland located immediately adjacent to the north-west corner.

Fauna

Bats

3.2.7 The row of seven (semi)-mature *Populus ×canadensis* (Hybrid Black-poplar) trees at *Target Note 2* (refer to photo below) comprises two trees (the second and third trees from the south) with limited bat roost potential at most. The remainder of the trees do not provide bat roost potential.

Trees at *Target Note 2.*

3.2.8 The amenity grassland that dominates the site is species-poor and as such is unlikely to be of particular value for foraging/ commuting bats. The rough grassland adjacent to the site at *Target Note 4* and 'St. Anne's Wood' to the north provide habitats of greater potential value. The line of trees at *Target Note 2* continues north of the site adjacent to Coed Aben; this linear feature might be used by species that favour such landmarks. The surrounding residential housing potentially provides roosting opportunities.

Great Crested Newt

3.2.9 There is no aquatic habitat within/ immediately adjacent to the proposed development site. The regularly mown amenity grassland is of negligible potential value for Great Crested Newt, although animals would be able to disperse across it should they be present.

3.2.10 An initial review of the OS map 1:25, 000 scale and relevant internet-based mapping[1] indicates that there is one waterbody within approximately 500 m of the survey site – this being a large feature at SJ 354 499, approximately 180 m to the east. A detailed pond scoping exercise has not been undertaken and as such the potential presence of other waterbodies (for example garden ponds) has not been determined.

Birds

3.2.11 Potential nesting opportunities within the site are mostly limited to the line of (semi)-mature trees at *Target Note 2.* A young tree within the amenity grassland could also possibly be used.

[1] http://maps.google.co.uk/

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Introduction

4.1.1 The proposed development concerns construction of 23 dwellings (a mix of houses and flats) and associated infrastructure. The proposed site layout is shown on an Ainsley Gommon Architects Ltd plan entitled '*Glan Gors Housing Development for Pennaf Housing Association – Proposed Housing Mix*', drawing no. C801.03F, dated 22.10.12

4.1.2 This drawing has 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.

4.1.3 Details of the proposed soft landscaping scheme have not been finalised at the present time, although a draft planting plan (Ainsley Gommon Architects Ltd drawing no. 1424/SI/100) has been reviewed.

4.2 Conclusions and Mitigation

Habitat and Flora

4.2.1 The line of (semi)-mature *Populus ×canadensis* (Hybrid Black-poplar) trees at *Target Note 2* is the only habitat feature of particular interest present on the site – as this is part of a linear feature which continues north of the site adjacent to Coed Aben it could be considered to be of local value[2] (as a whole unit) – individual trees are however likely to be of no more than site value[3]. The amenity grassland resource present is frequent and ubiquitous across similar urban sites in the area; this resource is of site value.

4.2.2 No plant species of note (*e.g.* either included within the *Wildlife & Countryside Act 1981* (as amended) or identified as locally 'scarce' or 'rare' in VC50 – Denbighshire, as per Green 2006) were recorded during the survey.

4.2.3 Drawing. no. C801.03F indicates that the vast majority of the site will be cleared for development. However based on the quality/ character of the habitat present no further survey of the habitat is required. No specific mitigation measures are required with regards habitat.

4.2.4 Drawing no. C801.03F indicates that all of the existing trees at *Target Note 2* are to be lost as part of the scheme. The draft planting plan shows that three replacement *Alnus glutinosa* (Alder) trees will be planted along this frontage. An additional ten trees – *Liquidamber sp.* and *Sorbus aria* (Common Whitebeam) – are proposed to be planted elsewhere on the

[2] Local value – areas of habitat that are considered to appreciably enrich the habitat resource within the context of the parish or neighbourhood (after IEEM 2006).
[3] Site value – areas of habitat that are considered to appreciably enrich the habitat resource within the context of the survey site (after IEEM 2006).

edges of the site, and five *Carpinus betulus* (Hornbeam) trees adjacent to the northern boundary.

4.2.5 Proposed mitigation measures with regards flora are limited to installation of tree protection measures to protect off-site trees associated with *Target Note 2* (the line of trees continues north outside of the proposed development site boundary). Appropriate tree protection should be installed prior to any work starting on the site in relation to these trees. These protection measures should include exclusion barriers and signage, and be in accordance with '*BS 5837:2012 Trees in Relation to Design, Demolition and Construction. Recommendations*'.

4.2.6 Habitat enhancement measures are considered in *Section 4.3* below.

Fauna

Bats

4.2.7 Two of the trees at *Target Note 2* (the second and third trees from the south) have limited bat roost potential; this linear feature could also be used by commuting/ foraging bats. The value of the potential foraging habitat within the site is negligible. Records for eleven species of bat are included on the NBN Gateway, including Brown Long-eared Bat (*Plecotus auritus*) and Common Pipistrelle (*Pipistrellus pipistrellus sensu stricto*), from the same 1 km/ 2 km grid squares (respectively) as the proposed development site.

4.2.8 As detailed above, all the trees at *Target Note 2* are to be lost. Prior to felling of this line of trees a detailed daytime inspection by a licensed bat surveyor should be completed in relation to the second and third trees from the south. If evidence of bats is recorded or the inspection deemed inconclusive it may be necessary to undertake an emergence survey to determine whether or not the trees are being utilised by roosting bats. Such surveys usually involve two to three visits and can only be completed during the active season of bats (approximately May to September). The results of this survey would be used to design mitigation/ compensation measures if required. For example, if bats are determined to utilise either of the trees a Welsh Government 'development' licence would be required for the felling to lawfully proceed.

4.2.9 Where possible, the use of heavy machinery should be limited adjacent to the tree protection fencing (as detailed above), especially in the main bat breeding season (June to July).

Great Crested Newt

4.2.10 There is no aquatic habitat within/ immediately adjacent to the proposed development site and the amenity grassland is of negligible potential value for this species. 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 is only one known waterbody within 500 m of the survey site, this being located approximately 185 m to the east. The closest known record is from a location approximately 550 m east. Both the known waterbody and the location of the record are separated from the proposed development site by residential housing (approximately 170 m width at its widest point) and Cefn Road; there is also a stone wall that forms the eastern boundary of this road for several hundred meters north and south past the pond (as viewed on Google Streetview).

4.2.11 Considering the above information the likelihood that Great Crested Newts are present/ could disperse across the proposed development site is considered to be negligible. However due to the presence of a pond within 250 m, and taking into account that Great Crested Newts are known from Cefn Park (the location of the record), Ainsley Gommon Architects consulted with the WCBC biodiversity officer. This resulted in the requirement for a Great Crested Newt Reasonable Avoidance Measures (RAMs) scheme method statement to be prepared for the planning submission. This method statement was informed by the completion of a pond scoping exercise. It will be necessary to follow the measures detailed within the method statement (Marches Ecology 2012) both prior to and during the construction period.

Birds

4.2.12 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.

4.2.13 At present no further survey is envisaged. It is suggested that the single young tree present within the amenity grassland and the southernmost tree at *Target Note 2* are scheduled for removal outside the nesting period (March to August inclusive). Should this not be feasible, a nesting bird check would be required. 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.

4.2.14 Furthermore and as stated above, the proposed tree protection measures should be installed prior to the start of any preparatory/ construction work on site. No particular loss of potential nesting opportunities will be associated with the development, however proposed enhancement measures are discussed in *Section 4.3* below.

4.3 Recommendations/ Enhancements

4.3.1 Technical Advice Note 5: Nature Conservation and Planning (Welsh Assembly Government, 2009) seeks development to achieve net biodiversity gain. In addition The Code for Sustainable Homes (CfSH) Eco 2 Issue also relates to enhancement. With regards Eco 2 it should be noted that this does not necessarily include measures required to mitigate for perceived impacts on legally protected species/ habitats or other features of nature conservation concern. These requirements are most commonly driven by legislation and or planning/ other policy. As such recommendations for enhancement/ compensation are provided below and listed as key or additional in accordance with the CfSH.

The following are key recommendations:

I. The trees located to the north of *Target Note 2* (outside the site) which are to be retained are to be subject to appropriate tree protection. These protection measures should include exclusion barriers and signage, and be in accordance with '*BS 5837:2012 Trees in Relation to Design, Demolition and Construction. Recommendations*'. Such measures should be implemented installed prior to any work starting on the site. This is as shown on drawing no. C801.03F.
II. Provision of a hedge along the south and north western boundaries of the site (at the top of the embankment). This hedge, along with shrubs and trees to be planted in

scattered locations throughout the site, should ideally utilise locally native species but as a minimum British origin native stock. Should this not be possible plant species should have a known attraction to wildlife.

III. The potential impact of lighting (both during construction and operation) on bats that may use the area, in particular the tree line outside of the development site to the north of *Target Note* 2, should be considered. Lighting at the development site should follow guidance provided by The Bat Conservation Trust and Institution of Lighting Engineers (2008) wherever possible. No details are currently available concerning proposed lighting.

IV. The House Sparrow (*Passer domesticus*) is a rapidly declining bird of conservation concern and is likely to be present in the area. A minimum of five Schwegler Brick Box No.24 nest-boxes[4] are to be installed on one or more of the buildings within the site. These nest-boxes should be installed within the wall. Boxes should be sited out of reach, 3 - 5 m or more off the ground. All of the nest-boxes should be located somewhere between (facing) north through east to southeast; avoiding prevailing winds and direct sunlight where possible. All bird-boxes should be checked and cleaned outside the breeding season.

V. Simple measures to provide access points for bats are to be included in one or more buildings within the development including ridge tile and roof tile access points (*e.g*. Tudor Tiles[5]); a minimum of five such features will be provided. These specially adapted ridge and roof tiles allow access between the tiles and under-felt but not the loft-space. Advice from a bat ecologist would be required to determine the best location for these features to maximise the benefit to bats.

VI. A minimum of five bat-boxes are to be provided on, or within, the structure of external walls of one or more houses within the development (*e.g*. Roofblock bat-box[6], Ibstock bat-bricks[7] or Schwegler bat-tubes[8]). Appropriate Schwegler bat-box models would be Bat Tube 1FR, Bat Roost 1WQ and or the Bat Access Panel 1FE. These bat-boxes should be placed at approximately 4-6 m height on various aspects, facing onto open space and not in areas lit by artificial light. It is necessary to ensure that the boxes on the houses cannot be readily opened and inspected by the new residents. Advice from a bat ecologist would be required to determine the best location for these features to maximise the benefit to bats.

The following are additional recommendations:

I. The existing amenity grassland within the south-west corner of the site which has not been identified for development on drawing no. C801.03F should be supplemented by the introduction of new wildflower plug plants (for example the BTCV 'Flowering Lawn' wildflower plug collection[9]). Further to establishment this habitat can be subject to frequent management, with ideally the cessation of mowing for approximately one month in summer to encourage flowering.

II. Subject to land owner permission a small number of bird nest-boxes and bat-boxes could be installed on retained trees outside the site (to the north of *Target Note 2*).

[4] http://www.livingwithbirds.com/nest-boxes-by-species/house-sparrow/brick-box-no24/
[5] http://www.tudorrooftiles.co.uk/?content=bats
[6] http://www.roofblock.co.uk/pages/batbox.html
[7] http://www.ibstock.com/pdfs/ideas-into-action/ideas-into-action-bats.pdf
[8] http://www.livingwithbirds.com/nest-boxes-by-species/bats/
[9] http://shop.tcv.org.uk/shop/stock?l=level3;lid=850;sid=8875

Schwegler produce a range of appropriate nest-/ bat-boxes (*e.g*. Schwegler 1B[10] type for birds and General Purpose Bat Box 2F[11]). Nest-boxes should be sited out of reach, 3m or more off the ground. All of the nest-boxes should be located somewhere between (facing) north through east to southeast; avoiding prevailing winds and direct sunlight where possible. The three bat-boxes should be located in a cluster of three. They should be sited no lower than 3 m from the ground and ideally between 3 m and 5 m above the ground on large tree trunks, generally facing south, southwest and southeast wherever possible (so that they are not overly exposed). There should be no over-hanging branches/ other vegetation and there should be direct and easy access to the entrances. The bat-boxes should be located in the darkest areas, away from artificial light sources. All nest-/ bat-boxes should be checked and cleaned outside the breeding season.

III. The Swift (*Apus apus*) is a rapidly declining bird of conservation concern and is likely to be present in the area. Modern housing design frequently does not provide nesting opportunities for this species and as such five Swift-bricks[12] could be incorporated into one or more of the buildings within the site. Installation should follow the guidance detailed on the Swift Conservation web-site but should be more than 5 m above ground level. The Schwegler Brick Box No.25 for Swifts[13] or the Ibstock Swift box[14] should be used. All bird-boxes should be checked and cleaned outside the breeding season.

[10] http://www.livingwithbirds.com/nest-boxes-by-species/blue-tit/the-official-woodecrete-nest-box-1b/
[11] http://www.livingwithbirds.com/nest-boxes-by-species/bats/2f-bat-box/
[12] http://www.swift-conservation.org/swift_bricks.htm
[13] http://www.livingwithbirds.com/nest-boxes-by-species/swift/brick-box-no25-for-swifts/
[14] http://www.ibstock.com/sustainability-ecozone.asp

5 TARGET NOTES

Proposed Development Site

Target Note 1. Amenity grassland. This extends north out of the proposed development site boundary. It occupies a gently slope (towards the south), with embankments (approximately 2 m high and 45°) on the south and west sides. With the exception of the lower zone of these embankments (refer below), the vast majority of the grassland had been subject to tractor mowing immediately prior to the survey – as such the sward was approximately 0.02 m high with fresh arisings scattered across. The sward is dominated by *Lolium perenne* (Perennial Rye-grass) with associated grasses (generally at low levels of abundance) such as *Agrostis stolonifera* (Creeping Bent), *Festuca rubra* (Red Fescue), *Hordeum murinum* (Wall Barley) and *Poa annua* (Annual Meadow-grass). The forb component of the sward is dominated by *Trifolium repens* (White Clover), *Taraxacum* sect. *Ruderalia* (Common Dandelion) and locally (especially in more disturbed areas), *Plantago major* (Greater Plantain). A variety of other forbs are present at low levels of abundance such as *Bellis perennis* (Daisy), *Geranium molle* (Dove's-foot Crane's-bill), *Achillea millefolium* (Yarrow), *Plantago lanceolata* (Ribwort Plantain), *Senecio jacobaea* (Common Ragwort), *Cerastium fontanum* (Common Mouse-ear), *Crepis capillaris* (Smooth Hawk's-beard) and *Polygonum aviculare* (Knotgrass).
The lower zone of the embankments largely supports a sward to 0.2 m in height – additional species to those recorded in the main sward include grasses such as frequent *Dactylis glomerata* (Cock's-foot) and occasional *Holcus lanatus* (Yorkshire-fog), and forbs/ tall-herbs such as locally frequent *Ranunculus repens* (Creeping Buttercup) and lesser amounts of *Rumex obtusifolius* (Broad-leaved Dock), *Veronica persica* (Common Field-speedwell) and *Potentilla reptans* (Creeping Cinquefoil).

Target Note 2. A line of seven (semi)-mature *Populus ×canadensis* (Hybrid Black-poplar) trees located adjacent to Coed Aben on the eastern side of the proposed development site. This line of trees continues north outside of the proposed development site boundary. The second and third trees from the south are the largest with a maximum diameter at breast height (dbh) of approximately 0.8 m and approximate heights of 20 m. They appear in good condition and (with the possible exception of frequent bark cracks of unknown depth) no particular features of potential value for roosting bats were visible. These two trees have limited bat roost potential at most. The other five trees have approximate maximum dbh's of 0.4 m and approximate heights of 10 m; these trees do not provide bat roost potential.

Immediately Adjacent Land

Target Note 3. A short length of garden hedgerow immediately adjacent to the proposed development site. It is approximately 1.5 m high and wide. The woody component is dominated by *Crataegus monogyna* (Hawthorn) with abundant scrambling *Galium aparine* (Cleavers). The field layer is dominated by *Geranium robertianum* (Herb-robert) and *Equisetum arvense* (Field Horsetail). It appears infrequently managed.

Target Note 4. A small area of unmanaged rough grassland. The sward is dominated by the coarse-leaved grasses *Dactylis glomerata* (Cock's-foot), *Holcus lanatus* (Yorkshire-fog) and *Arrhenatherum elatius* (False Oat-grass). A range of tall-herbs are also present including *Heracleum sphondylium* (Hogweed), *Senecio jacobaea* (Common Ragwort), *Urtica dioica* (Common Nettle), *Rumex obtusifolius* (Broad-leaved Dock) and *Cirsium arvense* (Creeping Thistle). Locally there is incipient *Rubus fruticosus* agg. (Bramble) and young *Crataegus monogyna* (Hawthorn) bushes.

6 REFERENCES

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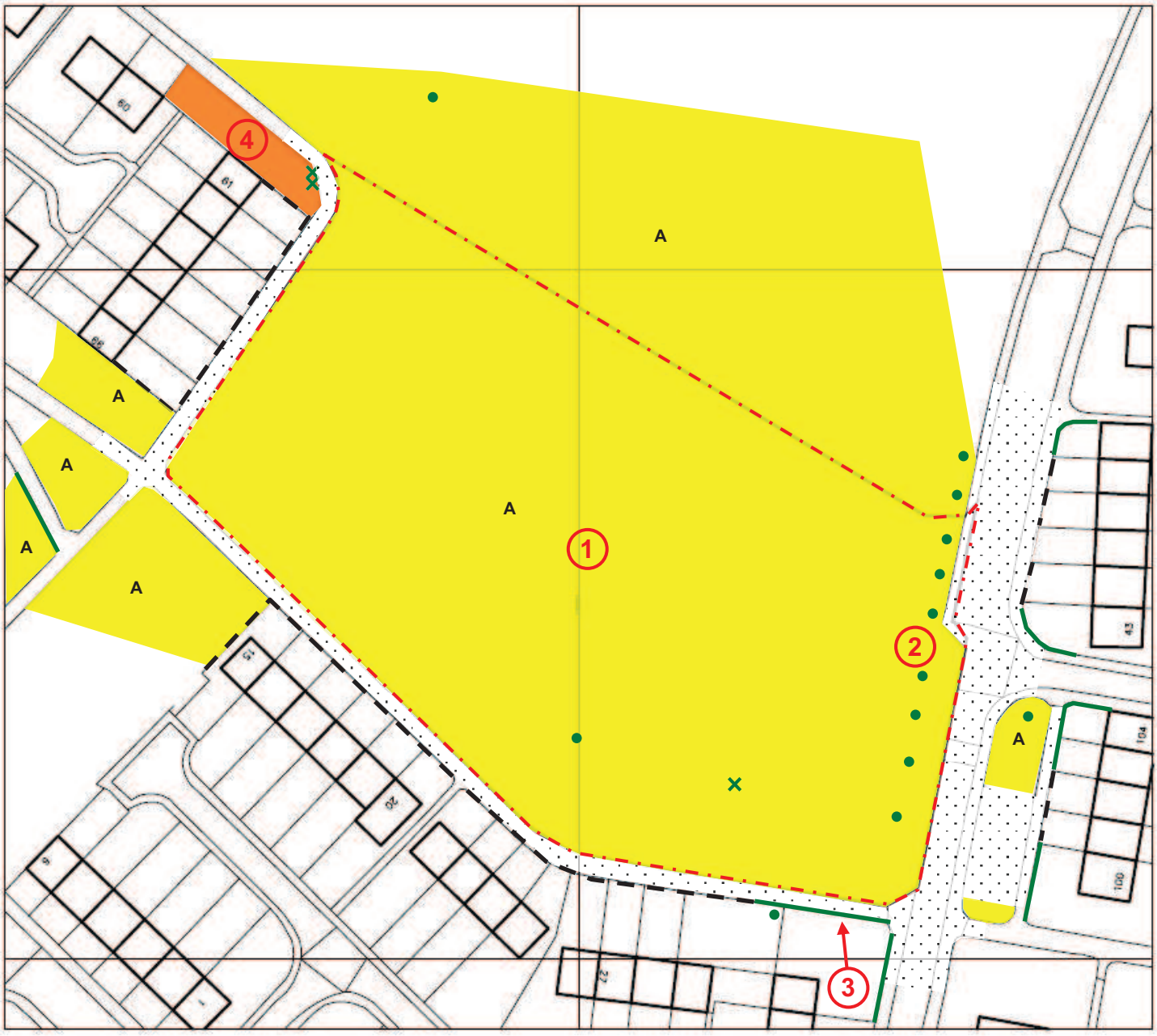
7 DATA

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

Plant species
Populus ×canadensis (Hybrid Black-poplar)
Quercus robur cultivar(a Pedunculate Oak)
Achillea millefolium (Yarrow)
Agrostis stolonifera (Creeping Bent)
Bellis perennis (Daisy)
Capsella bursa-pastoris (Shepherd's-purse)
Cerastium fontanum (Common Mouse-ear)
Crepis capillaris (Smooth Hawk's-beard)
Dactylis glomerata (Cock's-foot)
Festuca rubra (Red Fescue)
Geranium molle (Dove's-foot Crane's-bill)
Holcus lanatus (Yorkshire-fog)
Hordeum murinum (Wall Barley)
Lolium perenne (Perennial Rye-grass)
Malva sylvestris (Common Mallow)
Matricaria discoidea (Pineappleweed)
Plantago lanceolata (Ribwort Plantain)
Plantago major (Greater Plantain)
Poa annua (Annual Meadow-grass)
Polygonum aviculare (Knotgrass)
Potentilla reptans (Creeping Cinquefoil)
Ranunculus repens (Creeping Buttercup)
Rumex obtusifolius (Broad-leaved Dock)
Senecio jacobaea (Common Ragwort)
Senecio vulgaris (Groundsel)
Sonchus oleraceus (Smooth Sow-thistle)
Stellaria media (Common Chickweed)
Taraxacum sect. *Ruderalia* (Common Dandelion)
Trifolium dubium (Lesser Trefoil)
Trifolium pratense (Red Clover)
Trifolium repens (White Clover)
Veronica persica (Common Field-speedwell)



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Not to scale.

Base mapping from an Ainsley Gommon Architects plan entitled 'Glan Gors, Wrexham – Location Plan', drawing no. C801.01, dated 30.07.12

Marches Ecology

C200 Proposed Residential Development, Glan Gors, Caia Park, Wrexham – Extended Phase 1 Habitat Survey

***Figure 1* – Extended Phase 1 Habitat Survey**

Drawn by: ME
Checked by: TK
*Date:*05.09.12

Key

- × Scattered scrub
- ● Individual broad-leaved tree
- Hedge
- A Amenity grassland
- Rough grassland
- Hard-standing
- Fence
- (1) Target Note
- Proposed development site boundary