



**Land at  
St. Cyres,  
Dinas Powys**

**Ecological  
Appraisal**

Prepared by:  
**The Environmental  
Dimension  
Partnership Ltd**

On behalf of:  
**Barratt and  
David Wilson  
Homes,  
South Wales**

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Report Reference  
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## Executive Summary

- S1 This Ecological Appraisal has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Barratt and David Wilson Homes South Wales (hereafter referred to as “the Applicant”). This Appraisal considers the ecological implications of proposed residential development at St. Cyres, Dinas Powys (hereafter referred to as “the Application Site”).
- S2 To inform a planning application submission a Desk Study, Extended Phase 1 Habitat survey and further detailed surveys for bats, dormouse and great crested newt were completed by RPS during 2015 and 2016. The findings of such work were updated by EDP during 2017 to determine any material change to those habitats and protected/notable species supported, in addition to completing further detailed survey work with respect to breeding birds and reptiles.
- S3 With respect to designated sites, Cross Common Site of Importance for Nature Conservation (SINC) overlaps with the Application Site’s south western boundaries. Two Ancient Woodland sites, as listed on the Ancient Woodland Inventory (AWI), also adjoin the southern boundary of the Application Site, contained within the SINC boundaries.
- S4 With respect to habitats onsite, the eastern half of the Application Site comprises relatively open land, including areas of hardstanding comprising the former school grounds alongside two species poor, semi-improved grassland fields, comprising the former playing fields. The western half of the Application Site comprises six field parcels divided by native treelines, woodland belts and outgrown hedgerows. Broadleaved semi-natural and plantation woodland otherwise form the peripheries of the Application Site, and together with its connectivity to vegetated field boundaries, provide suitable habitat for dormouse, bats, breeding birds, reptiles and badger.
- S5 Accordingly, EDP has contributed to the design of the masterplan assessed by this report. Specific proposals for the avoidance, mitigation and compensation of any predicted impacts include the retention, protection and enhancement of those features of greater ecological importance, namely the vegetated boundaries of the Application Site, to compensate and mitigate for unavoidable habitat loss.
- S6 Subject to implementation of inherent and recommended mitigation and enhancement measures, EDP’s desk and field-based baseline investigations have demonstrated that the habitats and species present within and around the Application Site, do not pose a significant constraint to the proposed development.
- S7 Overall therefore, EDP considers that the scheme is capable of compliance with relevant planning policy for the conservation of the natural environment at all levels. Additionally, it is considered that the proposed mitigation and enhancement measures incorporated within the proposed masterplan will prevent loss of biodiversity within the Application Site.

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## **Section 1**

### **Introduction, Purpose and Context**

- 1.1 This Ecological Appraisal has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Barratt & David Wilson Homes, South Wales (hereafter referred to as “the Applicant”). This Appraisal considers the ecological implications of proposed residential development at St. Cyres, Dinas Powys (hereafter referred to as “the Application Site”).
- 1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff and Shrewsbury. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website [www.edp-uk.co.uk](http://www.edp-uk.co.uk).

#### **Site Context**

- 1.3 The Application Site is centred approximately at Ordnance Survey Grid Reference (OSGR) ST 162 707 within the Local Planning Authority of Vale of Glamorgan County Council (VoGC) and encompasses approximately 12 hectares (ha) of predominantly poor semi-improved grassland.
- 1.4 The eastern half of the Application Site comprise the grounds of a former school (now demolished), with associated areas of hardstanding and former playing fields. The northern and southern boundaries of the former school are delineated by broadleaved plantation woodland, whilst the eastern boundary is defined by Murch Road and a native species-rich hedgerow adjacent to a lane.
- 1.5 The western half of the Application Site is dominated by a series of poor semi-improved grassland fields sub divided by native treelines, outgrown hedgerows and broadleaved woodland. Of particular note is a relatively large area of semi-natural broadleaved woodland located along its southern boundary, which partly extends into the Application Site. This area is designated as Cross Common Site of Importance for Nature Conservation (SINC), of which two sections are included on the Ancient Woodland Inventory (AWI)<sup>1</sup>, classed as areas of Ancient Semi Natural Woodland.
- 1.6 More generally, the Application Site is bound to the immediate north and west by existing residential development comprising part of the settlement of Dinas Powys. The urban area of Penarth lies to the east. Wider open countryside comprising a network of fields, hedgerows and woodland is otherwise present south of the Application Site.

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<sup>1</sup> The Ancient Woodland Inventory defines Ancient Semi Natural Woodland to consist of broadleaf woodlands, comprising mainly native tree and shrub species which are believed to have been in existence for over 400 years. <https://naturalresources.wales/guidance-and-advice/environmental-topics/woodland-management/woodlands-and-the-environment/ancient-woodland-inventory/?lang=en>.

## Development Proposals

- 1.7 The proposed development is described in further detail at **Section 4**. In brief, the proposal is for the provision of 220 residential units, to include an area of land proposed for future community use. The proposed residential use is to be the subject of a detailed planning application whilst the community use is to be submitted as an outline planning application. The detailed layouts of the scheme are provided at **Appendix EDP 1**.
- 1.8 The Application Site is identified within the adopted Vale of Glamorgan Local Deposit Plan (LDP) 2011-2026 as an allocation for residential and community development, with a capacity of 300 units identified. However, given the ecological sensitivities of the Application Site, it was considered necessary to significantly reduce the extent of the proposed development to 220 residential units.
- 1.9 As such, the ecological sensitivities of the Application Site have influenced the final layout through an iterative design process. Thus, the masterplan incorporates a degree of 'inherent' mitigation to avoid or reduce the severity of potential ecological impacts.

## Scope of Appraisal

- 1.10 This Ecological Appraisal describes the current ecological interest within and around the Application Site, which has been identified through standard desk- and field- based investigations. It then considers the potential ecological impacts and opportunities for ecological enhancement based on the final masterplan (incorporating inherent mitigation) in the context of relevant legislation and planning policy. Finally, this Appraisal identifies the necessary additional measures to avoid, mitigate or provide compensation for potential impacts, and the mechanisms for securing such measures.
- 1.11 The remainder of this report is structured as follows:
- **Section 2** summarises the methodology employed in determining the baseline ecological conditions within and around the Application Site (with further details provided within Appendices and on Plans where appropriate);
  - **Section 3** summarises the baseline ecological conditions (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates any pertinent ecological features/receptors;
  - **Section 4** describes the development proposals, how the design has been influenced by ecological factors, EDP input to the design process and key components of inherent mitigation;
  - **Section 5** considers the potential impacts of the proposal on pertinent ecological features in the context of legislative, planning policy and biodiversity action planning considerations. Recommended mitigation and enhancement measures are provided for the current and possible future planning stages; and



- **Section 6** summarises the inherent and recommended additional mitigation measures and provides the overall conclusions of the Appraisal.

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## **Section 2**

### **Methodology (Baseline Investigations)**

2.1 This section of the Ecological Appraisal summarises the methodologies employed in determining the baseline ecological conditions within and around the Application Site. The appraisal has been undertaken by appropriately qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the site or wider study area. Full details of the techniques and process adopted are, where appropriate, provided within Appendices and Plans to the rear of this report.

#### **Desk Study and Consultation**

2.2 The desk study is an important element of undertaking an initial ecological appraisal of a site proposed for development, enabling the initial collation and review of contextual information, such as designated sites, together with known records of protected and priority species.

2.3 The desk study was undertaken by RPS during June 2015 (**Appendix EDP 2**) and involved collating biodiversity information from the following sources:

- South East Wales Biodiversity Records Centre (SEWBRcC);
- Multi-Agency Geographic Information for the Countryside (MAGIC) website<sup>2</sup>; and
- National Biodiversity Network (NBN) Atlas website<sup>3</sup>.

2.4 The desk study involved obtaining the following information:

- International statutory designations (10km radius around the Application Site);
- National statutory designations and non-statutory local sites (2km radius);
- Lesser and Greater Horseshoe bat records (5km radius); and
- All other protected/notable species records (2km radius).

2.5 The above listed search areas are considered sufficient to cover the potential zones of influence<sup>4</sup> of the proposed development in relation to designated sites, habitats and species.

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<sup>2</sup> [www.magic.gov.uk](http://www.magic.gov.uk)

<sup>3</sup> <http://www.nbnatlas.org>

<sup>4</sup> Zone of Influence - the areas and resources that may be affected by the proposed development.

- 2.6 The distribution of pertinent designations around the Application Site is illustrated within **Plan EDP 1** and specifically referenced within **Section 3** of this report.

#### **Update Extended Phase 1 Survey**

- 2.7 An initial Extended Phase I Habitat Survey was undertaken by RPS in May 2015 (**Appendix EDP 2**). Given the time that had lapsed since the original survey, EDP completed an update Extended Phase 1 Habitat Survey on 19 April 2017 to verify previous findings whilst also determining any material changes to those habitats previously identified onsite.
- 2.8 The survey technique adopted for the update habitat assessment was at a level intermediate between a standard Phase 1 survey technique<sup>5</sup>, based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 Survey. This level of survey does not aim to compile a complete floral and faunal inventory for the site.
- 2.9 The level of survey involves identifying and mapping the principal habitat types and identifying the dominant plant species present in each principal habitat type. In addition, any actual or potential protected species or species of principal importance, are identified and scoped. The distribution of habitats surveyed is illustrated at **Plan EDP 2**, with habitat descriptions and photographs included within **Appendix EDP 3**.

#### **Limitations**

- 2.10 The Extended Phase I Survey was fully accessible at the time of the update site visit and was completed during the optimal surveys months of April and September inclusive. The survey was therefore not limited by seasonal or climatic conditions.

#### **Detailed (Phase 2) Surveys**

- 2.11 The scope of the additional Phase 2 surveys undertaken at the Application Site was defined following the completion of the update Extended Phase 1 Habitat Survey and review of the previous survey findings collated by RPS between 2015 and 2016. The surveys 'scoped in' are summarised in turn below, with a brief explanation of those potential surveys 'scoped out' provided thereafter.

#### **Breeding Bird (Pilot) Survey**

- 2.12 The Application Site supports a range of habitats suitable for breeding birds, with several records of protected/notable species returned from the desk study. A single 'pilot' breeding bird survey (BBS) was, therefore, undertaken on 22 April 2017 to assess the study area for its potential to support breeding birds of conservation concern and to

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<sup>5</sup> Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

determine whether further detailed survey work would be necessary to inform the application.

- 2.13 The pilot BBS was undertaken with reference to standard methodology, entailing a modified Common Bird Census (CBC) 'territory mapping' approach, as detailed in **Appendix EDP 4**.

### **Bats**

- 2.14 The update Extended Phase I Habitat Survey confirmed the continued presence of several trees with potential to support roosting bats both within and adjacent to the Application Site, whilst boundary features are considered to provide suitable foraging and commuting habitat for bats.
- 2.15 With respect to roosting bats, ground level and aerial tree inspections were undertaken in February 2017 by suitably qualified and NRW licensed ecologists from AVA Ecology on behalf of RPS, to determine their potential to support roosting bats. Full details are provided in **Appendix EDP 5**.
- 2.16 Given the potential impact of the proposed development footprint upon trees identified as having bat roost potential, a second detailed aerial inspection of those trees to be impacted was completed on 13 July 2017 by AVA Ecology Ltd. (**Appendix EDP 6**), with reference to best practice guidance<sup>6</sup>. A third and final inspection is intended during September 2017.
- 2.17 With respect to foraging/commuting bats, no material changes to those habitats present on and immediately adjacent to the Application Site were noted during the update survey visit. As such, given the survey effort previously employed by RPS, including the completion of manual transect and automated detector surveys on a monthly basis between May and September 2015 inclusive (as detailed at **Appendix EDP 2**), the previous findings are considered to remain valid for the purposes of this assessment such that no further update surveys were considered necessary.

### **Dormouse**

- 2.18 Owing to the suitability of the woodland, tree line and hedgerow network present across the Application Site for dormice (*Muscardinus avellanarius*), a nest tube survey to determine the presence/likely absence of the species was undertaken by RPS during 2015. A total of 85 nest tubes were deployed onsite in April 2015. Tubes were left *in situ* and checked by licensed surveyors for evidence of use by dormice on three separate occasions over the course of 2015 during suitable weather conditions, on 28 May, 23 July, and 23 September. An additional 'ad hoc' check of nest tubes during 16 June 2015 was also undertaken. Full details are provided in **Appendix EDP 2**.

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<sup>6</sup> Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines* (3<sup>rd</sup> edition). The Bat Conservation Trust, London.

### **Badger Survey**

- 2.19 The Application Site offers suitable foraging and sett building opportunities for badger (*Meles meles*). As such, a detailed walkover survey was completed by RPS during the initial Extended Phase I Habitat Survey to determine the presence and distribution of badgers and their setts across the Application Site (**Appendix EDP 2**). Given the mobile and opportunistic nature of this species, a further update survey walkover was completed by EDP on 19 April 2017.
- 2.20 During each survey, any signs of badger activity such as holes, latrines, trails, snuffle holes and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in active use:
- Fresh spoil outside entrances;
  - Old bedding material (typically dried grass) outside entrances;
  - Holes being cleared of leaf litter;
  - Badger guard hairs; and
  - Fresh tracks leading to/from the holes.

### **Great Crested Newt Survey**

#### *Habitat Suitability Assessment of Waterbodies*

- 2.21 All waterbodies located on and within a 500m radius of the Application Site (with exception of those separated from the site by effective barriers), were initially assessed by Biocensus on behalf of RPS in 2015 using the standard Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000)<sup>7</sup> for their potential to support great crested newt (*Triturus cristatus*) (**Appendix EDP 2**). This is a standard assessment system that uses numerous criteria such as water quality, fish/waterfowl presence and surrounding terrestrial habitat from which a score is derived. A total of two waterbodies were assessed, both of which are located within the Application Site.

#### *Presence/Absence Survey*

- 2.22 Given the suitability of the two waterbodies assessed, four presence/absence surveys were undertaken by Biocensus on behalf of RPS during May 2015 utilising standard techniques including torch survey, egg searching and bottle trapping techniques with reference to best practice guidance<sup>8</sup> (**Appendix EDP 2**).

#### *Update Habitat Suitability Assessment of Waterbodies*

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<sup>7</sup> Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.

<sup>8</sup> English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature.

- 2.23 An update HSI assessment was undertaken by EDP on 19 April 2017, to determine any material change to those waterbodies present within the Application Site. Full details are provided at **Appendix EDP 7**.

*Environmental DNA Sampling of Waterbodies*

- 2.24 To further update the baseline, update presence/likely absence surveys for great crested newt were completed on 19 April 2017 for both waterbodies present onsite, with water sampling completed in accordance with those methodologies set out by the Freshwater Habitats Trust<sup>9</sup>. Samples were analysed by FERA for great crested newt environmental DNA (eDNA), using real-time Polymerase Chain Reaction (PCR) as detailed within Biggs *et al.* (2014)<sup>10</sup>. Full details are provided in **Appendix EDP 7**.

**Reptile Survey**

- 2.25 The Application Site offers suitable basking, foraging and hibernating habitat for common reptile species, particularly across the areas of poor semi-improved grassland, and along woodland edges and hedgerow habitats.
- 2.26 To determine the presence/likely absence of reptile species within the Application Site, along with their distribution and approximate population size, a reptile survey was undertaken. The survey involved the use of artificial reptile refugia checked on seven occasions between May and June 2017. Full details of the reptile survey are provided in **Appendix EDP 8**.

**Surveys Scoped Out**

- 2.27 **Table EDP 2.1** below summarises other survey types which, while commonly required as part of an Ecological Appraisal for development sites, were not considered necessary/appropriate in this case.

**Table EDP 2.1:** Ecology surveys scoped out.

| Survey Type          | Reasons for scoping out   |
|----------------------|---|
| Bat Activity Surveys | An update Extended Phase 1 Habitat Survey undertaken in April 2017 did not identify any significant changes to the distribution and management of habitats on-site such that existing survey data collated by RPS between May and September 2015 is considered to remain valid for the purposes of this assessment. |

<sup>9</sup> As approved by Natural England. <http://www.freshwaterhabitats.org.uk/wordpress/wp-content/uploads/2013/09/eDNA-water-sample-methods-FHT.pdf>.

<sup>10</sup> Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

| Survey Type  | Reasons for scoping out   |
|--|---|
| Update Dormouse Surveys  | An update Extended Phase 1 Habitat Survey undertaken in April 2017 did not identify any significant changes to the distribution and management of habitats on-site, such that existing survey data collated by RPS between May and September 2015 is considered to remain valid for the purposes of this assessment.  |
| Otter ( <i>Lutra lutra</i> ) and Water Vole ( <i>Arvicola terrestris</i> ) | No suitable habitat exists on or immediately adjacent to the Application Site for either of these species.  |
| Great Crested Newt - Population Size Assessment                            | The 2017 eDNA surveys confirmed likely absence of great crested newt from ponds present within the Application Site such that no further survey is considered necessary.  |
| Invertebrates  | Although a number of invertebrate records were returned during the desk study, including records for stag beetle ( <i>Lucanus servus</i> ) and marsh fritillary ( <i>Euphydryas aurinia</i> ), habitats present on site are considered likely to support only a limited assemblage of common and widespread invertebrate species. Habitats of greater ecological value with potential to support a more diverse assemblage, including trees and hedgerows onsite, will be retained and buffered from the impacts of the development proposed. No further survey has, therefore, been considered necessary in this instance. |



## Section 3 Results (Baseline Conditions)

3.1 This section of the Ecological Appraisal summarises the baseline ecological conditions determined through the course of desk-based and field-based investigations described in **Section 2**. In particular, this section identifies and evaluates those ecological features/receptors that lie within the Application Site’s potential zone of influence and which are pertinent in the context of the proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.

### Designated Sites

3.2 Information regarding designated sites was obtained during the Desk Study from the MAGIC website and SEWBRc. Statutory designations (those receiving legal protection) and non-statutory designations (those receiving planning policy protection only) are discussed in turn below.

### Statutory Designations

3.3 Statutory designations represent the most significant ecological receptors, being of recognised importance at an international and/or national level. International designations include Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar Sites. National designations include Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).

3.4 No part of the Application Site is covered by any statutory designations. However, there are a number of such designations within the Application Site’s potential zone of influence, as described below/summarised in **Table EDP 3.1** and illustrated on **Plan EDP 1**.

**Table EDP 3.1:** Statutory designations within the site’s potential zone of influence.

| Designation    | Distance from site | Interest Feature(s)  |
|----------------|--------------------|--|
| Cog Moors SSSI | 1.1km south        | Cog moors comprises a series of fields adjacent to Sully Brook and is of special interest for its large area of damp neutral semi-natural grassland. Of additional interest, Cog Moors supports populations of the nationally scarce bulbous foxtail ( <i>Alopecurus bulbosus</i> ) and pepper saxifrage ( <i>Silaum silaus</i> ). |

| Designation                | Distance from site | Interest Feature(s)  |
|----------------------------|--------------------|--|
| Cosmeston Lakes SSSI       | 1.1km south        | This SSSI comprises two lakes, eastern and western, connected by a narrow channel, the former comprising the Application Site. Both lakes have been created from flooded limestone quarries and support a range of submerged plants. The western lake is of special interest as the only known site in Wales for the presence of starry stonewort ( <i>Nitellopsis obtusa</i> ). Reasons for its notification and sensitivities are provided further below.  |
| Severn Estuary Ramsar Site | 2.2km east         | The Severn Estuary is designated a Ramsar Site for: its immense tidal range; presence of unusual estuarine communities, reduced diversity and high productivity; populations of migratory fish; bird assemblages of international importance; and fish species associated with the whole estuarine and river system.   |
| Severn Estuary SPA         | 2.2km east         | This SPA is designated for supporting populations of European importance, overwintering Bewick's swan ( <i>Cygnus columbianus bewickii</i> ) and migratory curlew ( <i>Numenius arquata</i> ), dunlin ( <i>Calidris alpina</i> ), pintail ( <i>Anas acuta</i> ), redshank ( <i>Tringa tetanus</i> ) and shelduck ( <i>Tadorna tadorna</i> ). The site also supports a population of European importance of passage ringed plover ( <i>Charadrius hiaticula</i> ) and is a wetland of international importance. |
| Severn Estuary SAC         | 2.2km east         | This SAC is designated for its assemblage of Annex I habitats including: estuaries; mudflats and sandflats not covered by seawater at low tide; and Atlantic salt meadow. Also, a qualifying feature are its populations of twaite shad ( <i>Allosa fallax</i> ), sea lamprey ( <i>Petromyzon marinus</i> ) and river lamprey ( <i>Lampetra fluviatilis</i> ).   |

### Non-Statutory Designations

- 3.5 Non-statutory designations are also commonly referred to in planning policies as 'local sites', although in fact these designations are typically considered to be of importance at a county level. In Vale of Glamorgan, such designations are named Sites of Importance for Nature Conservations (SINCs). Additional designated sites which should be considered at this level include Local Nature Reserves (LNRs) and Ancient Semi Natural Woodland (ASNW), where these are not covered by other designations.
- 3.6 Non-statutory sites associated with the Application Site are summarised at **Table EDP 3.2** with further details provided at **Appendices EDP 2** and **EDP 9**.

**Table EDP 3.2:** Non-statutory designations within the site's potential zone of influence.

| Designation       | Distance from site   | Interest Feature(s)   |
|-------------------|--|---|
| Cross Common SINC | Adjacent to, and overlaps with part of the southern boundary | Semi-natural broadleaved woodland. Includes two sites classed as Ancient Semi Natural Woodland on the Ancient Woodland Inventory. |
| North of Pop Hill | 0.3km south west   | Species-rich, semi-improved neutral grassland with large anthill.   |
| Shortlands Wood   | 0.4km south west   | Semi-natural broadleaved woodland partly on an ancient woodland site.   |

| Designation                                       | Distance from site | Interest Feature(s)   |
|---|--------------------|---|
| Pop Hill SINC                                     | 0.7km south        | Ancient semi-natural broadleaved woodland.  |
| Cog Moors SINC                                    | 0.8km south        | An area of ancient semi-natural woodland.   |
| Pwll Erw-naw                                      | 0.9km south west   | Pond which supports good population of great crested newts.   |
| Cogan Pond SINC                                   | 1km south east     | A large pond supporting a reed bed.   |
| Dinas Powys Castle Woodland                       | 1km north west     | Ancient semi-natural broadleaved woodland.  |
| Dinas Powys Moors                                 | 1km south west     | Species-rich semi-improved neutral grassland with pond.   |
| North of Cog Moors                                | 1km south          | Ancient semi-natural woodland.  |
| Pond 11 Biglis Moors                              | 1.1km south west   | Pond which supports good population of great crested newts.   |
| Cosmeston Lakes SINC and Country Park             | 1.1km south east   | A Country Park supporting a range of habitat types including species-rich calcareous and neutral grasslands, scrub, hedgerows, woodland, streams and ponds, all of which support a diverse assemblage of protected and notable species. |
| Case Hill Wood                                    | 1.2km north west   | Semi-natural broadleaved woodland with mixed plantation on an ancient woodland site.  |
| Coed Twyncwn                                      | 1.3km north west   | Semi-natural broadleaved woodland with mixed plantation on an ancient woodland site.  |
| Downs Wood SINC                                   | 1.4km south east   | Ancient semi-natural broadleaved woodland.  |
| Coed Clwyd-Gwyn South West of Michaelstone le Pit | 1.4km north west   | Semi-natural broadleaved woodland with areas of mixed and coniferous plantation on ancient woodland and ancient semi-natural woodland sites.  |

### Habitats

- 3.7 Information on habitats within and around the Application Site was obtained during the initial and update desk study and Extended Phase 1 Habitat Surveys.
- 3.8 The distribution of different habitat types within and adjacent to the Application Site is illustrated on **Plan EDP 1**. In addition, detailed descriptions of these habitat types, together with illustrative photographs, are provided in **Appendix EDP 3**. A summary, and qualitative assessment, of these habitats is provided in **Table EDP 3.3**.

**Table EDP 3.3:** Summary of habitats within the Application Site.

| Habitat or feature                     | Distribution within Application Site  | Intrinsic ecological value   | Potential/confirmed value to protected species |          |          |        |           |
|--|---|--|--|----------|----------|--------|-----------|
|  |   |  | Spp.   | Breeding | Foraging | Refuge | Dispersal |
| Broadleaved semi-natural woodland      | Dominates the peripheries of the western half of the Application site. Cross Common SINC, also comprising semi-natural woodland, overlaps with the southern boundaries of the Application Site. | <b>Local</b> , owing to its connectivity to the wider landscape and prevalence of mature and over mature tree standards. | Bats   | ●        | ●        | ●      | ●         |
|  |   |  | Badger   | ●        | ●        | ●      | ●         |
|  |   |  | Birds  | ●        | ●        | ●      | ●         |
|  |   |  | Dormouse                                       | ●        | ●        | ●      | ●         |
|  |   |  | Reptiles                                       | ●        | ●        | ●      | ●         |
| Broadleaved plantation woodland        | Delineates the northern and southern boundaries of the eastern half of the Application Site.  | <b>Local</b> , owing to its connectivity to the wider landscape and prevalence of mature tree standards.                 | Bats   | ●        | ●        | ●      | ●         |
|  |   |  | Badger   | ●        | ●        | ●      | ●         |
|  |   |  | Birds  | ●        | ●        | ●      | ●         |
|  |   |  | Dormouse                                       | ●        | ●        | ●      | ●         |
|  |   |  | Reptiles                                       | ●        | ●        | ●      | ●         |
| Tree belts, hedgerows and mature trees | Vegetated boundaries delineate grassland fields and are mostly mature, outgrown, unmanaged, and well connected across the site and to the wider landscape.                                      | <b>Local</b> , owing to species-richness and integrity of network and connectivity to adjacent woodland habitat.         | Bats   | ●        | ●        | ●      | ●         |
|  |   |  | Badger   | ●        | ●        | ●      | ●         |
|  |   |  | Birds  | ●        | ●        | ●      | ●         |
|  |   |  | Dormouse                                       | ●        | ●        | ●      | ●         |
|  |   |  | Reptiles                                       | ●        | ●        | ●      | ●         |
| Poor semi-improved grassland           | Encompasses all fields within the Application Site.   | <b>Site</b> , owing to relative species richness, although subject to occasional management.                             | Bats   |          | ●        |        | ●         |
|  |   |  | Badger   |          | ●        |        | ●         |
|  |   |  | Birds  |          | ●        | ●      | ●         |
|  |   |  | Reptiles                                       |          | ●        |        | ●         |
| Standing water                         | Two waterbodies located onsite, including pond P1 located within plantation woodland and pond P2 located within the easternmost grassland field   | <b>Site</b> , owing to small size, poor water quality, limited vegetation cover and poor habitat structure.              | Bats   |          | ●        |        |           |
|  |   |  | Amphibians                                     | ●        | ●        | ●      | ●         |

| Habitat or feature         | Distribution within Application Site                              | Intrinsic ecological value | Potential/confirmed value to protected species |          |          |        |           |
|----------------------------|---|----------------------------|--|----------|----------|--------|-----------|
|                            |   |                            | Spp.   | Breeding | Foraging | Refuge | Dispersal |
| Buildings and hardstanding | Remain of a former (now demolished) school and a pumping station. | Negligible per se.         | Bats   | ●        |          |        |           |
|                            |   |                            | Birds  | ●        |          |        |           |
|                            |   |                            | Reptiles                                       |          |          | ●      |           |

3.9 As noted within **Table EDP 3.3**, the Application Site is dominated by poor semi-improved grassland habitat of limited intrinsic ecological value. Boundary habitats, notably semi-natural woodland, plantation woodland, tree lines and native hedgerows, some of which overlap with Cross Common SINC, are of considerably greater ecological value and have the potential to support a range of protected and notable species. Additionally, a number of other habitat features otherwise considered of negligible intrinsic ecological value may also require consideration in relation to their importance in maintaining populations of protected and/or notable species. This is discussed further below.

**Protected and/or Notable species**

3.10 The likelihood of presence, or confirmed presence, of protected/and or notable wildlife species within the Application Site is summarised below with reference to Desk Study records, habitat suitability and detailed surveys where relevant. Further details are made available within appendices and plans where referenced.

3.11 Where a particular species or taxonomic group has been confirmed to be present, or presence is inferred based on habitat suitability, the ecological value or significance of the population or assemblage is assessed on a geographical scale.

**Breeding Birds**

3.12 Numerous records of bird species were retrieved during the desk study, including Red and Amber listed species of conservation concern<sup>14</sup> and those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Many of these records relate to local Cosmeston Lakes Country Park approximately 1.2km south west of the Application Site and surrounding environs, as well as coastal habitats and the City of Cardiff.

3.13 In respect of the potential of boundary habitats to support nesting birds, a pilot breeding bird survey was undertaken to assess the importance of a breeding bird assemblage and inform any requirement for full breeding bird surveys.

<sup>14</sup> RSPB (2009) *The Population Status of Birds in Wales 2: An Analysis of Conservation Concern: 2002-2007* (RSPB Cymru, Cardiff).

- 3.14 A total of 26 species of bird were recorded within the Application Site during the pilot survey, 9 (35%) of which are of conservation concern. The remainder were on the Green list or have no status. Red list species identified include common bullfinch (*Pyrrhula pyrrhula*), willow warbler (*Phylliscopeus trochilus*) and herring gull (*Larus argentatus*). Amber list species recorded include lesser black-backed gull (*Larus fuscus*), goldcrest (*Regulus regulus*), coal tit (*Periparus ater*), swallow (*Hirundo rustica*), long-tailed tit (*Aegithalos caudatus*) and song thrush (*Turdus philomelos*). The full results are provided within **Appendix EDP 4** and illustrated on **Plan EDP 3**.
- 3.15 The majority of birds recorded during the survey comprise mostly common resident and migrant passerines of Green list status, although low numbers of species of concern were recorded, albeit primarily concentrated across the western half of the Application Site in association with woodland and hedgerow boundaries. Such species include those typically associated with urban edge habitats.
- 3.16 As such, it is considered that the Application Site supports a relatively typical edge of settlement breeding bird assemblage, associated primarily with its vegetated boundaries and with species of conservation concern recorded in only low numbers. The local breeding bird assemblage supported by the Application Site is therefore considered to be of importance at the **Site level** only.

### **Bats**

- 3.17 A desk study undertaken by RPS in 2015 did not identify any records for bats within or immediately adjacent to the Application Site. However, multiple records of bat activity were returned for common pipistrelle bat (*Pipistrellus pipistrellus*), soprano pipistrelle bat (*Pipistrellus pygmaeus*), Myotis bat (*Myotis* sp.), brown long-eared bat (*Plecotus auritus*), noctule bat (*Nyctalus noctula*), Leisler's bat (*Nyctalus leisleri*), Daubenton's bat (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*), serotine (*Eptesicus serotinus*), Nathusius's pipistrelle bat (*Pipistrellus nathusii*) and lesser horseshoe bat (*Rhinolophus hipposideros*). Records returned were largely associated with built up areas including Barry to the south, Penarth to the east and Dinas Powys to the west. In addition, records of roosting pipistrelle species, most notably a *Pipistrelle* sp. maternity roost within 480 metres of the Application Site, were returned.

### *Bat Roosting*

- 3.18 In respect of the number of mature and over-mature trees identified on Site during initial surveys, bat roost inspection surveys of all suitable trees onsite were initially undertaken by AVA Ecology Ltd. on behalf of RPS, during February 2017 (**Appendix EDP 5**). Ground level inspections identified seven trees with high potential to support roosting bats, six trees with moderate potential and eleven with low potential. All other trees on site were assessed as having negligible potential to support both summer roosting and hibernating bats. Aerial inspections of those trees identified as having potential to support roosting bats found no evidence of roosting bats however, although T19 and T20 showed signs of staining.

- 3.19 Trees to be lost or impacted by the development proposals include one assessed as having high bat roost potential (T93), one with moderate potential (T134) and a further three trees/tree groups initially assessed as having low bat roost potential (T16, T39 and one tree within tree group T13) (**Plan EDP 2**). A repeat aerial inspection of these trees to be impacted completed on 13 July 2017 (**Appendix EDP 6**), recorded no evidence of roosting bats, with tree T134 downgraded to low bat roost potential, and the tree located within tree group T13 downgraded to negligible potential. A third aerial inspection, targeting tree T93 of high bat roost potential in line with best practice guidance, is intended during September 2017.

#### *Bat Foraging/Commuting Activity*

- 3.20 The results of the bat activity transect surveys undertaken by RPS between May and September 2015 are provided at **Appendix EDP 2**. In brief, a total of six bat species/groups were recorded foraging and/or commuting across the Application Site during the survey period, with levels of activity recorded being generally low and with the majority of registrations relating to common pipistrelle. Low numbers of soprano pipistrelle, noctule, Brandt's/whiskered, Leisler's and Myotis bat were also recorded.
- 3.21 Levels of bat activity recorded by automated detectors deployed onsite during August and September 2015 are detailed within **Appendix EDP 2**. A total of five bat species/groups were recorded by the automated detectors deployed onsite, with serotine and Natterer's (*Myotis nattereri*) bats also recorded alongside soprano pipistrelle, common pipistrelle, Brandt's/whiskered (*Myotis brandtii/mystacinus*), noctule and myotis bat species/groups. Relative levels of activity recorded over the survey period by the automated detectors were relatively consistent with those levels experienced during the walked transect survey, with the majority of registrations attributed to common pipistrelle.

#### *Evaluation*

- 3.22 Common pipistrelle bats are common and widespread across the UK, representing the most and second most abundant species in the UK respectively. Whilst having suffered significant historic declines, national population monitoring<sup>12</sup> indicates that common pipistrelle bats are stable nationally. Common pipistrelle bats were found to be the dominant species utilising the Application Site during the activity surveys undertaken by RPS. Common pipistrelle bats using the site are therefore considered to be of **Local Importance**.
- 3.23 Soprano pipistrelle bats are widely distributed across the UK, and whilst populations declined dramatically in the twentieth century, population trends for this species are considered to be stable or increasing<sup>13</sup>. Soprano pipistrelle bats were only recorded occasionally during the activity surveys. In consideration of the relatively low activity levels, soprano pipistrelle bats supported by the Application Site are considered to be of importance at the **Site level** only.

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<sup>12</sup> Bat Conservation Trust, 2016. The National Bat Monitoring Programme. Annual Report 2015

<sup>13</sup> Bat Conservation Trust, 2016. The National Bat Monitoring Programme. Annual Report 2015

- 3.24 Noctule bat is widespread across the UK, with its population and range considered to remain stable in the UK. A far ranging species, noctule bats using the Application Site are considered to be of importance at the **Site level** only.
- 3.25 Myotid bat species occur throughout most of the UK, their populations considered to be either stable or increasing<sup>14</sup>. Individuals of Myotid bats were occasionally recorded foraging and commuting across the Application Site throughout the survey period. The use of the Application Site by Myotid bat species is therefore considered to be importance at the **Site level** only.
- 3.26 Nathusius' pipistrelle is considered rare in the UK. However, in consideration of the low activity levels recorded on the Application Site, this species is considered to be of importance at the **Site level** only.
- 3.27 Serotine bats are restricted to southern England and Wales where they are widespread, but scarce. SEWBRc returned a single record of serotine within 2km of the Application Site. A low number of serotine passes were recorded by automated detectors in June only. The Application Site is considered to support some habitat for this species, which, similarly to noctule and Leisler's bats, favours open habitats. In consideration of the low activity levels recorded on the Application Site limited to a single season, however, this species is considered to be of importance at the **Site level** only.
- 3.28 Leisler's bats are scarce in the UK. The Application Site is considered to support significant habitat opportunities for Leisler's bats through the woodland parcels located throughout the Application Site connected by hedgerows. Single passes of Leisler's were recorded during manual transect surveys in September and automated detectors in July and August. In consideration of the low activity levels recorded on the Application Site this species is considered to be of importance at the **Site level** only.
- 3.29 Single/low numbers of Natterer's bat were recorded by automated detectors in July, August and September. In consideration of the low activity levels recorded on the Application Site this species is considered to be of importance at the **Site level** only.
- 3.30 Single calls for Whiskered/Brandt's bat were record by automated detectors in June and August only. Registrations for Myotis sp. were occasionally recorded during manual transect surveys but could not be identified to species. In consideration of the low activity levels recorded on the Application Site this species is considered to be of importance at the **Site level** only.

#### *Evaluation of Overall Assemblage*

- 3.31 The abundance and diversity of bat species recorded on site is considered to be typical of an urban edge site in south Wales, with common and widespread generalist species such as common and soprano pipistrelle bats accounting for the vast majority of foraging and commuting activity. However, a number of rarer 'specialist' species were recorded on site including Leisler's bat, serotine and Nathusius' pipistrelle. However, given these species

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<sup>14</sup> Bat Conservation Trust, 2016. The National Bat Monitoring Programme. Annual Report 2015



were identified rarely and in some instances on one occasion, it is considered unlikely that significant roosts of these species exist on and/or adjacent to the Application Site.

- 3.32 Owing to the habitats present, it is considered that the Application Site supports an important network of habitats for foraging or commuting individuals of these rarer species. This is attributed to the presence of woodland parcels and mature hedgerows.
- 3.33 Overall, the general bat assemblage is therefore considered to be of **Local** importance.

#### ***Dormouse***

- 3.34 No records of dormouse were returned by SEWBRc during the desk study undertaken by RPS. Native hedgerows and woodland habitat does, however, provide suitable habitat for dormouse, facilitating the dispersal of this species across the wider landscape.
- 3.35 Nest tube surveys of suitable dormouse habitat undertaken by RPS during 2015 confirmed the presence of only limited dormouse activity onsite (**Appendix EDP 2**), with a single, fresh nest comprising green hawthorn leaves, presumed to be a dormouse nest, recorded within the centre of the central north-south woodland finger (immediately south of hedgerow H4), during the ad hoc visit on 16 June. The 'nest' showed no evidence of continued use during subsequent visits however, and had significantly deteriorated by the September check. No further evidence of dormouse was recorded.
- 3.36 An update walkover of the area completed by EDP on 19 April 2017, confirmed no material changes to those habitats to be impacted with regards to their potential to support dormouse. As such, the findings from the 2015 survey are considered to remain a valid baseline upon which appropriate mitigation measures can be based.
- 3.37 Habitats onsite confirmed to support dormice are contiguous with the remainder of boundary vegetation present on and immediately adjacent to the Application Site. Given the connectivity of such habitats onsite and with similar habitat extending across the wider landscape to the south and south west, all hedgerows, treelines and woodland areas present on and immediately adjacent to the Application Site, together with associated areas of scrub, are assumed to be used by the local dormouse population. Given the findings of the survey, however, it is considered that only a low population of dormice is present within the locality; likely existing at only very low densities, a typical characteristic of this species. This species is, therefore, considered important at the **Local level**.

#### ***Badger***

- 3.38 The desk study returned four records of badger, the closest within 1.6km of the Application Site. No records for badger setts were returned. No evidence of badger setts or their feeding signs were recorded for the Application Site during survey visits.
- 3.39 Given the mobility and widespread nature of this species however, precautionary recommendations are made prior to the commencement of construction onsite, as further discussed within **Section 4** of this report.

### **Great Crested Newt**

- 3.40 A desk study returned multiple records for great crested newt within 2km of the Application Site. These are largely centred around two broad locations: Pwll Yr Naw located approximately 880m south west of the Application Site; and Cosmeston Lakes Country Park located approximately 1.7km to the south east of the Application Site. Of particular note, Pwll Erw-naw SINC (0.9km south west) and Bigli Moors SINC (1.1km south west), within 2km of the Application Site are notified for a pond which supports a good population of great crested newt.
- 3.41 Semi-improved grassland habitat onsite is considered sub-optimal for a great crested newt population given its regular management resulting in limited structural and botanical diversity. Field boundaries comprising native hedgerows, scrub and semi-natural and plantation woodland do however provide suitable foraging habitat whilst also facilitating dispersal of this species across the wider landscape. Brash piles present within woody habitat, in addition to rubble piles associated with the former school are also considered to provide suitable refugia/hibernacula for this species.
- 3.42 Previous surveys undertaken by RPS of two ponds P1 and P2 located onsite assessed these features as being of poor and average suitability to support great crested newt respectively, although no evidence of their presence was recorded during the further detailed surveys completed in 2015 (**Appendix EDP 2**).
- 3.43 Update surveys completed during 2017 confirmed the previous findings, confirming the likely continued absence of this species from the Application Site (**Appendix EDP 7**). No further consideration is therefore given to this species through the remainder of this report.

### **Reptiles**

- 3.44 SEWBRc returned two records of slow-worm (*Anguis fragilis*) for a single location 1.1km north west of the Application Site. No records for other species of common reptiles were returned.
- 3.45 Semi-improved grassland habitat is considered sub-optimal for a reptile population, given its regular management limiting its structural and botanical diversity. Field boundaries comprising native hedgerows, scrub and semi-natural and plantation woodland do however provide suitable foraging and dispersal habitat for common reptile species whilst brash piles present within woody habitat and rubble piles associated with the former school provide suitable refugia/hibernacula for this species group.
- 3.46 Detailed surveys, as described in full in **Appendix EDP 8** and illustrated on **Plan EDP 4**, have confirmed the presence of a small population of slow-worm (peak adult count of 4) within the Application Site, associated primarily with the vegetated boundaries present along the northern periphery and across the western half of the Application Site.

3.47 In consideration of the low population size and limited distribution of this species, the slow-worm population supported by the Application Site is considered important at the **Site level** only.

**Other Species Potentially Supported**

*Other Mammals*

3.48 Two records of weasel (*Mustela nivalis*) and five records of European hedgehog (*Erinaceus europaeus*) have been reported from within 2km of the Application Site. Records are largely associated with Cosmeston Lakes SSSI located circa 1.1km south of the Application Site and residential gardens within the wider urban area. The Application Site is considered to support a range of suitable foraging and nesting habitat for these species and is likely of importance to these species at the **Site Level**.

**Summary of Key Issues Arising from Survey Findings**

3.49 Based on the survey findings described above, the key ecological features/receptors pertinent to the development proposals are as follows:

**Table EDP 3.4:** Key ecological features pertinent to the development proposals.

| Receptor   | Key Attributes  | Nature Conservation Importance |
|--|---|--------------------------------|
| <b>Habitats</b>  |   |                                |
| Cross Common SINC encompassing Ancient Semi Natural Woodland units | Forms southern boundary of Application Site. Landscape-scale wildlife corridor and foraging/breeding resource for a range of protected species. | <b>Local</b>                   |
| Broadleaved woodland, treelines and hedgerows                      | Landscape-scale wildlife corridors with connectivity to network of tree lines and woodland habitat.   | <b>Local</b>                   |
| <b>Fauna</b>   |   |                                |
| Breeding bird assemblage   | Common and widespread species likely to nest within suitable habitats present across the Application Site.                                      | <b>Site</b>                    |
| Foraging/commuting bat assemblage                                  | Typical assemblage of bat species with utilising the site for foraging and commuting purposes.  | <b>Local</b>                   |
| Dormouse   | Single dormouse nest identified in central hedgerow across western half of the Application Site.  | <b>Local</b>                   |
| Badger   | No setts identified within the Application Site.  | <b>Site</b>                    |
| Slow-worm  | Suitable habitats limited to site boundaries. Low population identified during surveys.   | <b>Site</b>                    |

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## **Section 4**

### **Details of Proposed Development**

- 4.1 Having reviewed the baseline conditions, this section of the Ecological Appraisal provides pertinent details of the proposed development, in particular those aspects which have potential implications for the ecological features/receptors identified in **Section 3**. Where relevant, reference is made to the influence that ecological considerations have had in the scheme's design and any inherent mitigation which avoids or reduces the severity of potential ecological impacts.
- 4.2 The proposal is for the provision of 220 residential units and an area of land proposed for future community use. The residential element is to be the subject of a detailed planning application, whilst the area proposed as community use is to be subject to an outline planning application. The detailed layouts of the scheme are provided at **Appendix EDP 1**.
- 4.3 The Application Site has been allocated within the LDP for residential and community development, with a capacity of 300 units identified. However, given the ecological sensitivities of the Application Site it was considered necessary to significantly reduce the extent of the proposed development to 220 residential units.
- 4.4 The proposals are illustrated within the illustrative site masterplan included as **Appendix EDP 1**.

#### **Proposed Habitat Loss**

- 4.5 Land take associated with the proposed development including community use will equate to approximately 7.87 ha (equating to approximately 63.4% of the total Application Site area), with habitat losses confined predominantly to poor semi-improved grassland fields of limited intrinsic ecological value.
- 4.6 The following additional habitats and features will also be lost to the development footprint:
- Full loss of hedgerow H2 extending circa 45m into the proposed development footprint from the eastern boundary of the Application Site (totalling circa 640m<sup>2</sup>);
  - Erosion of a broad finger of plantation woodland extending circa 80m northwards into the proposed development footprint from the southern boundary of the Application Site (totalling circa 2,212m<sup>2</sup>);
  - Erosion of plantation woodland habitat located along the northern boundaries of the Application Site (totalling circa 3,669m<sup>2</sup>);

- Erosion of three further belts of broadleaved vegetation located across the western half of the Application Site and extending south eastwards into the proposed development footprint from the north western and western boundaries (totalling 3,722m<sup>2</sup>);
- The loss of pond P2 located within the easternmost grassland field (F1); and
- Loss of three trees with bat roost potential, including one with high bat roost potential (T93) and two with low bat potential (T16 and T134), in addition to potential impacts upon tree T39 with low bat roosting potential given its proximity to built development.

### **Proposed Habitat Retention**

4.7 Approximately 3.3 ha of the Application Site is to be retained and further enhanced through the planting up and strengthening of key habitat corridors and their sensitive management over the long-term, with retention focusing on areas of greater ecological value. Such areas include:

- The retention of existing woodland, hedgerow, tree and shrub habitats present along the northern, eastern, southern and western boundaries of the Application Site (totalling circa 33,071m<sup>2</sup>), to include a number of trees with bat roosting potential, so as to minimise impacts of habitat fragmentation whilst maintaining existing habitat connectivity across the peripheries of the Application Site to the wider landscape; and
- The retention of P1 located within plantation woodland on the southern boundary of the Application Site.

### **Proposed Habitat Gain**

4.8 Given the confirmed presence of dormice onsite, habitat creation proposed across the Application Site has been designed to maximise opportunities for this species as far as possible, as follows:

- The provision of new tree, shrub and scrub planting amounting to 10,298m<sup>2</sup> to compensate for loss of habitat, with habitat creation focusing on strengthening and broadening areas of existing habitat forming the peripheries of the Application Site, whilst enhancing connectivity to additional ancient and semi-natural broadleaved woodland located immediately adjacent to the Application Site and across the wider landscape;
- The planting of new native, species-rich hedgerows fronting all areas of newly created habitat proposed along the north western, western and south western boundaries of the Application Site;

- the inclusion of agricultural fencing along the boundaries of all areas of retained and newly created habitat to facilitate habitat establishment, whilst preventing public access and recreational use of such areas; and
- the transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites located along the north western and western boundaries of the Application Site where appropriate to close up existing gaps and speed up establishment of newly created habitat.

4.9 Planting will include a diversity of native species of local provenance considered to be favourable to dormouse and other wildlife, chosen to maximise structural and species diversity, fruiting/flowering potential and seasonal availability, and designed to create natural woodland edges, shrubby glades and dense hedgerow habitats, as summarised within **Table EDP 4.1**, with their locations and distribution illustrated at **Appendix EDP 10**.

**Table EDP 4.1:** Native Species Planting Proposed at St. Cyres.

| <b>Tree, Shrub and Scrub Mix Proposed Across the Application Site</b> |                              |
|---|------------------------------|
| <b>Common Name</b>  | <b>Latin Binomial</b>        |
| Field maple   | <i>Acer campestre</i>        |
| Dogwood   | <i>Cornus sanguinea</i>      |
| Hazel   | <i>Corylus avellana</i>      |
| Hawthorn  | <i>Crataegus monogyna</i>    |
| Spindle   | <i>Euonymus europaea</i>     |
| Holly   | <i>Ilex aquifolium</i>       |
| Honeysuckle   | <i>Lonicera periclymenum</i> |
| Crab Apple  | <i>Malus sylvestrus</i>      |
| Wayfaring tree  | <i>Viburnum lantana</i>      |
| Guelder rose  | <i>Viburnum opulus</i>       |
| Blackthorn  | <i>Prunus spinosa</i>        |
| Dog rose  | <i>Rosa canina</i>           |
| English oak   | <i>Quercus rober</i>         |
| <b>Hedgerow Planting Mix</b>  |                              |
| Dogwood   | <i>Cornus sanguinea</i>      |
| Hazel   | <i>Corylus avellana</i>      |
| Hawthorn  | <i>Crataegus monogyna</i>    |
| Holly   | <i>Ilex aquifolium</i>       |
| Crab Apple  | <i>Malus sylvestrus</i>      |
| Blackthorn  | <i>Prunus spinosa</i>        |
| Dog rose  | <i>Rosa canina</i>           |
| Wayfaring tree  | <i>Viburnum lantana</i>      |

4.10 Additionally, the proposals incorporate formal landscaping and tree planting across the development footprint itself, in addition to the provision of a small area of species-rich

meadow grassland across the proposed attenuation feature located along the south eastern corner of the Application Site.

- 4.11 All retained, enhanced and newly created habitat will be excluded from adjacent curtilages, with 1-2m wide grassed maintenance strips provided adjacent where appropriate to allow for future access. Such habitats will be subject to a sensitive management and maintenance regime by a Private Management Company over the lifetime of the development.
- 4.12 EDP has provided input throughout the iterative design process such that the proposed layout reflects key measures, suggested by EDP, to avoid, mitigate or compensate for ecological impacts as well as other measures designed to provide long-term ecological enhancements. Such measures are discussed further in **Section 5** of this Appraisal.



## Section 5 Predicted Impacts and Mitigation

- 5.1 This section of the Ecological Appraisal considers the likely impacts of the detailed layouts included as **Appendix EDP 1** on the existing ecological resource. Where impacts cannot be avoided by inherent mitigation alone, additional mitigation or enhancement measures are recommended which, if implemented, would as a minimum enable the proposed development to meet legislative and/or planning policy requirements.
- 5.2 Additionally, opportunities for the proposed development to enhance existing features, or provide opportunities for positive ecological gain, in accordance with the principles of Planning Policy Wales (Edition 9, November 2016) and Technical Advice Note 5: Nature Conservation and Planning (TAN5), are identified.

### Designated Sites

#### Statutory Designations

- 5.3 Statutory designations receive legal protection under various international and national legislative instruments. This protection is also reflected in policies included within *Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning (TAN5)*, which are given material consideration during the planning application process.
- 5.4 *The Vale of Glamorgan Local Development Plan 2011-2026* (LDP) sets out planning policy for the county up until 2026. In accordance with Policy SP 10 (Built and Natural Environment) development proposals must “*preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan including...Sites designated for their local, national and European nature conservation importance.*” Additionally, Policies MG 19 and 20 require for development proposals to avoid significant adverse effects with respect to European and Nationally protected sites respectively.
- 5.5 As described in **Section 3**, there are 5 statutory designations within the potential zone of influence of the Application Site.

#### International Sites

- 5.6 A Habitat’s Regulation Assessment (HRA) Screening of VoG’s previous Draft Preferred Strategy (2007) identified the potential for significant negative effects on the Severn Estuary SAC/SPA/Ramsar site, to arise as a result of impacts associated with Preferred Strategy proposals encompassing water resources, water quality, disturbance and air quality. The potential of impacts to arise were, however, largely associated with proposed development adjacent to the boundaries of this European Site.

- 5.7 A re-screening exercise was undertaken whereby it was recommended that the potential for negative effects to arise should be considered further within an Appropriate Assessment. The screening found that for the majority of site allocations, there were no impact pathways for development to have direct impacts on European sites, given the distance of the allocations from designated habitats and species, and the lack of connectivity between the development and the potential receptors. The screening, furthermore, assessed that potential indirect impacts could be either avoided or mitigated through the LDP Policies.
- 5.8 Overall therefore, given the scale and nature of the proposed development and its distance to the Severn Estuary SAC/SPA/Ramsar site, no significant adverse effects upon the integrity of this designation are considered likely.

#### *National Sites*

- 5.9 With respect to all other statutory sites within 2km of the Application Site, including Cogs Moor SSSI and Cosmeston Lakes SSSI, no significant negative effects upon the qualifying features of each SSSI are predicted given their distance and spatial separation from the Application Site.

#### **Non-Statutory Designations**

- 5.10 Non-statutory designations/local sites do not receive any formal legal protection. However, they do receive planning policy protection, as reflected in TAN5.
- 5.11 In accordance with Policy MG21 (Sites of Importance for Nature Conservation) of the LDP, development which has an unacceptable impact on SINCs will not be permitted.
- 5.12 As described in **Section 3**, Cross Common SINC lies adjacent to the south west boundary of the Application Site, notified for ancient and broadleaved woodland, and also encompasses two areas of Ancient Semi Natural Woodland as listed on the AWI.
- 5.13 The development proposals have therefore been sensitively designed to avoid all built development along the southern boundary of the Application Site as far as possible, with only a small number of units proposed within close proximity (units 132-145). The curtilage boundaries of such units have been sited to fully avoid adjacent root protection areas, with curtilage boundaries defined through provision of 1.8m high close board fencing to rear gardens and inclusion of a 2m wide maintenance access strip between retained vegetation and adjacent properties. Permanent agricultural fencing will also be installed along the full length of the south western, western and northern boundaries of the development footprint to further protect retained habitats, including Cross Common SINC from impacts of recreational disturbance otherwise potentially arising (as illustrated at **Appendix EDP 1** and **Appendix EDP 10**).
- 5.14 Additionally, new tree and shrub planting is proposed across the north western extents of grassland fields F3-F5, in addition to significant planting proposed across fields F6-F8 located immediately adjacent to Cross Common SINC (**Appendix EDP 10**). Such planting will strengthen existing woodland habitats, whilst maximising habitat connectivity across

the Application Site and to the wider landscape. As such, no significant adverse impacts upon Cross Common SINC or its qualifying features are considered likely to arise as a result of the proposed development.

5.15 However, a number of additional recommendations are made to ensure the protection, enhancement, and maintenance of all areas of broadleaved woodland associated with Cross Common SINC, as follows:

- Landscaping works proposed within and/or adjacent to habitat buffers, aligning woodland habitats should be undertaken in accordance with sensitive working methodologies to be set out within a future Ecological Construction Method Statement (ECMS) prepared for the Application Site;
- All areas of woodland habitat to be retained and created should be managed in the long-term in accordance with a future Landscape and Ecological Management Plan (LEMP) prepared for the Application Site;
- To minimise recreational disturbance and littering bins should be sited within publicly accessible areas to deter littering and attraction of vermin including rats and corvids which could otherwise predate wildlife; and
- Incorporation of a sensitive lighting strategy to ensure no/limited lighting provision adjacent to sensitive habitats, including the woodland boundaries and habitat buffers provided adjacent, is advised. Where lighting is required along road/pedestrian routes, this should be sited within the development footprint itself and away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed or low-lux lighting. Such measures could be secured via planning obligations/conditions attached to any future outline consent.

5.16 Subject to the implementation of those detailed design measures described previously above, in addition to the further recommendations set out above, no significant impacts are considered likely to arise upon Cross Common SINC.

5.17 Additionally, with respect to all other non-statutory sites located within 2km of the Application Site, no significant negative effects are predicted given their distance and spatial separation from the Application Site.

### **Habitats**

5.18 There are several mechanisms through which habitats receive protection out with the statutory and non-statutory designated site frameworks. Priority habitats comprise those listed by the Welsh Government as being of Principal Importance for the purposes of conserving biological diversity, with local authorities having a duty to seek to maintain and enhance biodiversity under the Environment (Wales) Act. Priority Habitats receive protection as identified within policies set out in TAN5.

5.19 In addition, the LDP sets out additional policies including Policy MD 9 (Promoting Biodiversity), which sets out the requirement for new development to conserve and where appropriate enhance biodiversity interests. This is to be achieved by: maintaining and enhancing existing important biodiversity features such as woodland, trees, hedgerows, wetland, watercourses, ponds, green lanes, geological features and habitats; incorporating new biodiversity features either on or off site to enable a net gain in biodiversity interest; and demonstrating how they maintain features of importance for ecological connectivity, including wildlife corridors and 'stepping stones' that enable migration, dispersal and/or genetic exchange.

5.20 Habitats across the Application Site comprise six species-poor semi-improved grassland fields and two former playing fields associated with a now demolished school, with such grassland habitats considered to be of limited ecological value. Habitats onsite considered to be of greater ecological value include areas of broadleaved woodland, treelines and mature hedgerows forming the field boundaries and peripheries of the Application Site. Whilst such habitats are to be retained as far as possible, some losses are unavoidable. The proposed development layout has sought to minimise such losses as far as possible through focusing losses across the central areas of the Application Site, thereby retaining its vegetated peripheries. Additional detailed design measures have also been incorporated into development proposals to minimise such impacts:

- The provision of new tree, shrub and scrub planting within fields F3-F8 to compensate for loss of broadleaved vegetation elsewhere across the Application Site, with habitat creation ensuring no net loss with respect to area coverage whilst focusing on strengthening and broadening areas of existing woodland, treelines and hedgerows to maximise and further enhance habitat function and connectivity between the Application Site and wider landscape;
- The planting of new native, species-rich hedgerows fronting all areas of new tree and shrub planting along the north western, western and south western boundaries of the Application Site;
- The provision of permanent agricultural fencing to be installed along the full length of the south western, western and northern boundaries of the development footprint to further protect retained and newly created habitats through facilitating establishment of newly planted areas whilst preventing public access and recreational use;
- The transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites, located along the north western and western boundaries of the Application Site where appropriate to close up existing gaps and speed up establishment of newly created habitat; and
- The inclusion of diversity of native species of local provenance chosen to maximise structural and species diversity, fruiting/flowering potential and seasonal availability, and designed to create natural woodland edges, shrubby glades and dense hedgerow habitats.

5.21 Specifications for new planting and other habitat creation are detailed at **Appendix EDP 10**. In addition to the above, further specifications regarding sensitive working methodologies during the construction phase, detailed planting design, and long-term management and maintenance regimes are recommended, to be secured by condition, as follows:

- Reasonable avoidance measures and best working practices to ensure the protection and maintenance of sensitive habitats during the construction phase should be set out within an ECMS prepared for the site; and
- Measures to restore and enhance existing habitats, to ensure successful establishment of new habitats, and to maintain the value of all ecological features in the long-term, should also be detailed within the LEMP secured by planning condition.

5.22 Taken together, the above recommendations should ensure that no significant detrimental impacts upon those habitats of ecological value supported by the site will arise as a result of the proposals.

#### **Protected and/or Notable species**

5.23 Certain species receive legal protection in the United Kingdom and are commonly known as 'protected species'. In reality, the level of protection for different species varies considerably, from protection solely against 'killing and injury' to full protection of the species and their places of refuge. Where pertinent, details of legal protection afforded to species/ species-groups are provided below.

5.24 In addition to protected species, there are other species/species-groups that do not receive legal protection, but which are notable owing to their conservation status as Priority Species or other status as described in **Section 3**. Details of any actual or potential notable species within the site are identified below.

5.25 With respect to planning policy, protected and notable species are also afforded policy protection at a national level by TAN5, which requires planning authorities to ensure that such species are protected from the adverse effects of development.

5.26 At the local level, Policies MG 19 and 20 of the LDP require for development proposals to avoid significant adverse effects with respect to internationally and nationally protected species respectively, whilst Policy MD 9 (Promoting Biodiversity) requires for new development to conserve and where appropriate enhance biodiversity interests.

5.27 Baseline investigations have identified protected species implications for the Application Site relating to breeding birds, bats, dormouse, badger and common reptiles, which are discussed in turn below.

### **Birds**

- 5.28 All wild birds, their nests and eggs are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), This makes it an offence to:
- (i) Intentionally kill, injure or take any wild bird;
  - (ii) Take, damage or destroy the nest of any wild bird while it is in use or being built;
  - (iii) Take, damage or destroy the egg of any wild bird; or
  - (iv) To have in one's possession or control any wild bird (dead or alive) or egg or any part of a wild bird or egg.
- 5.29 In addition, further protection is afforded to those wild bird species listed on Schedule 1, prohibiting any intentional or reckless disturbance to these species while it is nest building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird. A number of species are also included as priority species.
- 5.30 Those habitat retention and enhancement measures detailed above and incorporated into the detailed layout (**Appendix EDP 1**), and detailed soft landscape plans (**Appendix EDP 10**), are also considered to ensure the avoidance of impacts upon the local breeding bird assemblage given their likely association with those habitats to be retained and created, including areas of woodland, treelines and hedgerows associated with the boundaries of the Application Site.
- 5.31 However, given the protection afforded to all breeding birds, their nests, eggs and young, sensitive vegetation clearance required during the pre-construction and construction phases of development should be timed to avoid the main bird breeding season (i.e. March to August inclusive). Should this seasonal constraint prove impracticable, then vegetation clearance outside of this period should only commence following the advice and under supervision of a suitably qualified ecologist. Pre-commencement checks for active nests will be required prior to any vegetation clearance occurring during the main bird breeding season, with appropriate buffers marked out around active nests or nests under construction, until all eggs have hatched and chicks fledged. Such protection measures in relation to breeding birds should be included within an Ecological Construction Method Statement for the Application Site.
- 5.32 In addition, it is further recommended that bird boxes be installed upon suitable retained trees across the Application Site.

### **Bats**

#### *Legislation*

- 5.33 All species of British bat are listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive). This affords it

protection under the Conservation of Habitats and Species Regulations 2010, making it an offence to:

- (i) Deliberately capture, injure or kill a wild animal of an EPS;
- (ii) Deliberately disturb wild animals of an EPS wherever they are occurring, in particular, any disturbance which is likely to impair their ability to survive, to breed or reproduce, to affect significantly the local distribution or abundance of the species to which they belong, or in the case of hibernating or migratory species, to hibernate or migrate; or
- (iii) Damage or destroy a breeding site or resting place of a wild animal of an EPS.

5.34 Additional protection for bats is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. In addition, eight of the eighteen species of bat resident in the UK (greater horseshoe, lesser horseshoe, barbastelle, Bechstein's (*Myotis bechsteinii*), soprano pipistrelle, common pipistrelle, brown long-eared and noctule) are also listed as Priority species.

#### *Roosting Bats*

5.35 A number of mature trees exist across the Application Site, primarily associated with areas of woodland, treelines and hedgerows forming the field boundaries. Of those trees to likely be impacted by the proposed development, tree T93 is considered to have high potential to support roosting bats, whilst a further three are considered to have low potential (T39, T134 and T16). Detailed surveys have inferred likely absence of bat roosts within these trees; however, given the transient nature of this species group, an update assessment of trees to be impacted by the development by a suitably qualified and NRW bat licensed ecologist, is recommended immediately prior to felling/clearance. With respect to trees identified as having moderate or greater bat roost potential, an update aerial inspection is advised to reassess those features of potential.

5.36 Should a bat roost be confirmed within any trees to be impacted by the proposals, then a derogation licence (Development Licence) from NRW will be required prior to works commencing, with sufficient replacement roosting habitat provided.

5.37 Where no roosts are found but bat roosting potential remains, then as a precautionary measure it is recommended that such trees should be subject to a 'soft' felling methodology by a suitably qualified arboricultural contractor with experience of working with bats, following the advice of the suitably qualified and licensed ecologist and supervised where necessary. A soft felling methodology involves the following approach:

- The avoidance of cutting through cavities/potential roosting features – i.e. cutting above and below the feature when removing sections with suitable features;

- The gentle lowering of cut sections to ground to avoid violent movement of potential roosting features; and
- The retention of cut sections with potential roosting features on site for 48 hours, with potential entrances not blocked i.e. facing away from the ground, before being removed or chipped.

5.38 Should any bats be discovered during the felling of these or any other trees, then works will necessarily cease and a suitably qualified and NRW bat licensed ecologist contacted for further advice. It may be necessary to obtain an NRW Development Licence before works can continue.

5.39 Additionally, given the potential for trees to degrade/decay over time such that their potential to support roosting bats may increase, should the felling of trees with bat potential occur more than 12 months since the previous bat roost assessment, then such trees should be subject to an update tree roost assessment by a suitably qualified and NRW bat licensed ecologist, with appropriate mitigation/precautionary measures followed.

#### *Foraging/Commuting Bats*

5.40 Detailed bat activity surveys have confirmed that the Application Site supports relatively low levels of foraging and commuting activity dominated by common and widespread bat species. Whilst grassland loss is not considered to significantly impact the local bat assemblage, the degradation of vegetated boundaries coupled with potential disturbance impacts arising following occupation, could, however, potentially arise.

5.41 Such impacts will however be adequately mitigated through those habitat retention, protection, enhancement and creation measures previously described in relation to habitats, with such measures incorporated within the detailed soft landscape plans provided at **Appendix EDP 10**.

5.42 However, given the sensitivities of bat species to artificial lighting, it is recommended that a sensitive lighting strategy be implemented to ensure that the illumination of suitable flight corridors be avoided as far as possible, in addition to the provision of 'dark corridors' adjacent to areas of retained and newly created vegetation, particularly along the south western, western and north western boundaries. Directional, timed or low-lux lighting should be incorporated across the development footprint to ensure minimal light spillage upon retained and newly created habitats, within and adjacent to the development edge. Where lighting is required along roads, pedestrian and/or cycle access routes situated adjacent to such habitat features, it is recommended for such columns/bollards to be sited within the development itself and away from the habitat edge to minimise disturbance and light spill. The programming of timed lighting to ensure adequate dark periods between dusk and dawn across the site, particularly along the eastern and northern boundaries is also recommended.



- 5.43 The implementation of a sensitive lighting strategy can be secured by condition, and should seek to ensure the functioning of retained and newly created habitat features as a wildlife corridor is maintained.
- 5.44 Additionally, it is recommended that new bat roosting features be provided across the Application Site to further enhance the development for roosting bats. Schwegler bat boxes<sup>15</sup> should be installed upon suitable, mature trees retained along the peripheries of the Application Site and erected with a south-east/south-west facing aspect where possible and away from sources of artificial lighting. Bat box design to be installed across the Application Site should include 2F for smaller bats and 2FN for larger bats (or similar). Additionally, it is recommended for bat roost features (such as bat tubes/bricks and raised ridge/roof tiles), to be incorporated into the exterior of buildings where possible.
- 5.45 Subject to the implementation of those detailed design measures and further additional recommendations detailed above, no significant detrimental impacts upon the foraging/commuting bat assemblage utilising the Application Site are considered likely to arise.

### **Badger**

#### *Legislation*

- 5.46 Badgers and their setts receive protection under the Protection of Badgers Act 1992, which protects badgers from deliberate harm and injury. The protection afforded to badgers is primarily due to animal welfare issues and not due to concerns over their unfavourable nature conservation status. Restrictions under this act which apply to development include any killing, injuring, possession or cruel treatment to badgers, any interference to a sett through damage or destruction, any obstruction of access to any entrance of a sett, or any disturbance to a badger whilst it is occupying a sett.
- 5.47 No impacts to active badger setts are predicted given their current absence from the Application Site. However, given the mobility and widespread nature of these species, in addition to their known presence within the wider landscape, an update walkover survey of the site by a suitably qualified ecologist immediately prior to the commencement of site clearance works is recommended, to determine whether any new setts have been established during the interim period.

### **Dormouse**

#### *Legislation*

- 5.48 The hazel dormouse is listed as a European Protected Species, thereby receiving protection under the Conservation of Habitats and Species Regulations 2010. Additional protection is also afforded to this species under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb dormice whilst

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<sup>15</sup> <http://www.nhbs.com/browse/search?title-type-facet%5B%5D=&term=bat+boxes>

they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. This species is also listed as a Priority species.

- 5.49 Given the presence of dormouse on site and in absence of appropriate compensation and mitigation measures, the development proposals are considered likely to result in the destruction of, and disturbance to, dormouse habitat both on and immediately adjacent to the Application Site. Additionally, the potential for disturbance, injury and killing of individuals could also arise during the pre-construction and construction phases. Proposed removal of woody habitat to facilitate development will, therefore, require an NRW Development Licence to be in place prior to commencement of a vegetation clearance works to compliance with the Conservation Regulations.
- 5.50 Habitat losses will also result in the fragmentation of dormouse habitat onsite. However, such impacts are considered to be relatively reduced given that retained habitats remain connected across the Application Site as well as to significant areas of suitable dormouse habitat present across the wider landscape.
- 5.51 Those habitat retention, enhancement and creation measures detailed above in relation to habitats and incorporated into the development layout, as illustrated at **Appendix EDP 1** and **Appendix EDP 10**, will ensure the adequate retention, protection and enhancement of existing dormouse habitat, with new tree, shrub and hedgerow planting proposed ensuring no overall net loss. Moreover, newly created habitat has been designed to maximise habitat connectivity necessary to maintain habitat function for this species, so as to ensure the maintenance of the favourable conservation status of this species.
- 5.52 In addition, it is recommended that 50 dormouse nest boxes to be installed along the northern, western and southern boundaries of the Application Site to enable future population monitoring.
- 5.53 Additional measures to avoid killing/injury of a resident dormouse population are also recommended, with the adoption of sensitive working methodologies during the pre-construction and construction phases of residential development. Such measures are detailed within the Dormouse Mitigation Strategy prepared by EDP (report reference **C\_EDP3927\_02a**) and submitted as part of the detailed planning application submission provided.
- 5.54 In brief, however, it is recommended that suitable dormouse habitat be removed (under licence) utilising both summer clearance and winter clearance methodologies in accordance with best practice guidance<sup>16</sup>, as follows:
- Summer clearance methodologies involving the removal of a small proportion of vegetation across the eastern extent of the Application Site, with both above-ground and below-ground vegetation removed between 1 September and 15 October 2017; and

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<sup>16</sup> Bright, P., Morris, P. & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook, 2<sup>nd</sup> Edition*. English Nature, Peterborough.

- Winter clearance methodologies, involving the removal of all remaining areas of vegetation to be removed, with above-ground vegetation to be cleared between 1 November 2018 and 30 March 2019 inclusive, i.e. outside of the dormouse active season and main bird breeding season (stage 1), followed by the clearance of below-ground vegetation from 1 May 2019 (i.e. following dormouse full emergence from hibernation).

## **Reptiles**

### *Legislation*

- 5.55 All species of common reptile (including common lizard (*Zootoca vivipara*), slow-worm, grass snake (*Natrix natrix*) and adder (*Vipera berus*)), receive at least limited protection from harm under the Wildlife and Countryside Act, 1981 (as amended), making it an offence to cause intentional killing and injuring of these species. In addition, these species are also listed as Priority species.
- 5.56 A low population of slow-worm has been identified within the Application Site. Proposed development will result in the loss of poor semi-improved grassland habitat of limited quality and structural diversity, in addition to reductions in boundary vegetation. Given the low population of slow-worm currently supported, and potential for other common reptile species to utilise habitats onsite on an opportunistic basis should they be present in the locality, a precautionary approach to habitat clearance is recommended to ensure no harm to reptiles arises during construction works. Such methods should be detailed within any future ECMS prepared for the Application Site and include the following approach with respect to grassland and woody habitats:

### *Grassland*

- 5.57 Clearance of any above-ground vegetation considered suitable for reptiles should be undertaken during the reptile active season (i.e. between April and October inclusive) and follow a phased approach, as described below:
- The first cut should be undertaken towards vegetation that is to be retained, i.e. towards the site's boundary features, so as to allow for any wildlife present to disperse safely towards this resource;
  - This initial cut should aim to reduce vegetation height to no less than 200mm, and should be undertaken through the use of a hand-held strimmer or brush cutter. The second cut should be undertaken the following day, during which the vegetation should be reduced to ground level;
  - Any below-ground earth works associated, should be undertaken during the reptile active season so as to avoid harm to any hibernating individuals potentially present. Prior to earthworks, the construction footprint should be inspected by a suitably qualified ecologist for the presence of potential refuges. If found, these should be dismantled by hand and any reptiles relocated to adjacent habitats; and

- The long-term maintenance and management of areas of open space including habitat buffers subject to new planting should include the provision of a management regime designed to enable the establishment of tall sward heights of varying structure to enhance the Application Site for reptiles, as well as other wildlife including amphibians, birds and invertebrates. Such habitats could also be interspersed with south-facing scrapes of bare ground/gravel to further enhance the Application Site for basking reptiles and invertebrates.

*Hedgerows and Woody Vegetation*

5.58 With respect to clearance of hedgerows, woodland and scrub habitat, clearance should be undertaken in accordance with the submitted Dormouse Mitigation Strategy (report reference **C\_EDP3927\_02a**) and approved NRW Development Licence.

**Summary of Predicted Impacts and Principal Mitigation Measures**

5.59 The potential impacts on valued ecological features (accounting for inherent mitigation), and recommended additional mitigation measures, in line with legislative and planning policy requirements, are summarised in **Table EDP 5.1**.

**Table EDP 5.1:** Summary of Ecological Impacts and Proposed Mitigation Measures.

| <b>Feature</b>   | <b>Impacts</b>   | <b>Inherent mitigation</b>                 | <b>Additional mitigation and/or enhancement</b>   |
|--|--|--|---|
| Broadleaved habitat, including areas of semi-natural woodland (including Cross Common SINC overlapping with the site), plantation woodland, tree lines and native hedgerows. | Loss, damage and degradation during the construction phase and permanent loss, fragmentation and degradation of habitats during the operational phase. | Habitat retention, buffering and creation. | Protection of sensitive habitats during construction through ECMS. Enhancement of existing habitats through additional planting in accordance with the detailed soft landscape scheme submitted and LEMP. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats. |

| Feature                                   | Impacts  | Inherent mitigation                        | Additional mitigation and/or enhancement  |
|---|--|--|---|
| Bats & Dormouse                           | Loss, damage and degradation of habitats during the construction phase and permanent loss, fragmentation and degradation of habitats during the operational phase. Elevated lighting and noise during both the construction and operation phase. Killing, injury and disturbance during both the construction and operation phase. | Habitat retention, buffering and creation. | Protection of sensitive habitats during construction through ECMS. Enhancement of existing habitats through additional planting in accordance with the detailed soft landscape scheme submitted and LEMP. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats. |
| Badger, breeding birds & common reptiles. | Killing, injury and disturbance. Permanent loss of habitat.  | Habitat retention, buffering and creation. | Protection of sensitive habitats during construction through ECMS. Enhancement of existing habitats through additional planting in accordance with the detailed soft landscape scheme submitted and LEMP.   |

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## Section 6 Summary and Conclusions

- 6.1 This section of the Ecological Appraisal summarises the Ecology Strategy for the proposed development, in terms of inherent and recommended additional mitigation measures, and then provides the overall conclusions of the Appraisal.

### **Summary of Ecology Strategy**

#### ***Inherent Mitigation Embedded in the Detailed Layouts***

- 6.2 The following design principles have been incorporated into the detailed layouts submitted (provided at **Appendix EDP 1** and **Appendix EDP 10**):
- The retention of existing woodland, hedgerow, tree and shrub habitats present along the northern, eastern, southern and western boundaries of the Application Site (totalling circa 33,071m<sup>2</sup>), to include a number of trees with bat roosting potential, so as to minimise impacts of habitat fragmentation whilst maintaining existing habitat connectivity across the peripheries of the Application Site to the wider landscape;
  - The retention of P1 located within plantation woodland on the southern boundary of the Application Site;
  - The provision of new tree, shrub and scrub planting amounting to 10,298m<sup>2</sup> to compensate for loss of broadleaved habitat elsewhere, with habitat creation focusing on strengthening and broadening areas of existing habitat forming the peripheries of the Application Site, whilst enhancing connectivity to additional ancient and semi-natural broadleaved woodland located immediately adjacent to the Application Site and across the wider landscape;
  - The planting of new native, species-rich hedgerows fronting all areas of newly created habitats proposed along the north western, western and south western boundaries of the Application Site;
  - The inclusion of agricultural fencing along the boundaries of all areas of retained and newly created habitats, to facilitate habitat establishment whilst preventing public access and recreational use of such areas;
  - The transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites located along the north western and western boundaries of the Application Site where appropriate, to close up existing gaps and speed up establishment of newly created habitats; and

- All retained, enhanced and newly created habitat will be excluded from adjacent curtilages and with 1-2m wide grassed maintenance strips provided adjacent. Such habitats will be subject to a sensitive management and maintenance regime by a Private Management Company over the lifetime of the development.

6.3 Additional detailed design measures recommended for incorporation include:

- Minimising the spillage of artificial lighting upon sensitive ecological habitats to be retained and further enhanced through the implementation of a sensitive lighting strategy, in addition to ensuring the provision of 'dark corridors' along woodland habitats present along the boundaries of the Application Site;
- The provision of 50 dormouse nest boxes to be installed along the northern, western and southern boundaries of the Application Site to enable future population monitoring; and
- The installation of bat and bird boxes upon suitable mature trees to be retained across the Application Site and/or incorporated within the exteriors of new buildings across the development footprint, aimed at further enhancing roosting opportunities for the local bird and bat assemblages.

6.4 The above principles could be secured through appropriately worded conditions attached to any forthcoming planning consent.

### **Construction Measures**

6.5 An Ecological Construction Method Statement (ECMS) should also be prepared for the Application Site, to be secured by condition attached to any forthcoming planning consent. In the case of dormouse, all necessary measures will be secured via an NRW Development Licence application post-consent and prior to commencement of any vegetation clearance works. Measures to be included within the ECMS include:

- Measures to physically protect retained habitats on and immediately adjacent to the Application Site, with valued habitats suitably protected through the establishment of Ecological Protection Zones (EPZs) and use of protective fencing and signage, together with the identification of responsibilities for maintaining this fencing/signage during the construction period;
- The location of any work compound(s) and storage areas, including measures to avoid impacts of storage of any fuel, chemicals, plant or machinery onsite, and regarding the use of artificial lighting (including security lighting);
- Species-specific working methodologies to ensure the avoidance of harm to wildlife, particularly in relation to bats, dormice, badger, breeding birds and reptiles, for implementation/consideration during all pre-construction and construction phases;



- Measures regarding the preparation of all newly planted areas including translocation sites; and
- A timetable of all key tasks to be undertaken as part of pre-construction and construction works, taking into account all species and habitat sensitivities.

### ***Restoration, Enhancement and Maintenance Measures***

6.6 A future Landscape and Ecological Management Plan (LEMP), should also be prepared for the Application Site, to be secured by condition attached to any forthcoming planning consent, to include:

- Those ecological management prescriptions for defined management compartments to be retained and/or created;
- The monitoring of biophysical changes to sensitive habitats including; terrestrial succession and scrub encroachment within all retained, enhanced and newly created habitats; and the management of recreational impacts including littering, erosion and damage, with identified remedial measures to address any significant issues;
- The monitoring of dormouse, bird and bat boxes installed across the development site; and
- Any additional monitoring requirements of species and habitats where required/identified.

### **Overall Conclusions**

6.7 EDP's desk- and field-based baseline investigations, have demonstrated that the habitats and species present within and around the Application Site, are not considered to pose an 'in principle' constraint to the proposed development that is the subject of this Appraisal.

6.8 However, EDP's surveys have identified a number of valuable habitat features and protected species which required further consideration within the proposed layout, to accord with national and local planning policy and legislation.

6.9 Whilst land take associated with the proposals will result in the loss of approximately 7.87 ha to the proposed development (including land proposed for community use), such impacts are considered to be sufficiently mitigated for through the sensitive design and layout of the proposed development footprint, enabling the retention of habitats of greatest value, in addition to the provision of significant areas of new planting.

6.10 Accordingly, from the outset of the design process, EDP has contributed to the design of the masterplan assessed by this report which accompanies the planning application.

Specific proposals for the avoidance, mitigation and compensation of any predicted impacts are considered and summarised above. These measures include: those already embedded within the detailed layout and detailed soft landscaping scheme; measures which should be implemented at the construction stage; and management measures to ensure that the design vision is achieved in the long term. Measures to be implemented at the construction stage and over the long-term post development, can be secured via appropriately worded conditions attached to any forthcoming planning consent.

- 6.11 Overall therefore, given the scale of the development proposals and scope of those proposed mitigation measures, EDP considers that the scheme is capable of compliance with relevant planning policy for the conservation of the natural environment at all levels.

**Appendix EDP 1**  
**Planning Layout (Hammonds Yates Limited, Drawing Number**  
**1540\_100\_Rev. B) and External Works Layouts**  
**(Hammonds Yates Limited, Drawing Numbers**  
**1540\_102\_1\_Rev. A, 102\_2 & 102\_3)**

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THE CONTRACTOR IS TO COMPLY IN ALL RESPECTS WITH CURRENT BUILDING REGULATIONS, PLANNING AND BUILDING REGULATIONS WHETHER OR NOT SPECIFICALLY STATED ON THIS DRAWING.  
 THIS DRAWING MUST BE READ IN CONJUNCTION WITH ANY STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, SANITARY, OR OTHER SPECIALIST DOCUMENTATION OR PLANS PROVIDED.  
 THIS DRAWING IS NOT INTENDED TO SHOW DETAILS OF FOUNDATIONS, GRADED CONDITIONS OR GROUND CONTAINMENTS. EACH AREA OF GROUND MUST BE INVESTIGATED BY THE CONTRACTOR A SUITABLE METHOD OF FOUNDATION SHOULD BE PROVIDED ALLOWING FOR EXISTING GROUND CONDITIONS. ANY EARTHWORK CONSTRUCTION SHOULD INDICATE TYPICAL SLOPES (GRADE ONLY AND SHOULD BE FURTHER INVESTIGATED BY A SUITABLE EXPERT.  
 WHERE EXISTING TREES ARE SHOWN TO BE REMOVED THEY SHOULD BE SUBJECT TO A FULL ARBORICULTURAL INSPECTION FOR SAFETY. A SUITABLE METHOD OF FOUNDATION IS TO BE PROVIDED TO ACCOMMODATE PROPOSED TREE PLANTING.

General Notes



**ACCOMMODATION SCHEDULE**

|              |    |      |            |
|--------------|----|------|------------|
| Ester        | Es | 1484 | 10         |
| Layton       | La | 1611 | 9          |
| Chelworth    | Ch | 1703 | 7          |
| Molden       | Mo | 1536 | 8          |
| Cornell      | Co | 1374 | 4          |
| Bradgate     | Ba | 1441 | 7          |
| Moresby      | Mo | 854  | 6          |
| Buchanan     | Bu | 875  | 3          |
| Richardson   | Ri | 711  | 10         |
| Maidstone    | Md | 830  | 21         |
| Collaton     | Cl | 863  | 15         |
| Eskdale      | Es | 1058 | 9          |
| Ennerdale    | En | 917  | 2          |
| Andover      | An | 998  | 4          |
| Kingsley     | Ki | 1080 | 8          |
| Meneworth    | Me | 1152 | 1          |
| Alderney     | Ad | 1225 | 7          |
| Rodleigh     | Ra | 1317 | 1          |
| Washington   | Wa | 615  | 26         |
| Alder        | Al | 570  | 20         |
| Olive        | Ol | 861  | 35         |
| Larch        | Lh | 998  | 4          |
| Cherry       | Cy | 1179 | 3          |
| <b>Total</b> |    |      | <b>220</b> |

|     |          |    |  |
|-----|----------|----|--|
| B   | 08.08.17 | IB | Rodline revised to Client comment  |
| A   | 06.07.17 | IB | Entrance arrangement and plot 37-41 & 50-52 revised to Client instructions |
| Rev | Date     | By | Comment  |

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Project Title  
**St Cyres Dinas Powys**

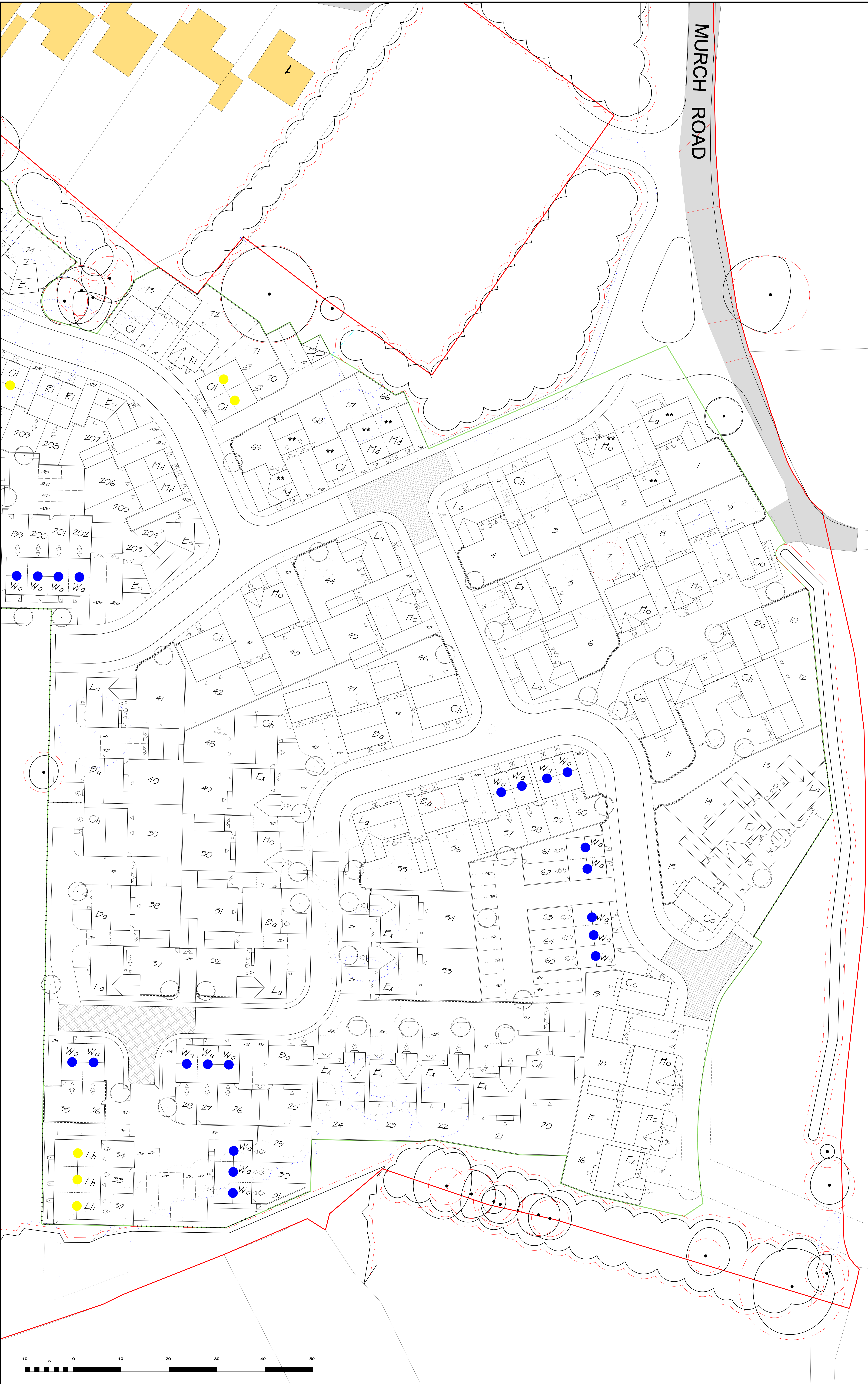
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  - 1.5m CLASH BOARD FENCE (400mm FIBRE)
  - 1.5m SLASH-BE-LYS RAILINGS (200mm FIBRE)
  - 1.5m BALL TOP RAILINGS
  - PERSONNEL GATE POSITION
  - PATHS TO FRONT DOOR (GREEN BRICK)
  - PATHS AND PATIO (GREEN BRICK)
  - 31 PLOT NUMBERS
  - 37 CAR PARKING ALLOCATION
  - 38 ELECTRIC METER LOCATION
  - 39 GAS (VALVES/CONVEYERS)
  - 40 FRONT/REAR DOOR POSITION
  - 41 GARAGE/CAR PORT LOCATION
  - 42 SALES AREA
  - 43 AFFORDABLE HOUSING (SHAW HILL)
  - 44 AFFORDABLE HOUSING (SHAW CHERRY)
  - 45 BLOCK PAVING SURFACE (TREATMENT COLOUR: TEA)
  - 46 GRASS (TREATMENT COLOUR: TEA)
  - 47 EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
  - 48 PROPOSED TREES
  - 49 EXISTING TREES TO BE REMOVED

A 08.08.17 JB Redline revised to client comment  
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Project Title:  
**St Cyres Dinas Powys**

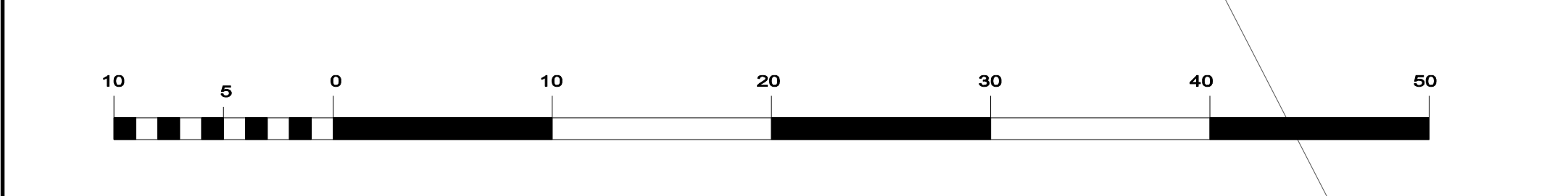
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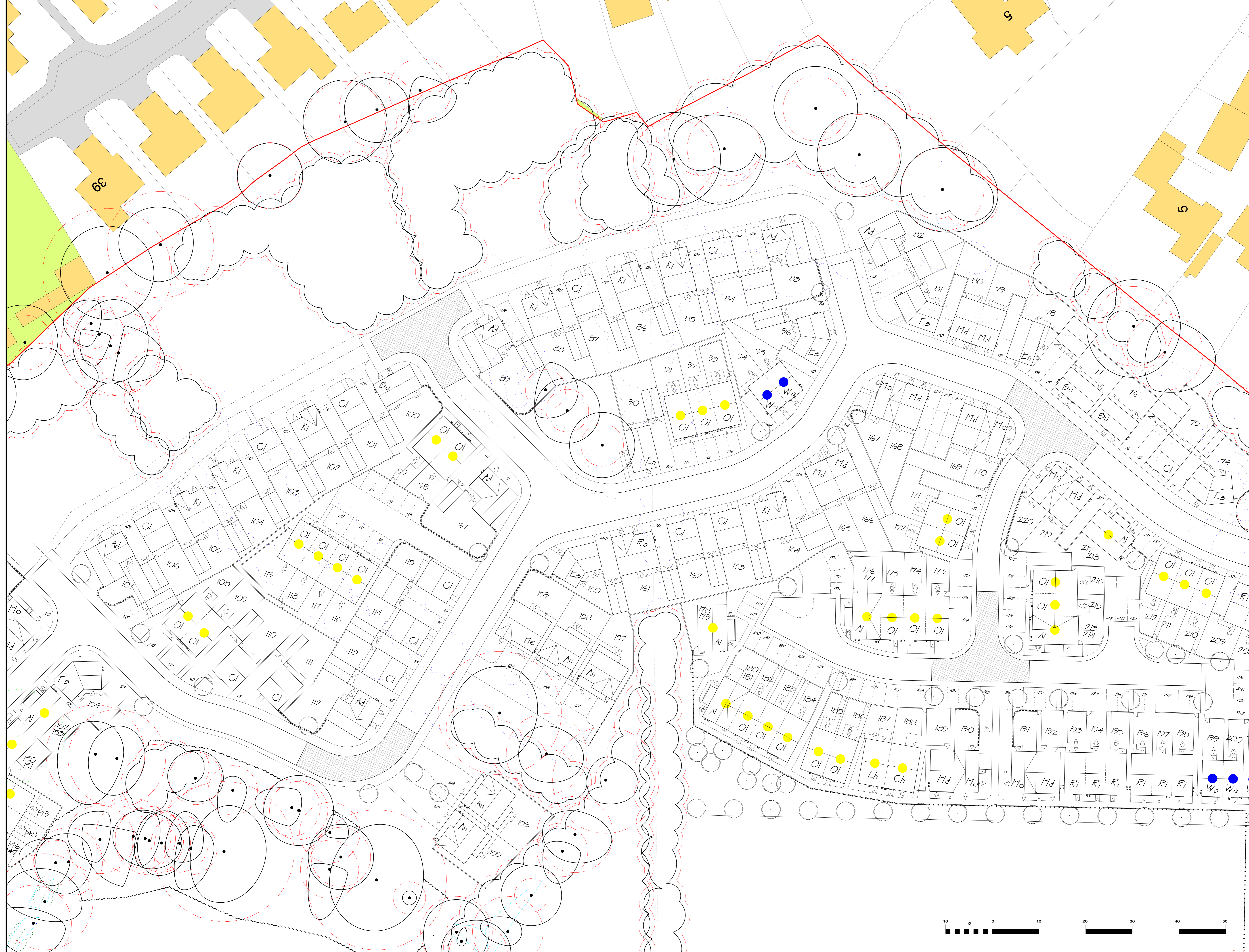
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**General Notes**

- EXTERNAL WORKS LEGEND**
- 1.5m BRICK SCREEN WALL
  - 1.5m CLOSE BOARD FENCE (Hedgehog Friendly)
  - 1.5m FIBREGLASS RAILINGS
  - 1.2m BALL TOP RAILINGS
  - PERSONNEL GATE POSITION
  - PATH TO FRONT DOOR
  - PATHS AND PATIO
  - 31 PLOT NUMBERS
  - J7 CAR PARKING ALLOCATION
  - ELECTRIC METER LOCATION
  - DATA ANALYSIS CONSOLE
  - FRONT/REAR DOOR POSITION
  - GARAGE/CAR PORT LOCATION
  - SALES AREA
  - ★ AFFORDABLE HOUSING
  - AFFORDABLE HOUSING
  - BLOCK PAVING SURFACE
  - COLOURED TARMAC SURFACE
  - EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
  - PROPOSED TREES
  - EXISTING TREES TO BE REMOVED

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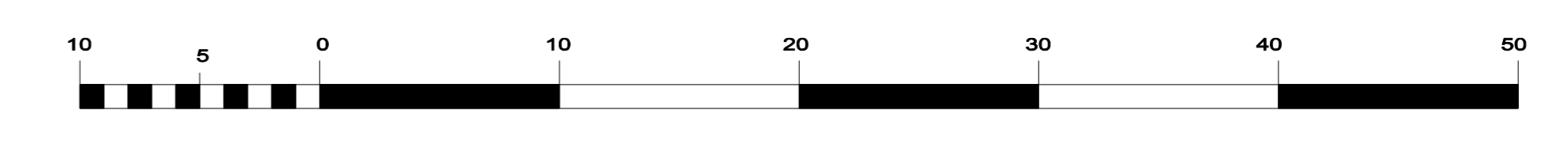
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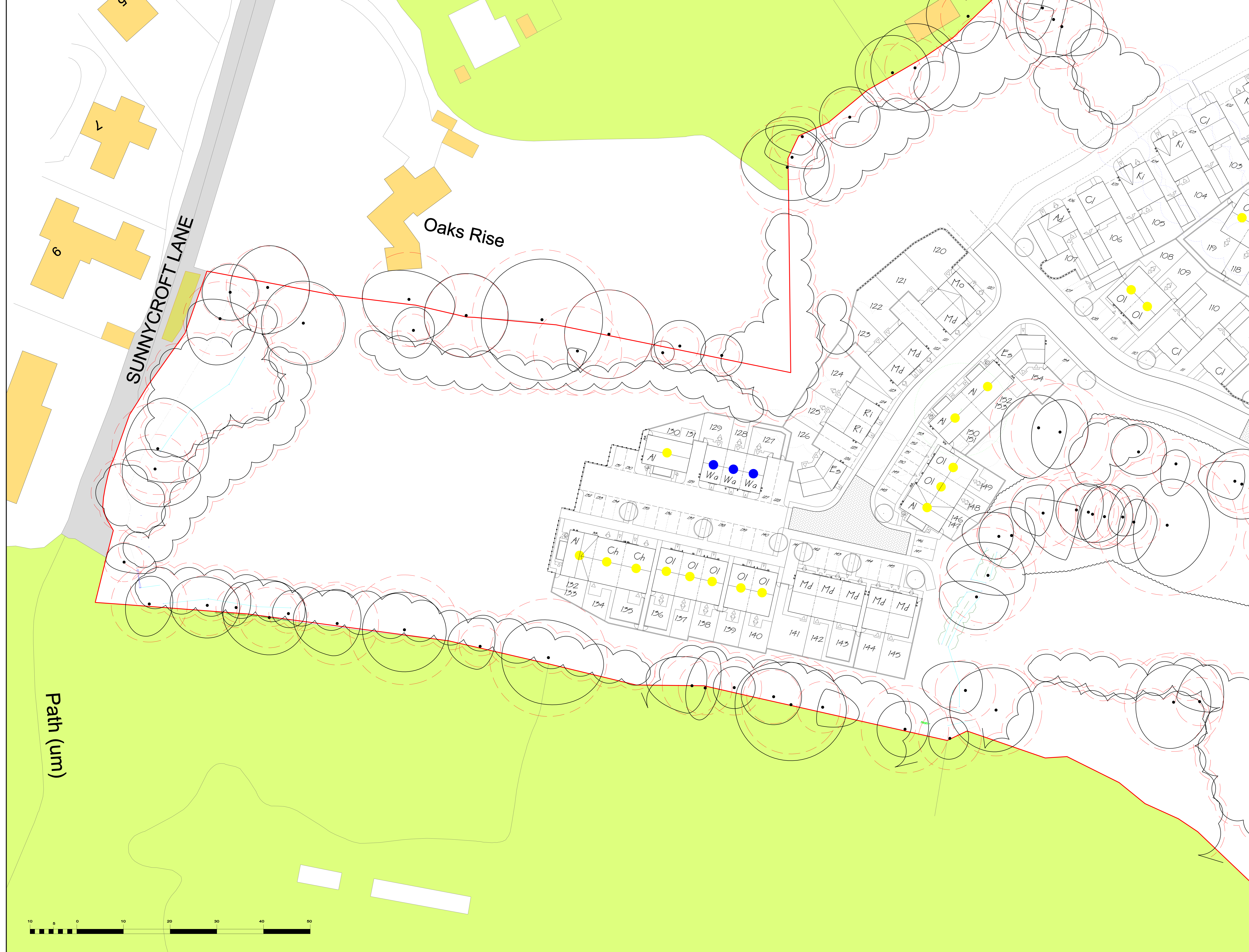
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**General Notes**

- EXTERNAL WORKS LEGEND
  - 1.0m BRICK SCREEN WALL
  - 1.0m CLOSE BOARD FENCE (Hedgehog Friendly)
  - 1.2m PL. BRICK/CLAY RAILINGS
  - 1.2m BALL TOP RAILINGS
- PERSONNEL GATE POSITION
- PERMIT TO FRONT DOOR (500mm)
- PATHS AND PATIO (GREEN SHED)
- 31 PLOT NUMBERS
- 31 CAR PARKING ALLOCATION
- ELECTRIC METER LOCATION
- 31 GARAGE/ALCOVE/CONSERVATORY
- FRONT/REAR DOOR POSITION
- 31 GARAGE/CAR PORT LOCATION
- SALES AREA
- ★ AFFORDABLE HOUSING (Sole Rent)
- AFFORDABLE HOUSING (Shared Ownership)
- BLOCK PAVING SURFACE TREATMENT Colour: TBA
- COLOURED TARMAC SURFACE TREATMENT Colour: TBA
- EXISTING TREES TO BE RETAINED WITH ROOT PROTECTION ZONE
- PROPOSED TREES
- EXISTING TREES TO BE REMOVED



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**Appendix EDP 2**  
**Ecological Appraisal Report**  
**(RPS, Report Reference JER6565, December 2015)**

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Ecological Appraisal  
St Cyres, Dinas Powys  
On Behalf of  
Barratt Homes Ltd




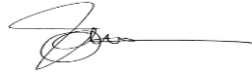
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**Our Ref:** JER6565  
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# Quality Management

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| <b>Authorised by:</b>      | Tim Oliver MCIEEM   |  |
| <b>Date:</b>               | December 2015   |   |
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# Amendment Record

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| Revision No. | Date | Reason for Change | Authors Initials |
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| <b>JER6565-ECO-006</b> | <b>Bat Transect Plan – 27<sup>th</sup> August 2015</b>    |
| <b>JER6565-ECO-007</b> | <b>Bat Transect Plan – 29<sup>th</sup> September 2015</b> |

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# 1 Introduction

---

## 1.1 Background and Scope of Works

- 1.1.1 RPS was commissioned by Barratt Homes Ltd to undertake an Ecological Appraisal of the site known as St Cyres, located at Dinas Powys, Vale of Glamorgan. Barratt Homes proposes to submit a planning application for the development of the site for residential use.
- 1.1.2 The Ecological Appraisal undertaken in May identified habitats within and adjoining the site with the potential to support several protected species, specifically:
- Hedgerows and woodland edge with the potential to be used by foraging / commuting bats;
  - Mature trees with the potential to be used by roosting bats;
  - Hedgerows and woodland with the potential to be used by dormice;
  - Two ponds within the site that could have potential to support great crested newts (GCN); and,
  - Grassland and woodland fringe habitats with the potential to support reptiles.
- 1.1.3 Consequently RPS were commissioned to undertake the following protected species surveys:
- Bat activity surveys;
  - Dormouse presence / likely absence of suitable hedgerow and woodland habits within the site; and,
  - GCN Presence / likely absence survey of the two on-site ponds.
- 1.1.4 This report presents the findings of the Ecological Appraisal and protected species surveys. The report provides an ecological baseline of the site and provides an assessment of the potential ecological constraints on the future residential development of the site.

## 1.2 Site Description

- 1.2.1 The site is situated on the southern fringe of Dinas Powys, to the southwest of Cardiff (centred at Ordnance Survey grid reference ST16267078)
- 1.2.2 The site is approximately 12 ha in extent. The western half of the site is a series of grassland fields divided by overgrown hedgerows and linear wooded blocks. The eastern half of the site comprises two larger grassland fields (former school playing fields) with secondary and plantation woodland on the southern and northern boundaries. A green lane flanked by species-rich hedgerows on banks adjoins the eastern site boundary. The concrete footings of a former school (now demolished) are located in the northeast of the site
- 1.2.3 The site lies within a green corridor between the settlements of Dinas Powys to the west and Penarth to the East. Residential areas of Dinas Powys lie to the north and west with a series of large residential gardens adjoining the western site boundary. An operational construction site for a new medical centre adjoins the north-eastern boundary of the site. To the south the site



adjoins mature semi-natural broadleaved woodland and pasture. Land use in the surrounding areas to the east and south comprises pasture fields and wooded blocks divided by established hedgerows.

## 2 Method

---

### 2.1 Ecological Appraisal

2.1.1 The ecological appraisal provides a baseline of the site and is carried out in three stages:

- A desk study to collate records of designated sites, protected species and other species of conservation interest within the local area around the proposed development site;
- A site walkover survey to identify and map habitats on the site, to assess the extent and broad floristic composition of these habitats; and to assess the potential for habitats within the site to support protected species or otherwise notable flora and fauna; and,
- Collation and interpretation of the field survey results and desk study data to assess the current status of the site and its ecological context in the wider landscape.

2.1.2 The baseline survey information has also been used to determine whether there is a need for additional surveys of species or species groups to inform the development proposal.

#### Desk Study

2.1.3 A request was submitted to the South East Wales Biological Record Centre (SEWBRc) for the following:

- Information on non-statutory designated nature conservation sites within 2km of the survey site;
- Recent records of protected or otherwise notable species, including local and UK BAP species, Species of Principal Importance for Conservation in Wales and red data book species within 2km of the survey site.
- Recent records of horseshoe bats within 5km of the site.

2.1.4 Records older than 20 years were considered historical and were excluded from the data trawl results.

2.1.5 International nature conservation sites within 10km of the site, and national statutory designated nature conservation sites within 2km of the site were identified using the Multi Agency Geographic Information for the Countryside website (<http://www.magic.gov.uk>). Information about these sites identified was obtained from the Joint Nature Conservation Committee website (<http://www.jncc.gov.uk>).

#### Field Survey

2.1.6 The site walkover survey was conducted in accordance with The Handbook for Phase I Habitat Survey (JNCC, 2010) and guidelines on Ecological Appraisal (IEEM 2012) and included searches for signs of protected species, as described in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995).

- 2.1.7 The site walkover survey was undertaken in May with additional botanical information obtained during site visits in June and July. During the survey, habitats within the site were classified, mapped and described, with respect to their structure and broad floristic composition.
- 2.1.8 The habitats within the site were assessed for their potential to support legally protected or otherwise notable flora and fauna. Where possible, searches of suitable habitat were made for signs indicating the presence of protected species, such as droppings, burrows, tracks and evidence of feeding; although this was not a comprehensive search of all suitable on-site habitat.
- 2.1.9 Where species are not specifically mentioned, this indicates that no habitat of potential value for these species was identified during the survey.
- 2.1.10 Consideration was given to habitats and species present within the site that are listed under Section 42 of the Natural Environment and Rural Communities Act 2006. The protection of such habitats and species should be prioritised under the planning system as part of the planning objective of avoiding further biodiversity and achieving biodiversity gain.
- 2.1.11 The adjacent off-site habitats were viewed and assessed on-site and on aerial photographs in order to understand the wider ecological context of the features within the site.
- 2.1.12 During the walkover survey searches were made for invasive non-native plant species focussing on those species currently listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended in 2010). Follow up checks were made during subsequent site visits over summer 2015.
- 2.1.13 Botanical nomenclature in this report follows that laid out by Stace (1997) and Atherton, Bosanquet and Lawley [Eds] - (2010).

### **Limitations**

- 2.1.14 The survey offers a 'snapshot' of the site conditions and habitat potential for species at the times of the survey visits. On-site habitats have been assessed with due consideration for seasonal changes in structure and extent, but habitats will change over time and the ecological status of the site should not be seen as static.

## **2.2 Bat Activity Surveys**

### *Transect Surveys and Remote Recording*

- 2.2.1 Five bat transect surveys were undertaken on 29<sup>th</sup> May, 25<sup>th</sup> June, 6<sup>th</sup> August, 27<sup>th</sup> August and 29<sup>th</sup> September. The aim of the transect surveys was to identify which bat species utilise on-site habitats, and to assess levels of use by bats of the habitats within the application site.
- 2.2.2 Transect surveys also provided coverage of several large mature pedunculate oak trees around for the first 30 minutes after sunset, which is a key roost emergence period for several bat species. Each transect continued for at least 90 minutes after sunset following a route along the

woodland edges and hedgerows to provide coverage of all suitable habitats within the application site.

- 2.2.3 The transect routes were walked slowly. All registrations of bat activity were logged with notes on flight paths, numbers of bats, observed behaviour, social calls and feeding buzzes. Bat passes were recorded using a combination of Bat box duet detectors (heterodyne and frequency division) connected to Zoom H2 MP3 recorders and Anabat detector recorders (frequency division).
- 2.2.4 During some of the transect surveys remote recording detectors were positioned in fixed locations for the duration of the survey or overnight, to collect more comprehensive data on species and levels of bat activity associated with linear features (hedgerows and woodland edge) with potential to be used as key light lines.
- 2.2.5 The dates of transect surveys, static remote recording and survey conditions are shown in Table 2-1. Transect routes and the locations of static recorders are shown on the Bat Transect Plans (Drawing JER6565-ECO-003 to Drawing JER6565-ECO-007).

**Table 2-1 Bat Activity Survey Dates, times, Recording Techniques and Conditions.**

| Date                       | Transect Survey time (sunset) | Static Recording                  | Min Overnight Temp | Weather                                    |
|----------------------------|-------------------------------|-----------------------------------|--------------------|--|
| 29 <sup>th</sup> May       | 21:15-22:55<br>(21:16)        | During Transect<br>21:30 to 23:20 | 9°C                | Dry, 90% cloud cover, mild light breeze.   |
| 25 <sup>th</sup> June      | 21:49-23:34<br>(21:34)        | During transect and overnight     | 12°C               | Dry, 100% hazy cloud cover, mild and still |
| 6 <sup>th</sup> August     | 20:45-23:00<br>(21:13)        | During transect and overnight     | 9°C                | Dry, clear and still                       |
| 27 <sup>th</sup> August    | 20:10-22:16<br>(20:10)        | During transect and overnight     | 13°C               | Dry, clear and still                       |
| 29 <sup>th</sup> September | 18:55-20:57<br>(18:55)        | Yes – for duration of transect    | 10°C               | Dry clear, light breeze.                   |

## 2.3 Dormouse Nest Tube Survey

- 2.3.1 The nest tube survey was undertaken following a methodology based on published best practice guidelines (Bright, Morris & Mitchell Jones 2006; Chanin & Woods 2003).
- 2.3.2 The guidelines provide a method for quantifying survey effort based on the number of nest tubes used and the likelihood of encountering dormice during. Each month between April and November (when dormice are typically active) is assigned an 'index of probability' score

reflecting the relative likelihood of dormice being detected in nest tubes in that month (Table 2-2).

**Table 2-2 Dormouse Survey Months and Corresponding Index of Probability Scores**

| Month     | Index of Probability Score |
|-----------|----------------------------|
| April     | 1                          |
| May       | 4                          |
| June      | 2                          |
| July      | 2                          |
| August    | 5                          |
| September | 7                          |
| October   | 2                          |
| November  | 2                          |

- 2.3.3 Survey effort is calculated by summing the ‘index of probability’ scores for all complete months the tubes are left out. A score of 20 is considered the minimum survey effort based on a minimum of 50 tubes spaced approximately 20m apart wherever practical (Chanin & Woods 2003)
- 2.3.4 The survey effort calculation does not take into consideration nest tube spacing / density but the survey effort score may be modified by adjusting the number of nest tubes used; for example, the survey effort score may be multiplied by 2 if using 100 tubes.

### **Survey Effort**

- 2.3.5 The hedgerows and woodland edge habitat within the site varied in its suitability both as dormouse habitat and in the practicality of surveying. Areas of dense bramble thicket were avoided due to the difficulties in placing and checking tubes as the bramble grows through the season. Some areas of woodland edge also lacked suitable dense scrub growth where nest tubes could be placed in good cover. In total, 85 nest tubes were placed out giving a spacing of approximately 20-25m in suitable and practically surveyable habitat.
- 2.3.6 Tubes were placed in late April and left in situ for May through September to achieve a minimum survey effort score of 20 (Monthly Index of Probability Scores for May to September: 4; 2; 2; 5; and 7, giving a total of 20).
- 2.3.7 The nest tubes used were based on the standard design described in the published guidelines and as recommended by the mammal society and were set following the methodology described by Chanin and Woods (2003).

- 2.3.8 In accordance with the survey guidelines nest tubes were checked in dry weather for any signs of dormouse occupation at least bi-monthly on 28<sup>th</sup> May, 23<sup>rd</sup> July and 23<sup>rd</sup> September. The survey included checks in May and September which are key months for detecting evidence of dormouse activity. The locations of the nest tubes and nest boxes are shown in the Dormouse Survey Plan (Drawing JER6565–ECO-002).

## **2.4 GCN Presence / Absence**

### **Habitat Suitability Index (HSI) Assessment**

- 2.4.1 The two on-site waterbodies were assessed using the great crested newt Habitat Suitability Index (HSI) (Oldham et al. 2000). The HSI methodology assigns a value to each of 10 variables of the pond. The tenth root of the product of these variables is then calculated. This generates the HSI, a numerical index between 0 and 1. The HSI score gives an indication of the suitability of the pond as great crested newt habitat where a score of 1 represents optimal habitat for great crested newts.

### **Presence / Absence surveys**

- 2.4.2 A presence / absence survey was carried out following guidelines set out in the Herpetofauna Workers Manual (Gent & Gibson,1998), Great Crested Newt Mitigation Guidelines (English Nature, 2001), Common Standards Monitoring Guidance for Reptiles and Amphibians (JNCC, 2004) and Froglife Advice Sheet 11: Surveying for (Great Crested) Newt Conservation (Froglife, 2001).
- 2.4.3 Full details are given the Great Crested Newt Survey Report (Appendix 2)

## 3 Results

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### 3.1 Desk Study

- 3.1.1 Distances stated in the desk study are measured to the nearest 100m from the site boundary at its nearest point.

#### Internationally Designated Sites

- 3.1.2 The Severn Estuary is designated as a RAMSAR site, Specially Protected Area (SPA), Special Area of Conservation (SAC) and SSSI. The banks are designated under RAMSAR and SPA status while the SAC designation covers the entire estuary area.
- 3.1.3 The estuary lies 2.2km to the east of the site at the closest point. The Severn Estuary has the second largest tidal range in the world, resulting in an extensive intertidal zone comprising mudflats, sand banks, shingle, and rocky platforms; and 110 species of fish have been recorded in the river system.
- 3.1.4 Over 70,000 waterfowl have been recorded along the estuary during winter with important overwintering populations of:
- Bewick's Swan *Cygnus columbianus bewickii*
  - Curlew *Numenius arquata*,
  - Dunlin *Calidris alpina alpina*,
  - Pintail *Anas acuta*,
  - Redshank *Tringa totanus*, and
  - Shelduck *Tadorna tadorna*,

#### Nationally Designated Sites

- 3.1.5 There are two nationally designated sites within 2km of the site boundary, Cog Moors and Cosmeston Lakes, both of which are Sites of Special Scientific Interest (SSSI).
- 3.1.6 Cog Moors SSSI covers 13ha and lies 1.1km to the south of the site. The area comprises a series of unimproved species-rich grassland fields separated by ditches. The fields were previously hay meadows and now have a distinctive damp floristic element, typically comprising amphibious bistort *Persicaria amphibia*, meadowsweet *Filipendula ulmaria* and lesser pond-sedge *Carex acutiformis*. The nationally scarce bulbous foxtail *Alopecurus bulbosus* and a large population of pepper saxifrage *Silaum silaus*, a species close to the edge of its range, are present.
- 3.1.7 Cosmeston Lakes SSSI covers 26ha and lies 1.4km south-east of the site. The lakes have SSSI designation as they support starry stonewort *Nitellopsis obtuse* which is nationally endangered. The area is also a Country Park and Site of Importance for Nature Conservation Interest (SINC), with species rich grasslands, scrub and woodland being the reasons for designation.

## Non-statutory Designated Sites

3.1.8 There are sixteen non-statutory designated sites (SINCs) within the search radius, as described in Table 3-1.

**Table 3-1 Non-Statutory Designated Sites within the 2km Search Radius**

| Name   | Designation           | Distance From Site       | Description   |
|--|-----------------------|--------------------------|---|
| Case Hill Wood                                   | SINC                  | 1.2km                    | Semi-natural broadleaved woodland with some mixed plantation on an ancient woodland site  |
| Coed Clwyd-Gwyn South West of Michaelston le Pit | SINC                  | 1.4km                    | An extensive complex of semi-natural broadleaved woodland with areas of mixed and coniferous plantation on an ancient woodland site and ancient semi-natural woodland                                       |
| Coed Twyncyn                                     | SINC                  | 1.3km                    | Semi-natural broadleaved woodland with some mixed plantation on an ancient woodland site  |
| Cog Moors  | SSSI and SINC         | 0.8km                    | Series of species-rich rush pastures with neutral grassland and associated wet ditches  |
| Cogan Pond                                       | SINC                  | 1.0km                    | Large pond supporting a reedbed   |
| Cosmeston Lakes                                  | SINC and Country Park | 0.7km                    | Extensive country park supporting mosaic of habitats including species-rich calcareous and neutral grasslands, scrub, hedgerows, woodland, streams and lakes which all support a wide assemblage of species |
| Cross Common                                     | SINC                  | Adjoins SW site boundary | Semi-natural broadleaved woodland, part on an ancient woodland site   |
| Dinas Powys Castle Woodland                      | SINC                  | 1.0km                    | Ancient semi-natural broadleaved woodland   |
| Dinas Powys Moors                                | SINC                  | 1.0km                    | Series of species-rich semi-improved neutral grasslands with pond   |
| Downs Wood                                       | SINC                  | 1.4km                    | Ancient semi-natural broadleaved woodland   |
| North of Cog Moors                               | SINC                  | 1.0km                    | Ancient semi-natural woodland   |
| North of Pop Hill                                | SINC                  | 0.3km                    | Series of species-rich unimproved neutral grasslands with large anthills  |
| Pond 11 Biglis Moors                             | SINC                  | 1.1km                    | Pond which supports good population of great crested newts  |
| Pop Hill   | SINC                  | 0.7km                    | Predominantly ancient semi-natural broadleaved woodland   |
| Pwll Erw-naw                                     | SINC                  | 0.9km                    | Pond which supports good population of Great crested newts  |
| Shortlands Wood                                  | SINC                  | 0.4km                    | Semi-natural broadleaved woodland, part on an ancient woodland site   |



## Species Records

3.1.9 For each species an abbreviated reference is given to their legal and conservation status (as defined in Table 3-2). Table 3-3 provides a summary of records of legally protected species from within 2km of the proposed development, and for which there is suitable habitat on or adjacent to the site.

**Table 3-2 Abbreviations for Species Legal and Conservation Status**

| Abbreviation | Legal/Conservation Status   |
|--------------|---|
| EPS          | European Protected Species. Fully protected under the Conservation of Habitats and Species Regulations 2012                                   |
| WCA full     | Fully protected under the Wildlife and Countryside Act 1981 – as amended  |
| WCA5 Part    | Protected from killing and injuring under the Wildlife and Countryside Act 1981 – as amended  |
| WCA1         | Bird species subject to special protection - listed on Schedule 1 Wildlife & Countryside Act 1981 as amended                                  |
| S42          | Listed under Section 42 of the Natural Environment and Rural Communities Act 2006 as species of principal importance of conservation in Wales |
| UK BAP       | UK Biodiversity Action Plan Priority Species  |
| LBAP         | Local (Vale of Glamorgan) Biodiversity Action Plan priority species   |
| UKBRed       | RSPB UK Red List - Birds of high conservation concern in the UK   |
| UKBAm        | RSPB UK Amber List - Birds of high conservation concern in the UK   |
| PBA          | Protection of Badgers Act   |

**Table 3-3 Summary of Legally Protected Mammal and Herptile Records**

| Species                      | Scientific Name                  | Species Status                 | No. of Records | Location of Closest Record                              |
|------------------------------|----------------------------------|--------------------------------|----------------|---|
| <b>Bats</b>                  |                                  |                                |                |   |
| Lesser horseshoe bat         | <i>Rhinolophus hipposideros</i>  | EPS, S42,<br>WCA full,<br>LBAP | 1              | 1.9km south   |
| Brown long-eared Bat         | <i>Plecotus auritus</i>          |                                | 1              | 1.6km south-east  |
| Soprano pipistrelle          | <i>Pipistrellus pygmaeus</i>     |                                | 3              | 0.9km west  |
| Common pipistrelle           | <i>Pipistrellus pipistrellus</i> |                                | 11             | 0.9km north-east<br>Includes two roosts (one maternity) |
| Noctule                      | <i>Nyctalus noctula</i>          |                                | 3              | 0.9km north-east  |
| Leisler's bat                | <i>Nyctalus leisleri</i>         | EPS, WCA full                  | 1              | 1.9km south   |
| Unidentified myotis bat      | <i>Myotis sp(p)</i>              |                                | 2              | 0.9km south-west  |
| Unidentified bat             | <i>Chiroptera sp</i>             |                                | 7              | 0.5km west  |
| Unidentified pipistrelle bat | <i>Pipistrellus sp.</i>          |                                | 12             | 0.4km west<br>Includes four roosts (one maternity)      |

|                         |                              |                                       |    |                  |
|-------------------------|------------------------------|---------------------------------------|----|------------------|
| Daubenton's Bat         | <i>Myotis daubentonii</i>    | EPS, WCA full                         | 1  | 1.6km south-east |
| Whiskered Bat           | <i>Myotis mystacinus</i>     |                                       | 1  | 1.9km east       |
| Serotine                | <i>Eptesicus serotinus</i>   |                                       | 1  | 1.9km south      |
| Nathusius's pipistrelle | <i>Pipistrellus nathusii</i> |                                       | 1  | 2.0km north-east |
| <b>Other Mammals</b>    |                              |                                       |    |                  |
| Badger                  | <i>Meles meles</i>           | PBA                                   | 4  | 1.5km south-east |
| <b>Herptiles</b>        |                              |                                       |    |                  |
| Great crested newt      | <i>Triturus cristatus</i>    | EPS, WCA full<br>S42, UK BAP,<br>LBAP | 21 | 0.8km west       |
| Slow-worm               | <i>Anguis fragilis</i>       | WCA part,<br>S42, UK BAP,<br>LBAP     | 5  | 1.0km north-west |

3.1.10 In addition the following species of conservation importance have been recorded within the search area:

- Brown hare *Lepus europaeus* (S42, UK BAP, LBAP)
- Polecat *Mustela putorius* (S42, UK BAP, LBAP)
- Common Toad *Bufo bufo* (S42, UK BAP, LBAP)

3.1.11 The following RSPB red and amber list bird species for which potentially suitable habitats occur within the site, have been recorded within 2km of the site:

- **Red list Species:** Common bullfinch *Pyrrhula pyrrhula* (S42, LBAP), common cuckoo *Cuculus canorus* (S42, LBAP), grasshopper warbler *Locustella naevia* (S42, LBAP), starling *Sturnus vulgaris* (S42, LBAP), tree sparrow *Passer montanus* (S42, LBAP), turtle dove *Streptopelia turtur* (S42), grey partridge *Perdix perdix* (S42, UK BAP, LBAP), dunnock *Prunella modularis* (S42, LBAP), house sparrow *Passer domesticus* (S42, UK BAP, LBAP), lesser redpoll *Acanthis cabaret* (S42, UK BAP, LBAP), lesser spotted woodpecker *Dryobates minor* (S42, UK BAP, LBAP), linnet *Carduelis cannabina* (UKBRed, S42, UK BAP), song thrush *Turdus philomelos* (S42, LBAP), spotted flycatcher *Muscicapa striata* (S42, UK BAP, LBAP), woodlark *Lullula arborea* (S42, UK BAP, LBAP), wood warbler *Phylloscopus sibilatrix* (S42, UK BAP, LBAP), yellow wagtail *Motacilla flava* (S42, UK BAP, LBAP), yellowhammer *Emberiza citrinella* (S42, UK BAP, LBAP).
- **Amber List Species:** Kestrel *Falco tinnunculus* (S42, LBAP), firecrest *Regulus ignicapillus*, and pied flycatcher *Ficedula hypoleuca* (S42, LBAP),

## 3.2 Habitats

3.2.1 The results of the site walkover surveys are shown on the Habitats Plan (Drawing JER6565-ECO-001). Detailed descriptions are given below.

### Semi-improved grassland

3.2.2 The majority of the site consisted of species-poor semi-improved grassland. The site is broadly divided into two halves by a hedgerow running north/south. The western half of the site comprised 6 semi-improved grassland areas divided by thick hedgerows and wooded blocks (Fields A - F). The eastern half comprised one larger field (Field G), and three smaller fields all supporting semi-improved grassland (Fields H – J).

3.2.3 Typically the sward in each field was grass dominated with creeping bent *Agrostis capillaris*, Yorkshire fog *Holcus lanatus*, and perennial rye-grass *Lolium perenne* being frequent or abundant. Small cat's tail *Phleum bertolonii* was occasional to frequent with Cock's-foot *Dactylis glomerata*, and rough meadow grass *Poa trivialis* occurring rarely.

3.2.4 The fields were all species-poor but the assemblage of forbs varied between fields. Through fields A to D, ribwort plantain *Plantago lanceolata* was frequent with locally frequent common fleabane *Pulicaria dysenterica* and creeping cinquefoil *Potentilla reptans*. Rarely occurring species were common vetch *Vicia sativa*, meadow vetchling *Lathyrus pratensis* and red clover *Trifolium pratense*.

3.2.5 In the western half of the site (Fields A to F) other forbs occurred very rarely or as scattered individuals in one or more fields including dandelion *Taraxacum* agg, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, white clover *Trifolium repens* cut-leaved crane'sbill *Geranium dissectum*, meadow buttercup *Ranunculus acris* and soft rush *Juncus effusus* and hard rush *Juncus inflexus* (Plate 3-1).

**Plate 3- 1, Semi-improved Grassland in Field A.**



- 3.2.6 Hairy Sedge *Carex hirta* was frequent in field D and locally abundant at the western end of Field B (Plate 3-2) and Field C, and with localised patches in Field A.

**Plate 3- 2, Semi-improved Grassland with Abundant Hairy Sedge at the Western End of Field B**



- 3.2.7 A localised area of abundant common sedge *Carex nigra*, with frequent bird's foot trefoil and creeping bent was present at the eastern end of Field C (Plate 3-3). Red bartsia *Odontites vernus* and agrimony *Agrimonia eupatoria* were scattered along the eastern edge of Field C.

**Plate 3- 3, Semi-improved Grassland with Abundant Common Sedge at the Eastern End of Field C.**



- 3.2.8 Field F differed slightly in composition from the other fields with perennial rye-grass absent. Several forb and grass species occurred infrequently in field F, which were largely absent elsewhere in the west of the site. These were common couch *Elytrigia repens*, false oat-grass *Arrhenatherum elatius*, common mouse-ear *Cerastium fontanum*, hogweed *Heracleum*

*sphondylium*, dove's-foot crane's-bill *Geranium molle* agrimony and field bindweed *Convolvulus arvensis*.

- 3.2.9 In the eastern part of the site Fields G, H and I were species-poor with similar characteristic grass species, and a small number of forbs in common with grassland in the western half of the site.
- 3.2.10 Field I, had greater species diversity. The sward was dominated by grasses with Yorkshire fog, cock's-foot, perennial rye-grass, crested dog's-tail, and creeping bent all frequent or abundant throughout the sward. Timothy, and sweet vernal-grass *Anthoxanthum odoratum* were occasional with localised patches of meadow foxtail *Alopecurus pratensis*, and tall fescue *Festuca arundinacea* primarily on the eastern boundary on the lowest lying ground which was noted as being subject to waterlogging after periods of heavy rain.
- 3.2.11 Wildflower diversity was low with frequent meadow buttercup and creeping buttercup, and occasional cuckooflower *Cardamine pratensis*, common mouse ear, common vetch, common sorrel *Rumex acetosa* and dandelion. A single plant of greater bird's-foot trefoil *Lotus pedunculatus* was noted on the lower lying ground on the field boundary.
- 3.2.12 The grassland was coarse in May at time of survey but was subsequently subject to reinstatement of mowing management in the summer of 2015. The number of grass species confirmed that the grassland has been subject to at least annual cutting in the past.

#### **Hedgerows / Scrub / Wooded Belts**

- 3.2.13 The fields in the western half of the site were subdivided by a series of overgrown hedgerows with some linear woodland blocks with mature trees and a woodland ground flora.
- 3.2.14 The western half of the site comprised three internal hedgerows (H1, H2 and H5) and three small wooded blocks (W2, W4, W5) with an additional two hedgerows (H3, and H4) and one wooded block (W3) on the western boundary. The eastern half of the site has only two internal hedgerows (H7 and H8) with two further hedgerows (H9 and H10) and two larger woodland blocks (W1 and W6) on the site boundaries.
- 3.2.15 The hedgerow and wooded belt features are detailed in Table 3-4 and their location and extents are shown on the Habitats Map (Drawing JER6565-ECO-001).

**Table 3-4 Summary of Legally Protected Mammal and Herptile Records**

| Label                 | Position            | Description  |
|-----------------------|---------------------|--|
| H1                    | Internal            | Dense blackthorn <i>Prunus spinosa</i> thicket with extensive bramble <i>Rubus fruticosus</i> with occasional immature sycamore <i>Acer pseudoplatanus</i> and pedunculate oak trees <i>Quercus robur</i> . Blackthorn encroaching into the grassland with new suckering growth.   |
| H2                    | Internal            | Dense blackthorn hedgerow with localised bramble thicket and two large pedunculate oak trees at the southern end. A core of hazel coppice is present along the western half of the hedge.  |
| H3                    | Boundary            | <b>H3a</b> - 7m wide scrub thicket dominated by bramble growing with blackthorn. Small semi-mature pedunculate oaks at hedgerow intersections.   |
|                       |                     | <b>H3b</b> – Bramble thicket and tall ruderal vegetation with a clear cut section giving access to adjacent residential property.  |
|                       |                     | <b>H3c</b> A line of mature pedunculate oak trees (off-site) with a bramble understorey and immature ash trees within the site   |
| H4                    | Boundary (Internal) | Dense blackthorn and bramble with hawthorn and young maturing ash <i>Fraxinus excelsior</i> trees. Low thickets of sweet briar <i>Rosa rubiginosa</i> were well established in two locations on the edge of the overgrown hedgerow. Veteran oak trees were located outside the site boundary.  |
| H5                    | Internal            | Scrubby hedgerow adjoining woodland to the west and comprising immature silver birch, alder <i>Alnus glutinosa</i> and blackthorn with abundant bramble.   |
|                       | Internal            | <b>H5b</b> - Immature ash and silver birch <i>Betula pendula</i> with abundant dense bramble thicket.  |
|                       | Internal            | <b>H5c</b> Gappy hedgerow with elm <i>Ulmus</i> sp and hawthorn <i>Crataegus monogyna</i> shrubs and semi-mature ash and sycamore trees over low sprawling bramble and nettle.   |
| H6                    | Internal            | Overgrown hedgerow comprising dense blackthorn thicket with a single large pedunculate oak tree, a semi-mature sycamore and several small elm trees.   |
| H7                    | Internal            | Dense scrubby hedgerow of hawthorn, blackthorn and grey willow <i>Salix cinerea</i> with immature pedunculate oak and a multi stem maturing Ash.   |
| H8                    | Internal            | Dense scrubby hedgerow of hawthorn, blackthorn and bramble thicket with immature pedunculate oak and a maturing sycamore.  |
| H9                    | Boundary            | Species-diverse tall and scrubby roadside hedgerow with hazel <i>Corylus avellana</i> , sycamore, hawthorn, elm, field maple <i>Acer campestre</i> and blackthorn.   |
| H10                   | Boundary            | Low road side hedge with uniform shape indicating management. Species include hazel, hawthorn, ash and dogwood <i>Cornus sanguinea</i> .   |
| <b>Woodland Block</b> |                     |  |
| W1                    | Boundary            | Plantation woodland of even aged ash, oak and wild cherry <i>Prunus avium</i> . . Occasional large multi-stemmed aspen <i>Populus tremula</i> occur on the western side. Cow parsley <i>Anthriscus sylvestris</i> , hogweed <i>Heracleum sphondylium</i> and ivy <i>Hedera helix</i> are abundant field/ground layer species. Occasional lesser celandine <i>Ranunculus ficaria</i> , lords-and-ladies <i>Arum maculatum</i> , hedge mustard <i>Sisymbrium officinale</i> and herb Robert <i>Geranium robertianum</i> were present locally at the eastern end. |

| Label     | Position | Description  |
|-----------|----------|--|
| W2<br>a&b | Boundary | <b>W2a</b> 20-25m wide strip of secondary (planted?) broadleaved woodland on southern site boundary with a mix of native tree species including ash, field maple, wild cherry and birch and patches of dense scrub. The trees are young (6-8m high) with no larger trees.  |
|           |          | <b>W2b</b> Woodland widens at western end to 50m. Trees are older, up to 10m in height with oak also present in the canopy. Shrub layer comprises scattered hawthorn, spindle <i>Euonymus europaea</i> , dogwood, and young cherry.<br>Ground flora was more diverse with wood avens, hart's tongue fern, male fern and wood dock present amongst dense ivy along with abundant tree seedlings. A single common spotted orchid was seen.   |
| W3        | Internal | Scrubby woodland to 5m high with frequent blackthorn and alder, and occasional oak, silver birch, ash elm and sycamore. Ground flora comprises sprawling bramble.  |
| W4        | Boundary | Small area of woodland with a few large oak trees and a shrub layer comprising regenerating ash and willow. Ivy is abundant and dog's mercury locally abundant. Other woodland ground flora species occur at low frequency herb Robert, enchanter's nightshade <i>Circaea lutetiana</i> , wood speedwell <i>Veronica montana</i> , false wood brome <i>Brachypodium sylvaticum</i> , traveller's joy <i>Clematis vitalba</i> and wood sedge <i>Carex sylvatica</i> . Fallen timber lies on the ground and a narrow path created by people leads into the site.   |
| W5        | Internal | <b>W5a and W5b</b> Several veteran oak trees (very wide canopies) with scattered hawthorn shrubs and woodland field layer of bramble, common nettle <i>Urtica dioica</i> and young regenerating shrubs. Dense ivy and patches of rough meadow-grass occur in gaps in the bramble cover.<br>Woodland flora in W5a is very localised at eastern end with occasional lesser celandine <i>Ranunculus ficaria</i> , herb Robert, enchanter's nightshade, dog's mercury <i>Mercurialis perennis</i> and honeysuckle <i>Lonicera periclymenum</i> .<br>W5b was the only woodland block to support ancient woodland indicators close to the boundary with the off-site woodland with occasional giant fescue <i>Festuca gigantea</i> , and a few plants of goldilocks buttercup <i>Ranunculus auricomus</i> , and a small patch of wild garlic <i>Allium ursinum</i> . |

### Other Habitats

- 3.2.16 An area of concrete and brick hard standing was located in the north of the site where the buildings of the now demolished community school once stood.
- 3.2.17 A shallow shaded pond (Pond 1) was situated in the woodland on the southern boundary (eastern end of W2a). It measured approximately 7m x 6m, which increased to 9m x 7m after heavy rainfall. The pond supported no macrophyte plant species and the base of the pond was covered in leaf litter. Several items of refuse had been dumped in the pond and the water quality appeared very poor.

- 3.2.18 A second very small pond (Pond 2) with emergent vegetation was present in the east of the site comprising shallow water (less than 10-35cm cm deep) with abundant reedmace and occasional soft rush *Juncus effusus*, curled dock *Rumex crispus* and least duckweed *Lemna minuta*. A low bank encircles much of the pond and will have been created from soil dug out to create the waterbody. Dense bramble grows on the bank on the eastern side of the pond.

**Plate 3- 4, Pond 2 with Emergent Vegetation**



### **3.3 Dormouse Nest Tube Survey**

- 3.3.1 The results of the dormouse nest tube survey are summarised in the Dormouse Survey Plan (Drawing JER6565-ECO-002). Survey record sheets are provided in Appendix 1.

#### **Dormouse**

- 3.3.2 A single dormouse nest was recorded during ad hoc checks of nest tubes during a site visit on 16<sup>th</sup> June 2015. The nest comprised a stash of fresh green hawthorn leaves and was found in Tube no 26 towards the centre of the central north-south hedgerow.
- 3.3.3 The nest was found again in July with no signs of fresh use or fresh leaves. By September the nest had disintegrated to a large degree with no fresh leaves present.

#### **Other Rodents**

- 3.3.4 A nest comprising largely dead brown leaves with a few dead green leaves was found in Tube no 36 During the September check. The dead green leaves were partly decomposed and not typical of freshly picked green leaves that have dried out in a nest tube. The nest was not present in July and it was considered that this was a wood mouse nest constructed of brown dead leaves with more recently fallen and partly decomposed green leaves.
- 3.3.5 A wood mouse nest with a wood mouse present was found in Tube no 35 at the southern end of the site during the September tube check.



## 3.4 Bat Activity Surveys

- 3.4.1 The results of the bat activity transects surveys are illustrated on the Bat Transect Survey Plans (Drawings JER65650-ECO-003 to Drawing JER6565-ECO-007), and summarised below.

### 29<sup>th</sup> May 2015 Dusk Survey (See Drawing JER6565-ECO-003)

#### *Transect*

- 3.4.2 Low levels of bat activity were detected in May with the vast majority of registrations being of common pipistrelle. The first registration was at 12 minutes after sunset with common pipistrelle observed flying south from the location of a large mature oak close to the southern site boundary. Given the time of the observation it was considered probable that the bat emerged from the oak tree. Regular passes by common pipistrelle were seen and recorded here every 1 to 4 minutes in the first 30 minutes after sunset (sunset at 21:15).
- 3.4.3 A brief (1 to 2 minutes) period of foraging by individual common pipistrelle was recorded in association with hedgerow H3c on the western site boundary. Occasional point registrations were made adjacent to hedgerows in the west of the site, continuing until the survey end at 23:20.
- 3.4.4 Two brief soprano pipistrelle passes were made on the western site boundary approximately 40 minutes after sunset, and one pass of an unidentified Myotis bat was made on the eastern boundary hedge at 10:49 (over 90 minutes after sunset).

#### *Static Remote Recording*

- 3.4.5 Static recording was undertaken at two locations for the duration of the transect survey between 21:30 and 23:20.

#### Location A

- 3.4.6 Individual common pipistrelle bats were recorded flying along the hedgerow H1 in the north of the site with 34 registrations of brief passes spread evenly between 21:30 and 22:32. A single noctule was also detected at 22:05. No activity was recorded after 22:32

#### Location B

- 3.4.7 More frequent activity was recorded in the central small field bounded by mature oak trees, with 81 registrations of common pipistrelle between 21:35 and 22:36. Multiple passes were recorded each minute in the first 30-40 minutes after sunset with at least 2 bats recorded on 3 occasions. Four soprano pipistrelle registrations and one brief noctule registration were made in this period.
- 3.4.8 Activity dropped dramatically after 22:36 with only 3 passes of common pipistrelle registered before the end of the survey at 23:20.

## **25th June 2015 Dusk Survey (See Drawing JER6565-ECO-004)**

### *Transect*

- 3.4.9 Low bat activity, mostly common pipistrelle, was detected in June. Localised foraging by individual bats was detected at the southern and northern end of the central hedgerow (H5a and H5c) with occasional foraging passes also along the woodland edge (Woodland Block W1) in the northeast of the site. Occasional passes were also registered along hedgerows in the west of the site and the eastern boundary hedge (H9).
- 3.4.10 Brief passes of soprano pipistrelle were registered twice along the central north-south hedgerow. A single pass each of noctule and unidentified myotis bats were also recorded.

### *Static / Remote recording*

#### Location A

- 3.4.11 The majority of bat activity recorded was of common pipistrelle (73 registrations) with several passes of individual bats every hour between 23:37 and 04:40. Calls were more frequent between 01:00 and 03:00, and 04:00 to 04:40.
- 3.4.12 Occasional soprano pipistrelle calls (5 registrations of individual bats) were registered between 00:39 and 03:31.
- 3.4.13 Eleven passes of serotine bat were registered between 23:45 and 01:42. Single calls of whiskered / Brandt's bat, and an unidentified myotis bat were also recorded.

#### Location B

- 3.4.14 Occasional passes of common pipistrelle (8 registrations) and soprano pipistrelle (20 registrations) were registered at intervals typically of 1-3 minutes (and up to 12 minutes).

#### Location C

- 3.4.15 Bat activity was recorded throughout the survey period between 21:49 and 04:43. Most of the activity was passes of single common pipistrelle bats (83 registrations). Activity increased gradually from 21:49 with approximately half of all registrations in a peak 2 hour period between 02:00 and 04:00 before tailing off suddenly.
- 3.4.16 Occasional soprano pipistrelle passes were recorded (22 registrations) between 22:16 and 03:36.
- 3.4.17 A single pass by a Brandt's/ whiskered bat was registered at 02:35.

## **6<sup>th</sup> August 2015 Dusk Survey (See Drawing JER6565-ECO-005)**

### *Transect*

- 3.4.18 Moderate levels of activity were registered in early August with activity spread through the survey period. Most activity centred on the woodland blocks and hedgerows towards the centre

of the site and comprised common pipistrelle with a small number of soprano pipistrelle commuting / foraging passes.

- 3.4.19 Five common pipistrelle bats were registered at 21:02 north of the small central field with at least 6 common pipistrelles also observed in the field at the same time. Frequent passes with some feeding were registered in these areas until 21:31 with 2 bats recorded on several occasions. The timing of the first registrations of multiple bats (12 minutes before sunset) and the observed flight patterns indicated probable emergence from mature oak trees to the north and south (in woodland blocks W5a and W5b)
- 3.4.20 Localised foraging by 2 common pipistrelles was registered on the western edge of the site between 21:09 and 21:15 and over the site entrance, with occasional foraging passes by a single bat between 21:57 and 23:00. Occasional common pipistrelle passes were also recorded alongside hedgerows in the west of the site
- 3.4.21 Soprano pipistrelles were recorded infrequently with brief foraging passes north of hedgerow H2 at 10 and 16 minutes past sunset. Single passes of soprano pipistrelle were also registered in the west and far southeast of the site.
- 3.4.22 *Static Remote Recording*
- 3.4.23 Static recording was undertaken at two locations for the duration of the transect survey between 21:05 and 22:45 (both locations) and extending overnight until dawn at Location B.

#### Location A

- 3.4.24 High levels of activity were recorded were recorded along the woodland edge on the southwest site boundary. Most of the activity was common pipistrelle (126 registrations) with frequent passes between 21:19 and 00:45 at intervals generally of less than 2 minutes, and frequently with multiple passes per minute. At least 2 bats were recorded on one occasion. Common pipistrelle activity dropped dramatically after 00.45 with only 2 further registrations at 02:30 and 05:03.
- 3.4.25 Twelve registrations of soprano pipistrelle were also made, the first 4 widely spaced between 21:35 and 02:04. Eight further registrations were made in quick succession between 04:45 and 04:47.
- 3.4.26 Other species registered rarely were unidentified Myotis (7 registrations), noctule (4 registrations) Natterer's Bat (3 registrations) and probably Leisler's bat (1 registration). Three very faint sonograms were produced which were considered to be bat calls but which could not be identified to species.

#### Location B

- 3.4.27 Bat activity at Location B was much less frequent than at Location A. Most activity was common pipistrelle with 36 registrations between 21:05 (7 minutes after sunset) and 04:43, with activity largely concentrated in the first 90 minutes or so after sunset. Individual Soprano pipistrelles

were registered 8 times through the survey period up until the last call at 05:02. Two registrations of unidentified *Myotis* bats were also made.

### **27<sup>th</sup> August 2015 Dusk Survey (See Drawing JER6565-ECO-006)**

#### *Transect*

- 3.4.28 Low levels of bat activity were recorded during the transect, with most activity being common pipistrelle. The first bat was recorded 12 minutes after sunset, with occasional commuting and foraging passes observed along the hedgerows and woodland edge in the west of the site. Occasional foraging passes (H4, H3c and H2) were recorded but no prolonged foraging activity was noted. More prolonged foraging of a single bat was recorded along the central hedgerow (H5b/H5c) at 21:54 – 21:59 (sunset at 20:10). Brief passes of common pipistrelle were registered along most of the hedgerows and woodland boundaries in the west although activity levels were low. Rare passes were registered over the southern and eastern site boundaries.
- 3.4.29 Brief passes of individual soprano pipistrelles were registered along the boundary hedgerows of the two western fields (Fields A and B) with one short period of foraging on the western site boundary (Hedgerow H3c). More prolonged foraging of a single bat was recorded along the central hedgerow (H5/H5c) at 21:54 – 21:59
- 3.4.30 A single short burst of noctule foraging was registered over the woodland in the centre of the site, with a brief pass also registered over the western field (Field A).
- 3.4.31 Rare brief passes of unidentified *Myotis* bats were detected on the western boundary with a single bat foraging continuously along hedgerow H4 between 20:40 and 20:42.

#### *Static / Remote recording*

##### Location A

- 3.4.32 Moderate levels of activity were recorded at Location A with 77 registrations in total. Common and soprano pipistrelle were registered frequently (34 and 38 registrations respectively) between 20:21 and 21:33. Individuals of both species were often recorded simultaneously with multiple bats of both species also recorded.
- 3.4.33 Overnight activity was very low with a single common pipistrelle at 22:56 and a single soprano pipistrelle at 02:02. Four brief passes of individual *Myotis* bats (species not confirmed) and a single pass by Natterer's bat were also recorded.

##### Location B

- 3.4.34 High levels of activity were recorded at Location B on the central hedgerow with 300 registrations between 20:22 and 05:58. The large majority were common and soprano pipistrelle with almost equal numbers of registrations (143 and 149 respectively). Very occasionally 2 soprano pipistrelles were registered simultaneously and frequent social calling was recorded. Both pipistrelle species were recorded throughout the survey period with activity particularly

heavy in the 3-4 hours after sunset between 20:22 and 0:38. Activity then dropped dramatically with only 17 pipistrelle passes (both species) between 01:39 and 05:58.

- 3.4.35 Whiskered / Brandt's bat were registered on 5 occasions in the evening (21:30 and 21:49) and early morning (01:13). These species produce very similar sonograms and a definitive identification was not made.
- 3.4.36 Single passes were also registered of Leisler's bat, Noctule and an unidentified Myotis bat.

### **29<sup>th</sup> September 2015 Dusk Survey (See Drawing JER6565-ECO-007)**

#### *Transect*

- 3.4.37 Generally low levels of bat activity were recorded across the site with peaks in activity at localised foraging areas. Most activity was of common pipistrelle, about a quarter of the calls were soprano pipistrelle, and a small proportion were of Myotis species and noctule.
- 3.4.38 Common pipistrelle activity was recorded first at 18:54 (1 minute before sunset) with a single bat flying from woodland on the southern edge of the site. Given the timing of the detection the bat was considered likely to have emerged from one of the mature oak trees in woodland block W5b. Frequent common pipistrelle activity was recorded over the central field bounded by mature oaks, in the first 20 -25 minutes after sunset. Two bats were registered several times with foraging focused around mature oak trees at the western end of the field in this period.
- 3.4.39 Prolonged common pipistrelle foraging was also recorded in the southern field (Field F), with sporadic foraging in the centre of the site along hedgerow H2 (1 bat), and west of hedgerow H5b (2 bats). In the east of the site sporadic foraging was also registered along hedgerow H7 (1 bat), H9 (2 bats) and around the northern end of the hardstanding area (2 bats). Spot registrations of common pipistrelle were made infrequently in the western and southern parts of the site.
- 3.4.40 Prolonged soprano pipistrelle foraging was recorded over the southern field between 20:22 and 20:26 with at least 2 bats present. Brief foraging passes by 2 bats were also registered west of the central hedgerow (hedgerow H5b); and by a single bat over the eastern boundary hedgerow (H9) and the northeast corner of the hard standing in the north of the site. Brief passes of soprano pipistrelle were registered rarely, and mostly along the woodland edge in the north of the site.
- 3.4.41 Prolonged foraging by whiskered / Brandt's bat was recorded over the southern field between 20:25 and 20:31 with occasional foraging passes also along the eastern site boundary hedge (H9) with rare brief passes recorded in the wider site.
- 3.4.42 A single pass by a Leisler's bat was registered at 19:42 (47 minutes after sunset) by the scrubby northern hedgerow (H1).
- 3.4.43 A single noctule was also observed at 18:55 flying over Field E in a south easterly direction.

### *Static / Remote Recording*

- 3.4.44 The static remote recorder placed midway along the central hedgerow (H5 a–c) recorded frequent brief bat passes through the survey period from 19:29 to 21:03. The majority of passes were individual common pipistrelle (43 registrations) and soprano pipistrelle (28 registrations) at typical intervals of 1-2 minutes. Social calls of both species were recorded rarely.
- 3.4.45 Three passes by an unidentified *Myotis* species bat, and a single Natterer's bat pass were also recorded.

## **3.5 GCN Presence / Absence**

- 3.5.1 The results of the HSI assessment and GCN presence absence surveys are presented in full in Appendix 2. In summary Pond 1 was assessed as being of very poor suitability (HSI score of 0.29) while Pond 2 was assessed as being of average suitability (HSI score of 0.61).
- 3.5.2 No great crested newts were detected during the presence / absence surveys. Common frog larvae were encountered in Pond 2.

## 4 Discussion

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### 4.1 Designated Sites

- 4.1.1 No impact pathways have been identified between the development site and habitats or species for which the Severn Estuary SAC, RAMSAR site and SPA is designated, The site is located over 2.2km from the development, and extensive development within the settlement of Penarth lies between the development site and the designation. The fields within the site are less of typical of inland habitats that would be utilised by overwintering birds associated with the SPA, for which arable fields in the wider local area and along the coastal fringe of the SPA to the southeast, proved more suitable habitat. Given its distance from the site and the and the suboptimal character of the on-site habitats for species associated with the SPA, impacts on the Severn Estuary Designation are considered unlikely.
- 4.1.2 The Cog Moors SSSI 1.1km to the south of the site, Cosmeston Lakes SSSI, 1,4km south-east of the site comprise habitats (unimproved species-rich grassland, and lakes respectively) to which no direct impact pathways have been identified from the proposed development. Indirect impacts are also considered very unlikely given the distance of the sites from the development location.
- 4.1.3 Given their distance from the site no direct impact pathways have been identified between the development and any other nearby nature conservation designations.

### 4.2 Habitats

#### Semi-improved Grassland

- 4.2.1 Semi-improved grassland throughout the site was species-poor being dominated by a small number of common grasses. While the forb assemblage varied locally (most notably at the eastern end of Field C, and Field F), forb diversity was low throughout. The abundance of perennial rye-grass and low species diversity throughout most of the site indicates past nutrient enrichment of the soils and the grassland has been classified as a poor example of semi-improved grassland with low botanical value.
- 4.2.2 Of most botanical interest was Field I, with a greater diversity of grasses including crested dog's-tail and sweet vernal-grass indicating the lowest levels of agricultural improvement within the site. Forb diversity was low with few species indicative of high quality semi-improved neutral grassland.
- 4.2.3 The grassland is not sufficiently species-rich or representative of un-improved or good semi-improved grassland to qualify as lowland meadow under the UKBAP priority habitat definition or under Section 42 of the NERC Act as a Habitat of Principal Importance for conservation in Wales.

- 4.2.4 Overall the grassland is considered to be of ecological value at the level of the site and its immediate surrounds.
- 4.2.5 The extent of habitat loss will dependent on the final masterplan but it is likely that the majority of the on-site grassland would be lost as a result of the development. The loss of poor quality semi-improved grassland would be significant at the level of the site and it surrounds.

### **Hedgerows / Scrub**

- 4.2.6 The majority of the hedgerows in the west of the site were species-poor with abundant or dominant blackthorn and bramble. Few other shrub species were present with hawthorn being most frequent. The dense scrub cover provides shelter for nesting birds and the hedgerows will function as wildlife corridors in the local landscape. However, the very dense cover and low diversity of woody species and ground flora significantly limits the wider biodiversity value of the hedgerows.
- 4.2.7 Within the west of the site Hedgerow H2 has core of hazel coppice creating more structural and woody species diversity. The central hedgerow (Hedgerows H5a-c) has a more varied structure incorporating woodland edge and several maturing trees of ash and sycamore. However the hedgerow is not species-rich and the sections not adjoining woodland are gappy.
- 4.2.8 The eastern boundary hedge (H9) is more typical of a good quality hedgerow being tall and densely structured with elements of spreading canopy and a moderate diversity of woody species. This hedgerow was not sufficiently species rich to be likely to qualify as Important under the 1997 Hedgerow regulations. However, along with the adjacent narrow lane and adjoining hedgerow to the east of the lane, it forms part of landscape feature which has greater ecological value than the hedgerow in isolation.
- 4.2.9 In summary the hedgerows are not examples of well structured and species-rich hedgerows, but they will function as wildlife corridors and they ecological value within the context of the site and its surrounds. The eastern boundary hedgerow on the side of the green lane is the most notable in terms of woody species diversity. .
- 4.2.10 Occasional mature pedunculate oaks within the hedgerows in the west of the site have particular ecological value in their own right as established ecological resources that cannot be easily replaced. These should be considered independently of the hedgerows within which they occur.
- 4.2.11 The extent of hedgerow loss will depend on the final masterplan layout. Given the poor character of the majority of the on-site hedgerows significant hedgerow loss would be significant at the level of the site and it surrounds.

### **Woodland**

- 4.2.12 The woodland blocks in the centre of the site (W5a and W5b) have the highest value of the onsite woodlands. Large mature oaks were present indicating the woodlands have been



established for some time. The scrub understorey was sparse but several ancient woodland ground flora species were present and the woodland blocks are possible remnants of more extensive woodland cover. The size of the blocks limits their value of as woodland but the mature pedunculate oak trees have high ecological value and could only be replaced in the every long term.

- 4.2.13 To the west, woodland block W4 also supports some large pedunculate oaks indicating it has been established some time. Secondary growth of ash and willow creates dense shade which limits ground flora although the presence of some ancient woodland ground flora species indicates the woodland has been established some time.
- 4.2.14 These areas of woodland are of value at the level of the site at least with large mature oak trees potentially of local interest. These woodland blocks are also likely to qualify as Lowland Mixed Deciduous Woodland under the UKBAP priority habitats description.
- 4.2.15 The even-aged plantation woodland in the north of the site (W1) was typical of landscaping with well-spaced, even-sized trees and impoverished ground flora with grasses encroaching from adjacent grassland. Immature woodland on the southern boundary (W2b) also had a low ground flora diversity with even aged trees indicating planting or possibly secondary growth woodland.
- 4.2.16 Both areas lacked structural heterogeneity and ground flora diversity associated with semi-natural woodland. These woodlands provide cover for fauna and create connectivity within the landscape and therefore have ecological value in the context of the site and its surrounding. However they do not have intrinsically high ecological value and could be replaced in the short to medium term.
- 4.2.17 In the southeast, the boundary woodland (W2a) had a more varied age structure with a canopy of oak and sparse scrub under storey; and several ground flora species more typical of semi-natural woodland. This is more likely to be secondary woodland and has more intrinsic ecological value with a structure that would be more difficult to replace.
- 4.2.18 The extent of woodland loss will depend on the final masterplan layout. The loss of even aged young woodland in the east of the site would be of significant at the level of the site only. The loss of mature woodland with mature oak trees would potentially be significant locally. These areas should be seen as priority areas of habitat retention within the site given the age of the mature trees which could not be replaced.

#### Waterbodies

- 4.2.19 The small pond with emergent vegetation is very small with a low diversity of emergent vegetation, was not of sufficient size or depth sufficient to be of significant value for aquatic fauna, although the feature adds a small degree of interest and habitat diversity to the site. This pond is considered to be value at the levels of the site only.
- 4.2.20 The woodland pond contains very poor quality water with no aquatic vegetation and dries almost completely in summer. This pond is considered to be of negligible ecological value.

- 4.2.21 This feature is considered to be of ecological value at the level of the site at most.
- 4.2.22 It is likely that the woodland pond would be retained on the site boundary. The small pond with emergent vegetation is likely to be lost with the grassland being developed. The loss of one or both ponds would be significant at the level of the site only.

## 4.3 Fauna

### Bats

- 4.3.1 All species of bats occurring in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended). In addition the following eight species are listed in Section 42 of the NERC act (2006) as species of principal importance for conservation in Wales: Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, lesser horseshoe bat *Rhinolophus hipposideros*, greater horseshoe bat *Hipposideros ferrumequinum*, barbastelle *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, and brown long-eared *Plecotus auritus* bats. All the above species are also UK BAP priority species.

### Roosting

- 4.3.2 The larger mature trees within woodland blocks W5a and W5b have the potential to possess features that could be used by roosting bats. Due their size and age the trees may possess more sheltered features of high value for roosting bats such as larger cavities or lifted bark.
- 4.3.3 Common pipistrelle bats were observed flying from the location of mature oak trees in woodland blocks W5a and W5b shortly after sunset during the 29<sup>th</sup> May and 8<sup>th</sup> August dusk transect surveys and it is likely that at least one large oak tree within each block is used by roosting common pipistrelles.
- 4.3.4 The larger oak trees within the hedgerows in Woodland Block W4, and in the hedgerows in the west of the site, and within the mature oak woodland adjoining the site to the south of the site also have the potential to possess features that could be used by roosting bats.
- 4.3.5 Full coverage of all trees with bat roost potential was beyond the scope of the activity transect surveys and the likely absence of roosts in trees across the site could not be confirmed. However, all the trees within woodland blocks W1, W2a and W2b were too young to be likely to possess features such as rot holes, lifting bark etc with bat roost potential.
- 4.3.6 The extent of woodland loss will depend on the final masterplan. Mature trees have value in their own right, but the impact of tree loss on roosting bats would depend on whether roost are present and the species effected. Based on the findings of the activity survey the removal of mature oak trees in woodland blocks W5a and W5b would have the potential to results in the loss of one or more roosts of small numbers of common pipistrelle bats with potential local significance.

- 4.3.7 The removal of other mature trees in Woodland Block W4 or in the hedgerows could result in the loss of potential roost features.
- 4.3.8 Specific assessment of trees for bat roost potential would be needed to fully assess the potential significance of impacts on roosting bats as a result of tree loss.

#### *Foraging and Commuting*

- 4.3.9 Bat activity transect surveys confirmed the hedgerows are used by at least 7 bat species. The majority of bat activity was of common pipistrelle (66% of Anabat recordings) and soprano pipistrelle (28% of recordings). Other species comprising very low proportions of recordings were Serotine (1%), Noctule (0.8%), whiskered / Brandt's bat (0.7%), Natterer's bat (0.5%) and Leisler's Bat (0.2%).
- 4.3.10 Unconfirmed Myotis species bats comprised 1.8% of recordings with very faint sonograms of unidentified bat species making up 0.2% of recordings.
- 4.3.11 Temporal variations in activity were observed over the survey period of May to September. Common pipistrelle activity was frequent throughout the surveys, while soprano pipistrelle activity was very low from May to early August but equalled or exceeded common pipistrelle in late August, and remained relatively high in September.
- 4.3.12 Serotine was recorded only in the June survey suggesting possible seasonal use of foraging areas close to the site. Other species were recorded infrequently on various surveys and no temporal patterns in activity were discernible.
- 4.3.13 Woodland blocks (W5a and W5b) and hedgerow (H6) in the centre of the site are considered to be key areas of important for bats within the site. Prolonged common pipistrelle activity was recorded on all surveys with common pipistrelle considered likely to have emerged from roosts in mature oak trees in the woodland blocks.
- 4.3.14 The eastern boundary hedge (H9), and the eastern side of the central hedgerow (H5a-c) are also considered important foraging and commuting routes within the context of the site. Frequent passes foraging activity of both pipistrelle species with occasional Myotis foraging were recorded here on multiple survey dates. The southern and northern ends of the central hedgerow (H5a-c) are also important foraging areas for pipistrelle bats in the context of the site.
- 4.3.15 In some areas high levels of activity were recorded on some but not all surveys reflecting that bat activity may vary through the season with the availability of different prey types and movement between roosts. Hedgerows H6 and H5c where they adjoin Field F were subject to high levels of activity in September by both pipistrelle species and Myotis bats suggesting that this may be a seasonally important foraging area.
- 4.3.16 Activity levels along the southern boundary of Field A were low during the transect surveys, but overnight recording in early August detected significant common pipistrelle activity with at least 5 other species recorded rarely including Leisler's bat. The boundary with mature oak woodland is considered to have high value as bat foraging habitat. This area may be a useful

foraging area after the initial emergence period for common pipistrelle emerging from roosts in tree in woodland blocks 5a and 5b. The number of species recorded suggests possible wider value as a commuting route for less widespread species in the local area.

- 4.3.17 Other areas with sporadic activity were Woodland Block W4 (brief pipistrelle foraging in early August), Hedgerow H4 (myotis sp. passes in late August) and hedgerows H2 and H7 (individual common pipistrelle foraging in September). These areas are not considered to be high value features.
- 4.3.18 Bat activity along the northern and southern boundaries east of the central hedge line, and along hedgerows H1, H3a, and H3b was low, largely comprising brief passes of pipistrelle species. These areas are considered to be of low value for foraging / commuting bats.
- 4.3.19 No significant bat activity was detected over larger open areas of grassland (Fields A to D and Fields G to J) and these are considered to be of very low importance for foraging /commuting bats.
- 4.3.20 The extent of loss or indirect impacts on bat foraging areas and flight lines will depend on the final masterplan. Key areas used by large numbers of bats or used consistently through the active period as foraging areas / flight lines will potentially be of local importance and the loss of these areas either through direct loss of woodland edge / hedgerows, or through indirect impacts such as artificial lighting would be significant locally. Specifically these areas are Woodland Blocks 3, 5a and 5b, Field E, Hedgerows H5a to c and H9.
- 4.3.21 Loss or indirect impacts on areas used more sporadically or by high numbers of species may have potential to be of local significance as these habitats are likely to be important resources at certain times through the active season. These areas are the southern boundary of Field A, and Hedgerows H6 and H5c where they adjoin Field F.
- 4.3.22 Loss or change in context of low value bat foraging / commuting features would result in limited impacts on very small numbers of common and widespread species and is very unlikely to significantly impact on the local conservation status of these species. Such impacts would be significant at the level of the site only.

### **Dormouse**

- 4.3.23 The presence of a dormouse nest in the central hedgerow indicates that the hedgerow is utilised by dormice. Given the connectivity of the hedgerows and woodland, dormouse should be assumed to be utilising all suitable habitat throughout the site.
- 4.3.24 Nest tube surveys are not intended to provide an assessment of population numbers, but the occurrence of a single nest through the summer of 2015, despite the appropriate survey method and effort, suggests that dormouse are active within the site in very low numbers. This is supported by the almost absence of signs of other rodent activity within the nest tubes (such as wood mouse). Wood mouse in particular has less specific habitat requirements than dormouse and typically lives at much higher densities. The survey findings would suggest the on-site

hedgerows and woodland blocks have limited value for dormouse and other small rodents. The species-poor character of the majority of the hedgerows would potentially explain this with dense blackthorn thicket providing a limited autumn food resource and probably only supporting a poor assemblage of invertebrates.

- 4.3.25 It is unlikely that the on-site hedgerows and woodland would be able to support a self-sustaining dormouse population given their limited quality and extent. Extensive broadleaved woodland providing more suitable dormouse habitat adjoins the site to the south, and the dormice utilising the site are therefore likely to belong to a population distributed throughout suitable habitats in the wider local area including the on-site woodland and hedgerows.
- 4.3.26 The extent to which hedgerows and woodland will be removed will be confirmed in the final masterplan. Given the use of the hedgerows and woodland by dormouse, removal of significant lengths of hedgerows or extents of woodland will have the potential to harm individual animals and potentially to impact on dormouse use of the site through reduction in extent of suitable habitat or severance of movement corridors.
- 4.3.27 It is likely that a European Protected Species (EPS) mitigation licence would need to be obtained to allow the development to proceed lawfully. The licence would need to be obtained in advance of any construction related activity which could impact on dormice or their habitats.

### **Badger**

- 4.3.28 Badger setts are protected from disturbance and damage or obstruction of access under the Protection of Badger Act 1992.
- 4.3.29 No setts were identified within or adjacent to the site, and no evidence of badger activity was recorded during the ecological appraisal site walkover or subsequent site visits for protected species surveys.
- 4.3.30 Badger are likely to be resident in the wider rural area. The off-site woodland to the south would be expected to provide suitable locations where setts could be established. The absence of field signs strongly suggests the site does not currently form part of a badger social group territory.
- 4.3.31 In the absence of setts or any noticeable badger activity within the site, the development will not result in impacts on badger.

### **Birds**

#### *Breeding Assemblage*

- 4.3.32 All nesting birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

- 4.3.33 In addition, some species including kingfisher are protected under Schedule 1 of the WCA Act 1981 which confers a higher level of protection to nest sites.
- 4.3.34 Ground nesting birds can utilise large areas of open ground with limited cover. Species such as skylark are particularly associated with arable fields and short but tussocky grassland. The grassland management regime reduces habitat quality and the likelihood of nesting.
- 4.3.35 The hedgerows would be expected to be used by a range of bird species typically associated with arable landscapes. Dense bramble and blackthorn cover provides good nesting habitat for some species such as dunnoek, wren and bullfinch. Cavity features on the larger trees could be used by other nesting birds, such as tit species, treecreeper and nuthatch.
- 4.3.36 Depending on the extent of loss, removal of woodland and hedgerows, and the change in the context of retained habitat there will be a reduction of the extent of suitable bird nesting habitat. Ground nesting habitat would be lost and the site would be potentially less likely to support species of conservation concern less typically associated with gardens and sub-urban areas such as bullfinch.

### Reptiles

- 4.3.37 All native British reptiles are protected under the WCA 1981 (as amended). The four most widespread reptile species (grass snake, slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara* and adder *Vipera berus*) are protected from intentional killing or injury.
- 4.3.38 Intensively managed agricultural landscapes are not typically associated with good reptile populations. The semi-improved grassland within the site is uniform in structure and regularly cut which will limit its value and the likelihood of reptiles being present. The value of these areas is also limited by the absence of more substantial shelter where reptiles could take refuge in cool / wet weather, or hibernate.
- 4.3.39 Field boundaries comprising bramble scrub grading into grassland, and small clearings within the central woodland blocks provide a mix of cover and open herbaceous vegetation that could be used by slow-worm.
- 4.3.40 Overall the site is not considered to be of high value for reptiles given the uniform and frequently cut character of the grassland. The absence of slow-worm within the grassland field margins could not be ruled out.
- 4.3.41 The development of the site will likely result in the loss of most of the grassland within the site. Depending on the final masterplan layout there is the potential for loss of hedgerows and field margins with encroachment into the woodland edge habitat with the risk of killing or injuring slow-worm.

## **Amphibians**

- 4.3.42 Great crested newts *Triturus cristatus* are fully protected under The Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2010. Great crested newt is a UK BAP species.
- 4.3.43 No great crested newts were encountered during presence absence surveys of the on-site ponds, and no offsite ponds were identified within 500m of the site. The development will therefore not result in impacts on great crested newts.

## **Invertebrates**

- 4.3.44 The semi-improved grassland is unlikely to support a diverse assemblage of invertebrates due to low forb diversity and regularly cutting creating a structurally uniform sward. The hedgerows will also have limited value for invertebrates due to the lack of species-diversity in the scrub layer and ground flora. Bramble which is present throughout the hedgerows will support a reasonable assemblage of common invertebrates. The mature oak trees and associated woodland blocks with bramble and some dead wood are of higher value for invertebrates.
- 4.3.45 The range of invertebrate habitats is consistent with the surrounding area and the assemblage of species would be expected to have conservation interest in the context of the site or local area.
- 4.3.46 Loss of the grassland and hedgerows and woodland habitats would be expected to reduce the abundance and diversity of invertebrates that the site can support. Given the absence of high value invertebrate habitats with the site, the impacts on invertebrates is likely to be significant at the level of the site only.

## 5 Conclusion

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### 5.1 Designated Sites

- 5.1.1 No impact pathways have been identified between the development site and nearby nature conservation designations.

### 5.2 Habitats

#### Semi-improved Grassland

- 5.2.1 Semi-improved grassland throughout the site was species-poor and considered to be of ecological value at the level of the site. The grassland would not qualify as a UKBAP priority habitat or Habitat of Principal Importance for conservation in Wales.
- 5.2.2 The loss of poor quality semi-improved grassland would be significant at the level of the site.

#### Hedgerows / Scrub

- 5.2.3 The majority of the hedgerows were species-poor with limited biodiversity value of the hedgerows. None of the hedgerows are likely to qualify as Important under the 1997 Hedgerow regulations.
- 5.2.4 Hedgerow H2, Hedgerows H5a-c and Hedgerow 9 are considered to be of most interest in the context of the site but are not of high ecological value.
- 5.2.5 Occasional mature pedunculate oaks within the hedgerows in the west of the site have particular ecological value independently of the hedgerows within which they occur.
- 5.2.6 Given the poor character of the majority of the on-site hedgerows significant hedgerow loss would be significant at the level of the site and its surrounds.

#### Woodland

- 5.2.7 The woodland blocks W5a and W5b and W4 have the highest value of the on-site woodlands. Due to the presence of large mature oak trees. These woodland blocks are likely to qualify as the UKBAP priority habitat 'Lowland mixed deciduous woodland'
- 5.2.8 Woodland blocks W1, W2a, W2b and W3 are of lower ecological value.
- 5.2.9 Woodland loss as part of the development would be significant at the level of the site at least with the loss of large mature oak trees potentially of local interest.

#### Waterbodies

- 5.2.10 The small pond with emergent vegetation is pond has very little floral or faunal interest and is considered to be of value at the levels of the site only. The woodland pond is considered to be of negligible ecological value.



5.2.11 The loss of one or both ponds would be significant at the level of the site only

## 5.3 Fauna

### Bats

#### *Roosting*

- 5.3.1 One or more large mature trees within woodland blocks W5a and W5b is likely to support a common pipistrelle roost.
- 5.3.2 The larger oak trees in Woodland Block W4, in the hedgerows in the west of the site, and in the woodland to the south of the site also have the potential to possess features that could be used by roosting bats.
- 5.3.3 Trees within woodland blocks W1 and W2a are unlikely to be of value for roosting bats.
- 5.3.4 Removal of mature oak trees in woodland blocks W5a and W5b would likely result in the loss of one or more common pipistrelle roost of potentially potential local significance.
- 5.3.5 The removal of other mature trees in Woodland Block W4 or in the hedgerows could result in the loss of potential roost features.

#### *Foraging and Commuting*

- 5.3.6 The hedgerows and woodland are used by at least 7 bat species, mostly common pipistrelle and soprano pipistrelle with very small numbers of serotine, noctule, whiskered / Brandt's bat, Natterer's bat, Leisler's Bat. There were also records of unconfirmed Myotis sp and unidentified bat species.
- 5.3.7 Key area of bat activity were:

#### **High Value Areas**

- Woodland blocks W3, W5a and W5b and hedgerow H6 – foraging and flight lines close to roosts. Hedgerow H9 and the eastern side of the Hedgerows H5a-c - foraging and commuting routes within the context of the site.
- The southern and northern ends of the Hedgerows H5a-c - foraging areas for pipistrelle bats in the context of the site.
- Hedgerows H6 and H5c – key pipistrelle and myotis foraging areas in September
- Southern boundary of Field A – potential important flight line (at least 6 species recorded)

#### **Low Value Areas with Sporadic Activity**

- Woodland Block W4 (brief pipistrelle foraging in early August),
  - Hedgerow H4 (Myotis sp. passes in late August)
  - Hedgerows H2 and H7 (individual common pipistrelle foraging in September).
- 5.3.8 Loss or indirect impacts on high value areas would potentially be of local significance.

- 5.3.9 Loss or change in context of low value bat areas would be significant at the level of the site only.

#### **Dormouse**

- 5.3.10 The central hedgerow is utilised by dormice and this species assumed to be utilising woodland and hedgerows throughout the site.
- 5.3.11 Dormouse are considered likely to be active in very low numbers within the site.
- 5.3.12 Dormice utilising the site are likely to belong to a population distributed throughout suitable habitats in the wider local area including the on-site woodland and hedgerows.
- 5.3.13 It is likely that a European Protected Species (EPS) mitigation licence would need to be obtained to allow the development to proceed lawfully.

#### **Badger**

- 5.3.14 The absence of setts or badger field signs strongly suggests the site does not currently form part of a badger social group territory and the development will not result in impacts on badger.

#### **Birds**

##### *Breeding Assemblage*

- 5.3.15 Ground nesting birds could utilise on-site habitats.
- 5.3.16 The hedgerows would be expected to be used by a range of bird species typically associated with arable landscapes. Features on the larger trees would be used by cavity nesting species
- 5.3.17 Development of the site would result in the loss of ground nesting habitat and a reduction in the extent of other nesting habitats and the suitability of the site for species less typically associated with gardens and sub-urban areas.

#### **Reptiles**

- 5.3.18 Overall the site is not considered to be of high value for reptiles given the uniform and frequently cut character of the grassland. The absence of slow worm within the grassland field margins could not be ruled out.
- 5.3.19 There is the potential risk of killing or injuring slow worm as a result of hedgerow loss and encroachment into field margins.

#### **Amphibians**

- 5.3.20 No great crested newts were encountered during presence absence surveys of the on-site ponds, and no offsite ponds were identified within 500m of the site. The development will therefore not result in impacts on great crested newts.

## **Invertebrates**

- 5.3.21 The semi-improved grassland and hedgerows are unlikely to support a diverse assemblages of invertebrates. Mature oak trees and associated woodland blocks are of higher value for invertebrates in the context of the site.
- 5.3.22 Potential impacts on invertebrates are likely to be significant at the level of the site at most.

## 6 Recommendations

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### 6.1 Habitat Retention and Protection

- 6.1.1 In order to be consistent with planning policy, the site layout will need to demonstrate that the scheme does not result in a net loss of biodiversity. In this context, opportunities should be sought to retain key habitats of highest ecological value.
- 6.1.2 Where at all possible hedgerows and woodland should be retained, with the site layout designed to minimise indirect impacts (such as artificial light spill from street lighting etc) on retained habitats.
- 6.1.3 All hedgerows classify as UK BAP priority habitat and hedgerow retention should be maximised. Some hedgerow loss is likely to be unavoidable and retention should focus on the higher value hedgerows, specifically hedgerows H2 (western end), H5a-c H9 which are the most species-diverse and structurally diverse hedgerows within the site. Mature pedunculate oak trees in Hedgerows H2 and H4 should also be retained
- 6.1.4 Woodland blocks W5a and W5b are a UK BAP habitat. These woodlands along with woodland block W4 contain large oak trees and should be retained.
- 6.1.5 To protect the health of the retained trees, protection measures should be implemented in the root protection areas to ensure retained hedgerows and trees are protected in accordance with BS 5837:2012 "Trees in Relation to Design, Demolition and Construction – Recommendations".

### 6.2 Habitat Enhancement and Creation

- 6.2.1 To minimise impacts and avoid net loss of biodiversity, opportunities for habitat creation and enhancement of retained habitats should be incorporated into the development. Some level of hedgerows loss is likely to be necessary to create a viable layout. Given the low species diversity of many of the hedgerows, enhancement and improved management of retained hedgerows would be a relevant option for the site. Selective thinning and planting up of blackthorn scrub with a diverse mix of native shrubs would enhance the species diversity of retained hedgerows.
- 6.2.2 Appropriate management with infrequent cutting retained hedgerows with alternative sides cut in different years would promote better structure and would promote hedgerows with better diversity of woody species and with higher value for fauna by promoting flowering and fruiting of hedgerow shrubs.
- 6.2.3 Other relevant options would include native wildflower seeding along hedge bases, buffer strips adjoining retained hedgerows, and the use of native shrub species in new landscape planting.
- 6.2.4 Water attenuation is likely to form part of the development. Given the loss of a very small pond, any water attenuation features in the final layout will provide opportunities to create ecologically

valuable aquatic and margins habitats. Such features should be designed to maximise biodiversity gains using elements including, aquatic macrophyte planting, marginal vegetation planting / sowing, associated tree / shrub planting, and management of newly created habitats.

### 6.3 Protected Species

6.3.1 Specific measures will be needed to avoid potential impact on protected species, or to mitigate impacts where they are unavoidable.

#### Bats

6.3.2 Key areas of bat activity and mature trees with the potential to contain bat roost should be retained. Specifically these are:

- Woodland blocks W5a and W5b – mature trees likely to support a common pipistrelle roost.
- Woodland blocks W3, W5a and W5b and hedgerow H6 – bat foraging and flight lines close to roosts.
- Hedgerow H9 and Hedgerows H5a-c – bat foraging and commuting routes
- The southern and northern ends of the hedgerow H5a-c – pipistrelle bat foraging areas
- Hedgerows H6 and H5c – key pipistrelle and myotis foraging areas in September
- Southern boundary of Field A – potential important flight line (at least 6 species recorded)
- Woodland Block W4 (brief pipistrelle foraging in early August),
- Hedgerow H4 (myotis sp. passes in late August)
- Hedgerows H2 and H7 (individual common pipistrelle foraging in September).

6.3.3 Trees in woodland Blocks W5a and W5b with suspected bats roosts would need to be retained and protected with sufficient stand off to ensure that there will be no direct or indirect impact on bat roosts either during construction or occupation of the completed development.

6.3.4 Any works resulting in impacts on bat roosts would require an NRW EPS mitigation licence to be obtained in advance for the work to be lawful. Emergence surveys of the roosts undertaken during the period of May to August inclusive, would be required to provide sufficient information to characterise the roosts and assess impacts for the EPS mitigation licence.

6.3.5 It is recommended that mature trees within the site are inspected to confirm the locations of suspected bat roosts, and to identify potential roost features in other trees and assess their likelihood to be used by roosting bats.

6.3.6 A daytime tree inspection should be undertaken by a skilled tree climber who also holds an NRW bat survey licence. The tree climber would inspect all larger trees from the ground to identify potential features such as rot holes, loose bark, callus rolls, cavities etc that could be used by roosting bats. The tree climber would also be able to inspect the tree at height for features not visible from the ground. Any features identified would be closely inspected for signs of bats use. When features can be fully inspected and no signs of bats use are found the features the absence of a roost can normally be confirmed unless the feature is of particularly

high quality. Where absence cannot be confirmed or where features of very high quality are found. Additional dusk / dawn surveys are likely to be needed to confirm roost absence.

### **Dormouse**

6.3.7 Given the presence of dormice in the hedgerows and woodland on-site, any significant removal of these habitats will require an NRW EPS mitigation licence to be obtained prior to work commencing, in order for the work to be lawful. The licence would need to be informed by the results of the nest tube survey would require appropriate mitigation to be implemented to ensure that individual animals are not harmed and that the favourable conservation status of the population is not adversely affected. A detailed method statement would be prepared and submitted as part of the licence application. Once issued the licence would need to be undertaken in accordance with the details of the method statement which would become a legally binding condition of the licence. The method statement would broadly include the following elements:

- Demonstration of no net loss of suitable dormouse habitat through a combination of replacement of habitat loss, and enhancement of retained habitat;
- Maintaining connectivity for dormouse through retained habitat and into off-site habitat;
- Controlled removal of dormouse habitat (if required) through appropriate timing and ecological supervision to avoid harm to animals;
- Protection of retained habitats through stand-offs, fencing, avoidance of light spill etc to minimise post development impacts;
- Enhancement of retained habitats through appropriate native shrub planting, provision of nest boxes etc;
- Management of retained habitats to promote enhancement such as low intensity hedgerow cutting with alternate sides cut in rotation.
- Post construction survey and monitoring

### **Birds**

6.3.8 Removal of trees hedgerows or scrub, and clearance of open areas where ground nesting birds may be present, should be undertaken outside of the nesting bird season (March to August inclusive). If this is not possible then as a precaution an ecologist should undertake a nesting bird check of these area to confirm the absence of active nests immediately prior to clearance or removal. In the unlikely event that a nest is found, it would need to remain undisturbed until any young birds have fledged.

### **Reptiles**

6.3.9 Depending on the final Masterplan layout, it may be necessary to mitigate for potential impacts on reptiles.

- 6.3.10 Retention of the majority of hedgerows and woodland would reduce the level of impacts and potentially avoid the need to undertake presence / absence surveys.
- 6.3.11 For impacts on field margins / woodland edged, slow worm should be assumed to be present at least in small numbers and appropriate mitigation implemented to avoid injury or killing of animals. Depending on the extent of habitat loss, supervised and systematic habitat removal during the active period (March to September) and in mild dry conditions may be sufficient to avoid harm to individual animals. If more extensive habitat loss is proposed with the loss of most of the field margins / woodland edge habitats, the use of reptile fencing and trapping is likely to be required to remove animals from the working areas in advance of clearance. Reptile fencing would be installed around areas of suitable habitats. Artificial refuges (1m x 0.5m rectangles heavy duty roofing felt) would be placed in the fenced area and checked over a period of several days or weeks. Any reptiles found would be removed to suitable adjacent habitat off-site. Once reptiles are removed, degradation of habitats within the site would deter animals returning. Degraded habitats would be maintained in an unsuitable condition during construction.

## References

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# Drawings

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- Legend**
- Site Boundary
  - A Field Label
  - H1 Hedgerow Label
  - W1 Woodland Label
  - Amenity Grassland
  - Bramble Thicket
  - Dense Scrub
  - Emergent Vegetation
  - Hardstanding
  - Intact Species-poor Hedgerows
  - Plantation Broad-leaved Woodland
  - Semi-natural Broadleaved Woodland
  - SI Species-poor Semi-improved Grassland
  - ++++ Fence
  - Intact Species-poor Hedgerow
  - Intact Species-rich Hedgerow
  - Broadleaved Tree

| Rev | Description | Date | Initial | Checked |
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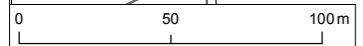


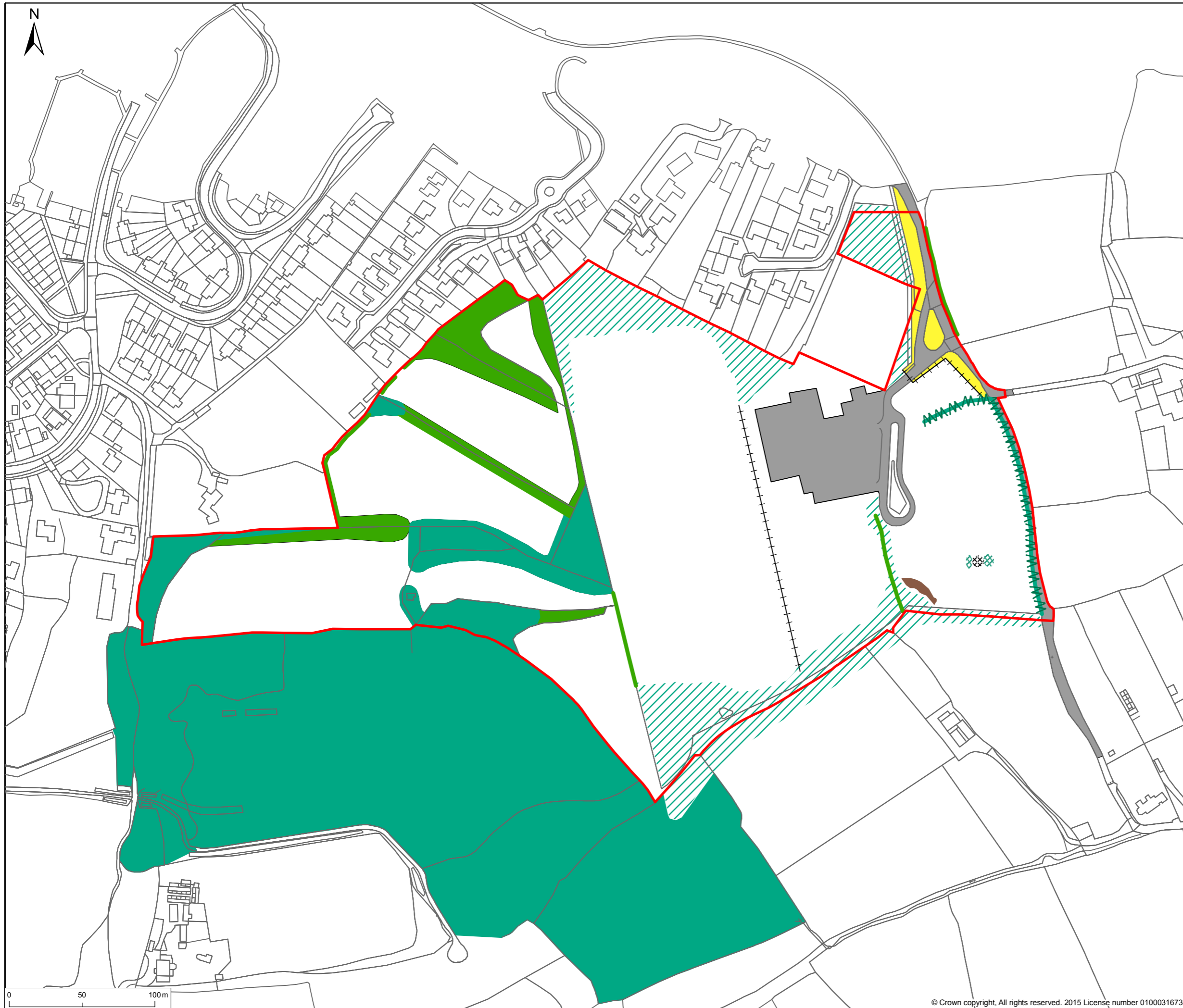
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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **HABITATS MAP**

|                        |                |               |
|------------------------|----------------|---------------|
| Status                 | Drawn By       | PM/Checked By |
| <b>PRELIMINARY</b>     | <b>JGB</b>     | <b>TO</b>     |
| Job Ref                | Scale @ A3     | Date Created  |
| <b>JER6565</b>         | <b>1:2,500</b> | <b>JAN 16</b> |
| Drawing Number         |                | Rev           |
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**Legend**

- Site Boundary
- Nest Tube Locations
- Nest Tube with Dormouse Nest & Data - Nest Was First Recorded
- Nest Tube with Other Rodent Nest (Not Dormouse) & Data - Nest Was First Recorded

| Rev | Description | Date | Initial | Checked |
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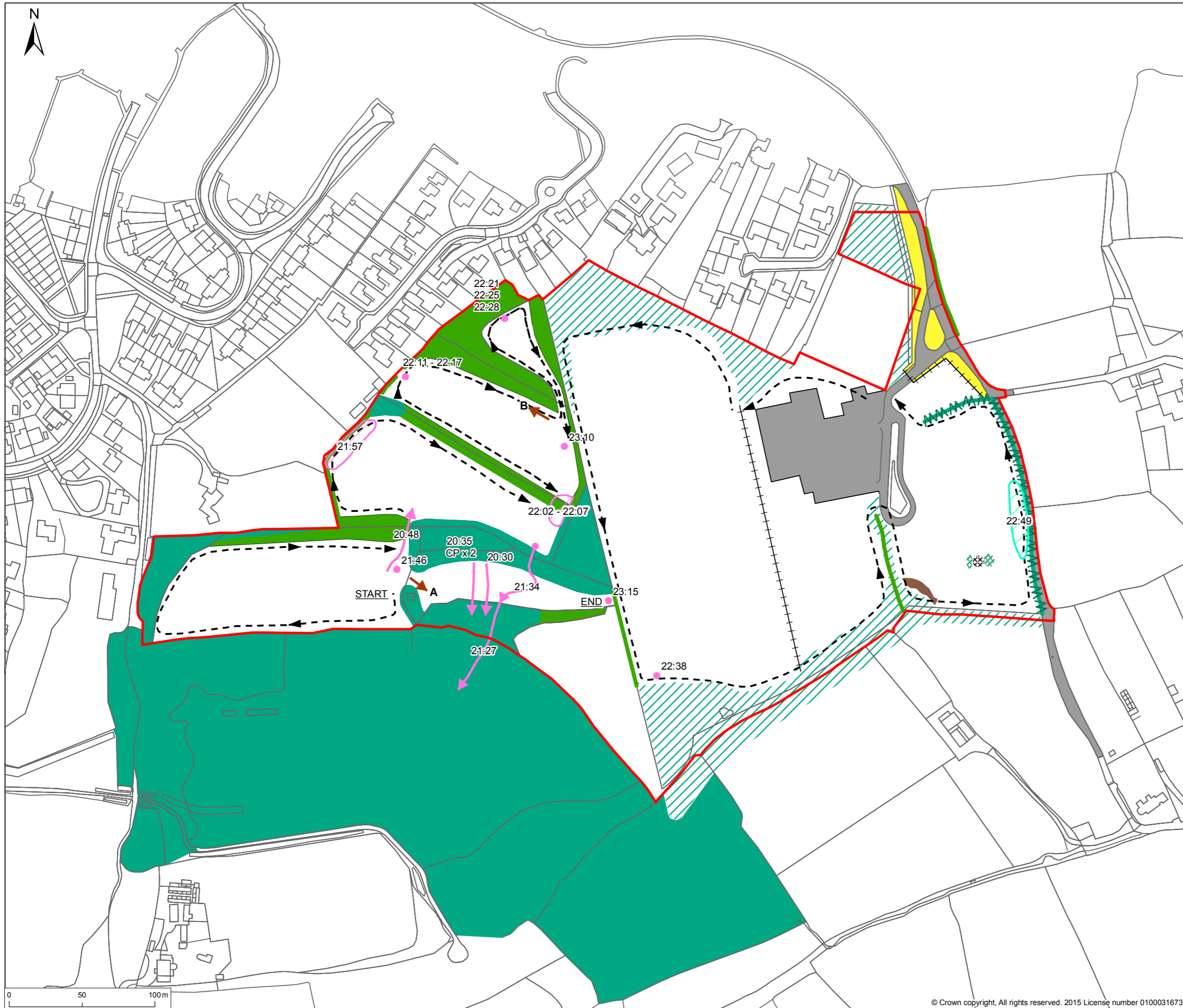


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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **DORMOUSE SURVEY PLAN**

|                        |            |               |
|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
| Job Ref                | Scale @ A3 | Date Created  |
| JER6565                | 1:2,500    | JAN 16        |
| Drawing Number         |            | Rev           |
| <b>JER6565-ECO-002</b> |            | -             |

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- Legend**
- Site Boundary
  - Bat Foraging**
  - Common Pipistrelle
  - Myotis Species
  - Static Detector**
  - ➔ Static Detector Location & Orientation
  - A 21:37 - 23:20
  - B 21:30 - 23:20
  - Bat Observed Flight Line**
  - ➔ Common Pipistrelle
  - Bat Point Registration**
  - Common Pipistrelle (Cp)
  - Bat Transect Route**
  - - ➔ Bat Transect Route (Start/End)

**NOTE**  
 Sunset - 21:16

| Rev | Description | Date | Initial | Checked |
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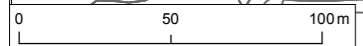


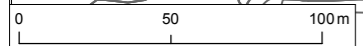
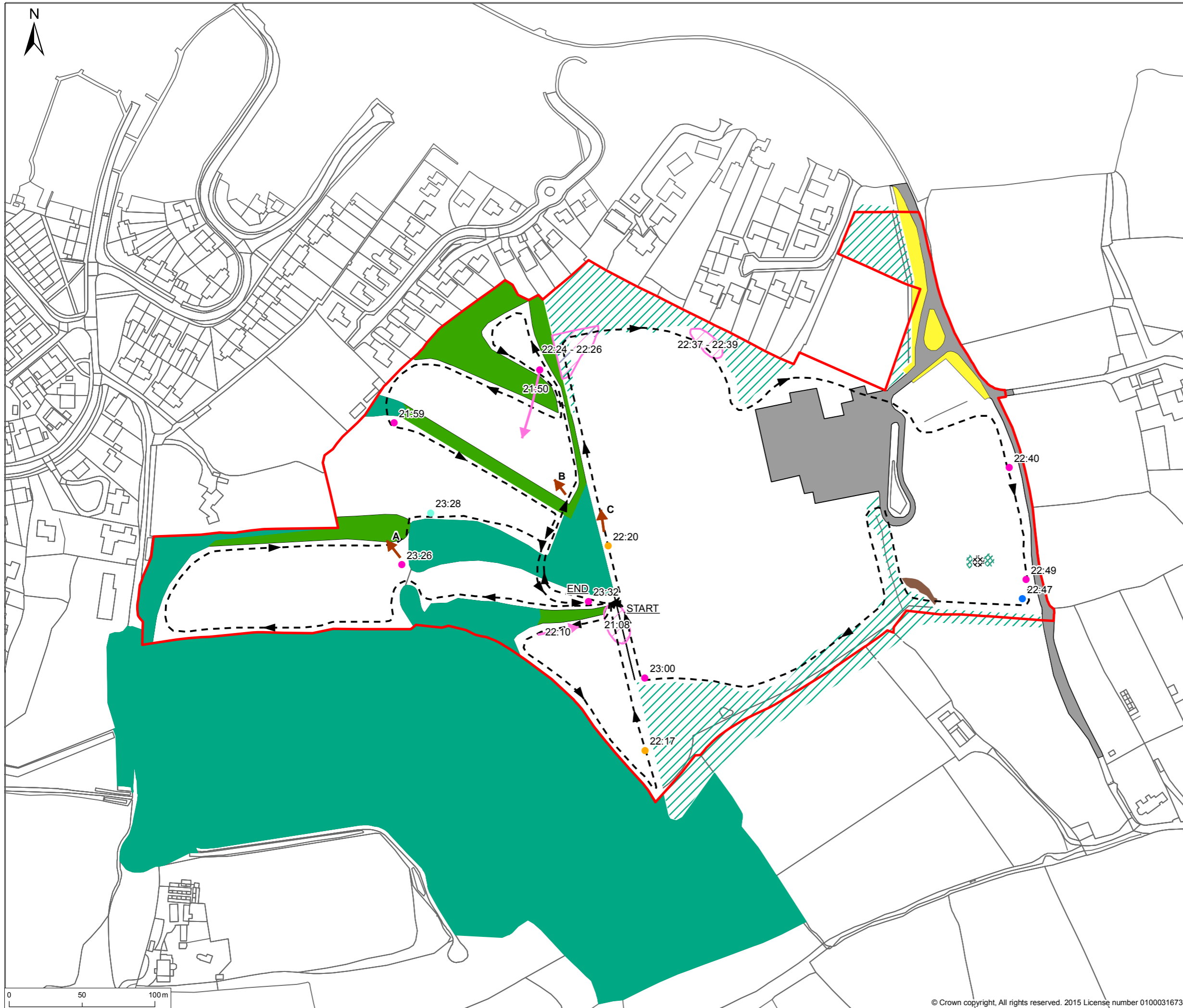
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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **BAT TRANSECT PLAN 29TH MAY 2015**

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|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
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- Legend**
- Site Boundary
  - Bat Foraging**
  - Common Pipistrelle
  - Static Detector**
  - Static Detector Location & Orientation
  - A** 23:25 - Dawn
  - B** 21:49 - 22:58
  - C** 23:27 - Dawn
  - Bat Observed Flight Line**
  - Common Pipistrelle
  - Bat Point Migration**
  - Common Pipistrelle (Cp)
  - Soprano Pipistrelle (Sp)
  - Myotis Species (My)
  - Noctule (No)

**NOTE**  
 Sunset - 21:34

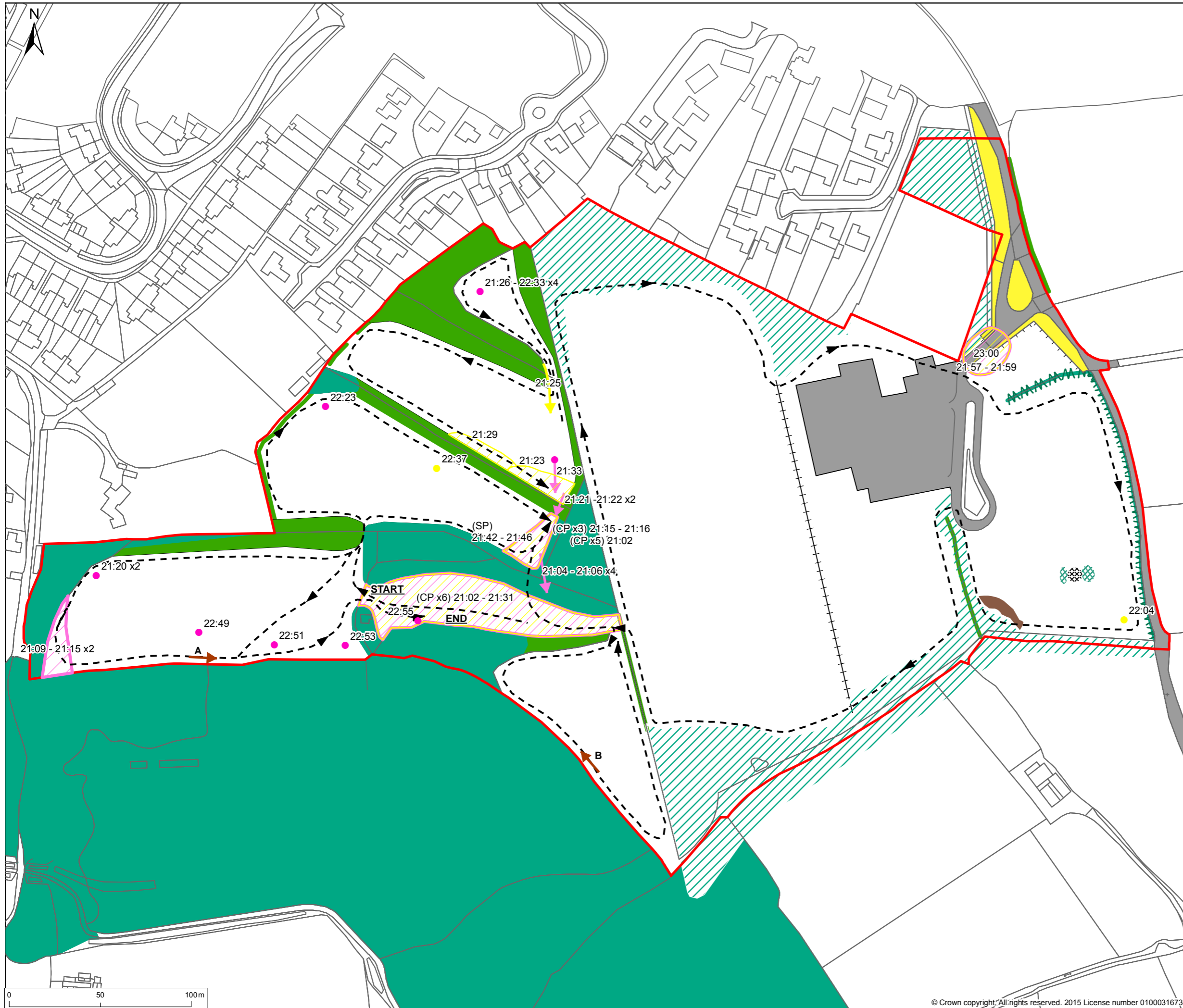
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|-----|-------------|------|---------|---------|
|     |             |      |         |         |

  
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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **BAT TRANSECT PLAN 25TH JUNE 2015**

|                        |            |               |
|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
| Job Ref                | Scale @ A3 | Date Created  |
| JER6565                | 1:2,500    | JAN 16        |
| Drawing Number         |            | Rev           |
| <b>JER6565-ECO-004</b> |            | -             |

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- Legend**
- Site Boundary
  - Bat Foraging**
  - Common Pipistrelle
  - Soprano Pipistrelle
  - Static Detector**
  - Static Detector Location & Orientation
  - A** Overnight
  - B** Overnight
  - Bat Point Migration**
  - Common Pipistrelle (Cp)
  - Soprano Pipistrelle (Sp)
  - Bat Transect Route**
  - Bat Transect Route (Start/End)

**NOTE**  
 Sunset - 21:13

| Rev | Description | Date | Initial | Checked |
|-----|-------------|------|---------|---------|
|     |             |      |         |         |



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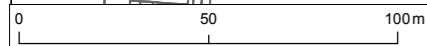
Client **BARRATT HOMES SOUTH WALES**

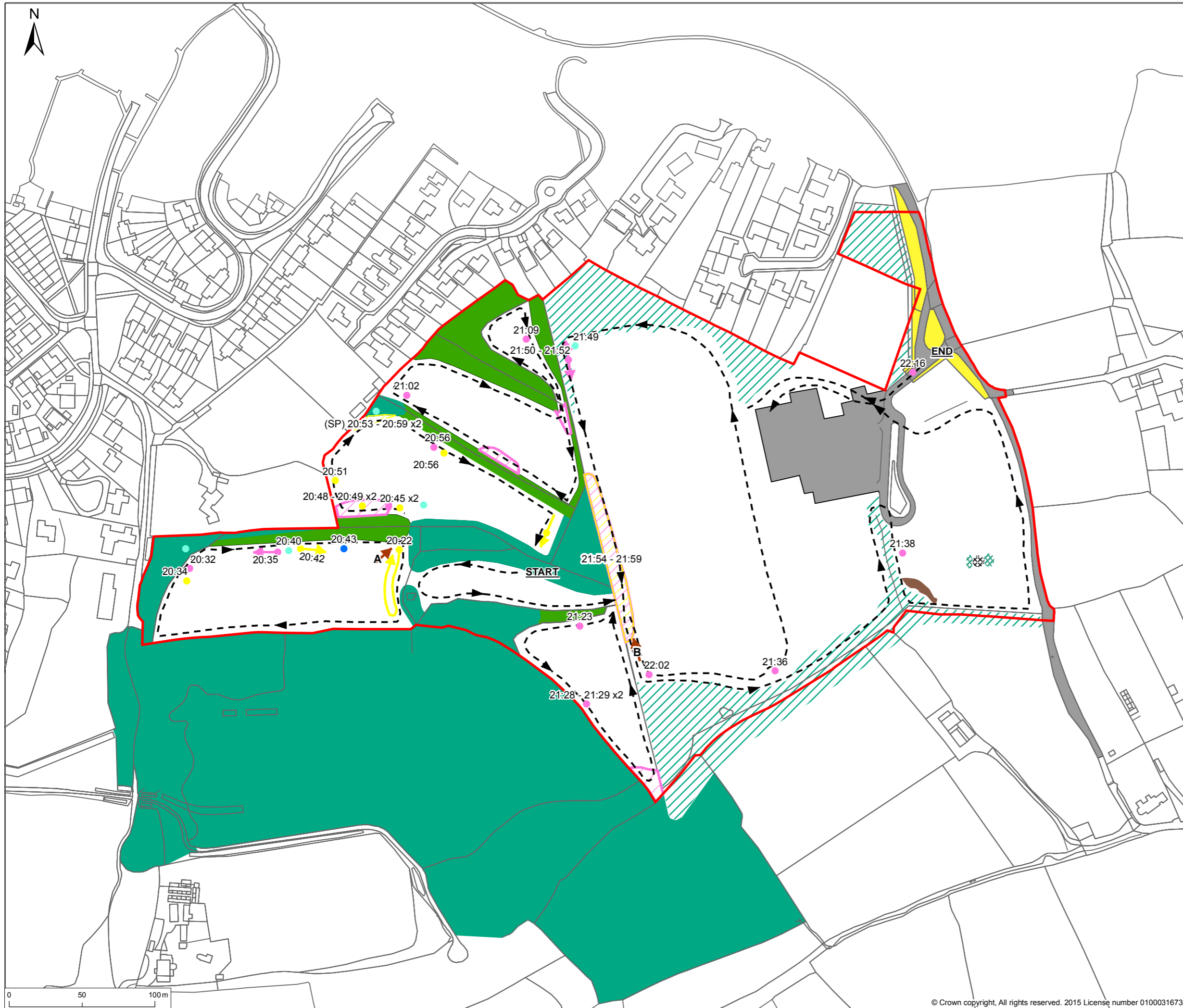
Project **LOWER ST CYRES SCHOOL**

Title **BAT TRANSECT PLAN 6TH AUGUST 2015**

|                        |            |               |
|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
| Job Ref                | Scale @ A3 | Date Created  |
| JER6565                | 1:2,000    | JAN 16        |
| Drawing Number         |            | Rev           |
| <b>JER6565-ECO-005</b> |            | -             |

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- Legend**
- Site Boundary
  - Bat Foraging**
  - Common Pipistrelle
  - Soprano Pipistrelle
  - Static Detector**
  - ➔ Static Detector Location & Orientation
  - A** Overnight
  - B** 22:05 - Dawn
  - Bat Observed Flight Line**
  - ➔ Common Pipistrelle
  - ➔ Soprano Pipistrelle
  - Bat Point Migration**
  - Common Pipistrelle (Cp)
  - Soprano Pipistrelle (Sp)
  - Myotis Species (My)
  - Noctule (No)
  - Bat Transect Route**
  - - ➔ Bat Transect Route (Start/End)
- NOTE**  
 Sunset - 20:10

| Rev | Description | Date | Initial | Checked |
|-----|-------------|------|---------|---------|
|     |             |      |         |         |

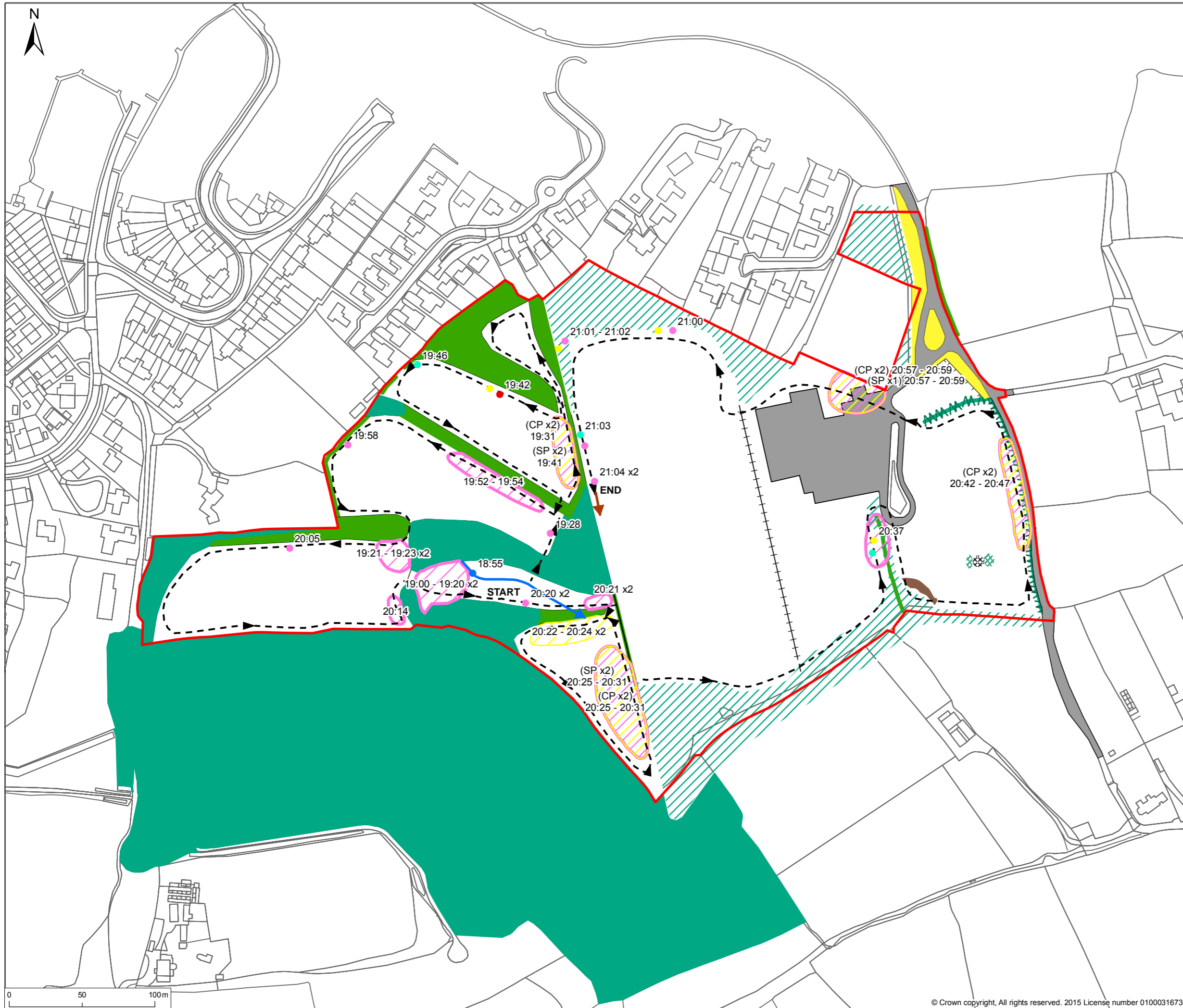


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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **BAT TRANSECT PLAN 27TH AUGUST 2015**

|                        |            |               |
|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
| Job Ref                | Scale @ A3 | Date Created  |
| JER6565                | 1:2,500    | JAN 16        |
| Drawing Number         |            | Rev           |
| <b>JER6565-ECO-006</b> |            | -             |

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**Legend**

- Site Boundary
- Bat Foraging**
- Common Pipistrelle
- Soprano Pipistrelle
- Static Detector**
- ➔ Static Detector Location & Orientation
- Bat Observed Flight Line**
- ➔ Noctule
- Bat Point Migration**
- Leisler's Bat (Le)
- Common Pipistrelle (Cp)
- Soprano Pipistrelle (Sp)
- Myotis Species (My)
- Noctule (No)
- Bat Transect Route**
- - ➔ Bat Transect Route (Start/End)

**NOTE**  
 Sunset - 18:55

| Rev | Description | Date | Initial | Checked |
|-----|-------------|------|---------|---------|
|     |             |      |         |         |

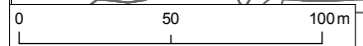


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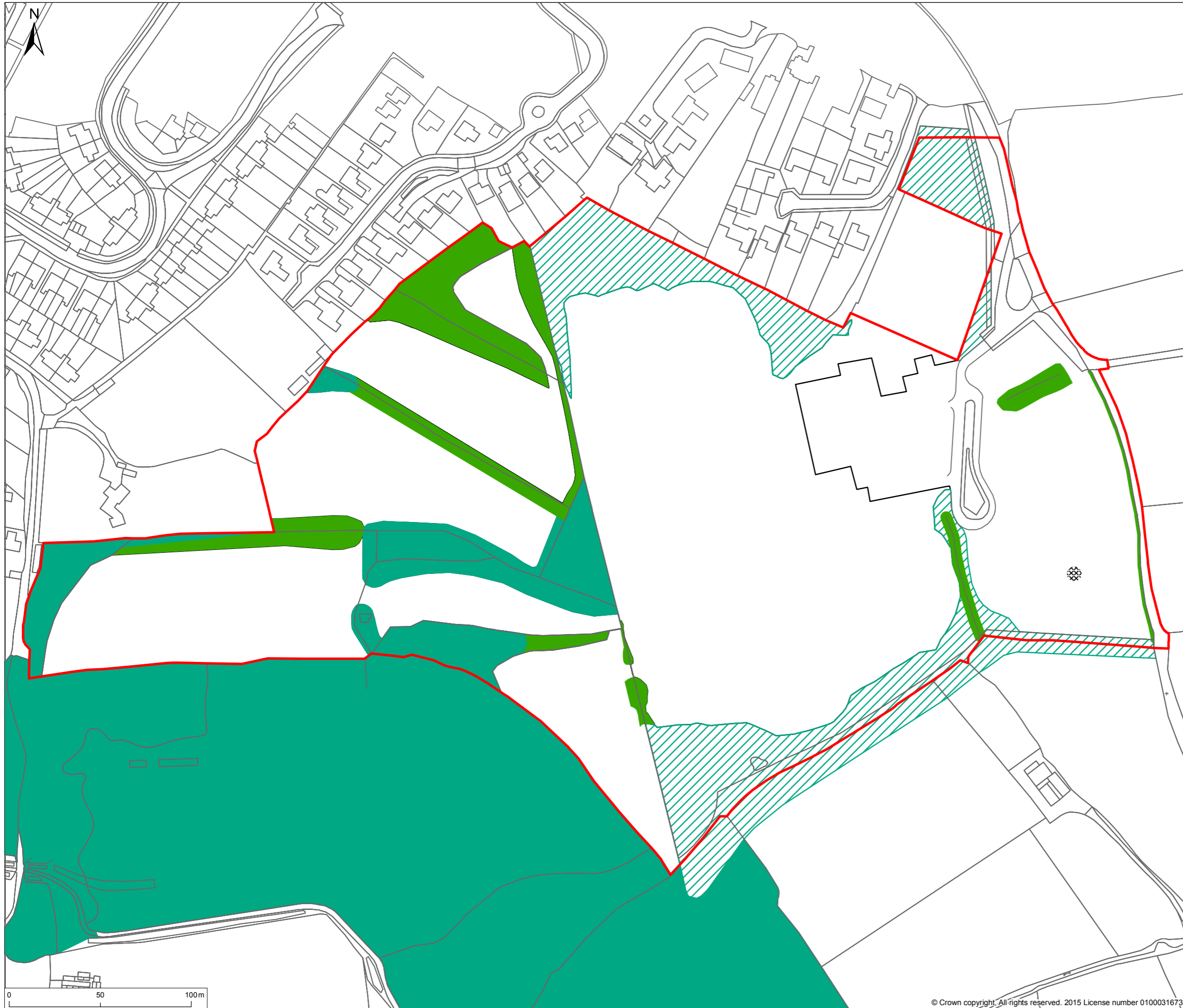
Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **BAT TRANSECT PLAN 29TH SEPTEMBER 2015**

|                        |            |               |
|------------------------|------------|---------------|
| Status                 | Drawn By   | PM/Checked By |
| PRELIMINARY            | JGB        | PT            |
| Job Ref                | Scale @ A3 | Date Created  |
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| Drawing Number         |            | Rev           |
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
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- Legend**
-  Site Boundary
  -  Emergent Vegetation
  -  Intact Species-poor Hedgerows
  -  Plantation Broad-leaved Woodland
  -  Semi-natural Broadleaved Woodland
  -  Other Habitat

| Rev | Description | Date | Initial | Checked |
|-----|-------------|------|---------|---------|
|     |             |      |         |         |



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Client **BARRATT HOMES SOUTH WALES**  
 Project **LOWER ST CYRES SCHOOL**  
 Title **HABITATS MAP (SIMPLIFIED)**

|                        |                |               |
|------------------------|----------------|---------------|
| Status                 | Drawn By       | PM/Checked By |
| <b>PRELIMINARY</b>     | <b>JGB</b>     | <b>TO</b>     |
| Job Ref                | Scale @ A3     | Date Created  |
| <b>JER6565</b>         | <b>1:2,000</b> | <b>JAN 16</b> |
| Drawing Number         | Rev            |               |
| <b>JER6565-ECO-008</b> | <b>-</b>       |               |

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# Appendices

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## Dormouse Survey Results


### Table Key

**E** = Empty

**NF** = Nest tube / box not found

**Nest** = Rodent nest

**FR** = Feeding remains (non dormouse)

 = Confirmed new occupation by dormouse

 = Previously recorded signs of dormouse still present

| Tube No | Survey Date               |                            |                                 |
|---------|---------------------------|----------------------------|---------------------------------|
|         | 28 <sup>th</sup> May 2015 | 23 <sup>rd</sup> July 2015 | 23 <sup>rd</sup> September 2015 |
| 1       | E                         | E                          | E                               |
| 2       | E                         | E                          | E                               |
| 3       | E                         | E                          | E                               |
| 4       | E                         | E                          | E                               |
| 5       | E                         | E                          | E                               |
| 6       | E                         | E                          | E                               |
| 7       | E                         | E                          | E                               |
| 8       | E                         | E                          | E                               |
| 9       | E                         | E                          | E                               |
| 10      | E                         | E                          | E                               |
| 11      | E                         | E                          | NF                              |
| 12      | E                         | E                          | E                               |
| 13      | E                         | E                          | E                               |
| 14      | E                         | E                          | NF                              |
| 15      | E                         | E                          | E                               |
| 16      | E                         | E                          | E                               |
| 17      | NF                        | E                          | E                               |
| 18      | E                         | E                          | E                               |
| 19      | E                         | E                          | E                               |
| 20      | E                         | E                          | E                               |
| 21      | E                         | E                          | E                               |
| 22      | E                         | E                          | E                               |
| 23      | E                         | E                          | E                               |
| 24      | E                         | E                          | E                               |
| 25      | E                         | E                          | E                               |
| 26      | E                         | OLD Dormouse nest of green | OLD Dormouse nest of green      |
| 27      | E                         | E                          | E                               |
| 28      | E                         | E                          | E                               |
| 29      | E                         | E                          | E                               |
| 30      | E                         | E                          | E                               |
| 31      | E                         | E                          | E                               |

| Tube No | Survey Date               |                            |                            |
|---------|---------------------------|----------------------------|----------------------------|
|         | 28 <sup>th</sup> May 2015 | 23 <sup>rd</sup> July 2015 | 23rd September 2015        |
| 32      | E                         | E                          | E                          |
| 33      | E                         | E                          | E                          |
| 34      | E                         | E                          | E                          |
| 35      | E                         | E                          | Nest (with live woodmouse) |
| 36      | E                         | E                          | E                          |
| 37      | E                         | E                          | E                          |
| 38      | E                         | E                          | NF                         |
| 39      | E                         | E                          | E                          |
| 40      | E                         | E                          | E                          |
| 41      | E                         | E                          | E                          |
| 42      | E                         | E                          | NF                         |
| 43      | E                         | E                          | NF                         |
| 44      | E                         | E                          | NF                         |
| 45      | E                         | E                          | E                          |
| 46      | E                         | E                          | E                          |
| 47      | E                         | E                          | E                          |
| 48      | E                         | E                          | E                          |
| 49      | E                         | E                          | E                          |
| 50      | E                         | E                          | E                          |
| 51      | E                         | E                          | E                          |
| 52      | E                         | E                          | E                          |
| 53      | E                         | E                          | E                          |
| 54      | E                         | E                          | E                          |
| 55      | E                         | E                          | E                          |
| 56      | E                         | E                          | NF                         |
| 57      | E                         | E                          | E                          |
| 58      | E                         | E                          | NF                         |
| 59      | E                         | E                          | E                          |
| 60      | E                         | E                          | E                          |
| 61      | E                         | E                          | E                          |
| 62      | E                         | E                          | NF                         |
| 63      | E                         | E                          | E                          |
| 64      | E                         | E                          | NF                         |
| 65      | E                         | E                          | E                          |
| 66      | E                         | E                          | E                          |
| 67      | E                         | E                          | E                          |
| 68      | E                         | E                          | E                          |
| 69      | E                         | E                          | E                          |
| 70      | E                         | E                          | E                          |
| 71      | E                         | E                          | E                          |
| 72      | E                         | E                          | E                          |
| 73      | E                         | E                          | E                          |
| 74      | E                         | E                          | E                          |
| 75      | E                         | E                          | E                          |
| 76      | E                         | E                          | NF                         |
| 77      | E                         | E                          | E                          |
| 78      | E                         | E                          | E                          |
| 79      | E                         | E                          | E                          |
| 80      | E                         | E                          | NF                         |
| 81      | E                         | E                          | NF                         |
| 82      | E                         | E                          | E                          |
| 83      | E                         | E                          | E                          |
| 84      | E                         | E                          | E                          |
| 85      | E                         | E                          | E                          |

### Great Crested Newt Survey

**St Cyres, Penarth  
Great Crested Newt Survey**

**Presented to RPS.**

**17 June 2015**

**biocensus**

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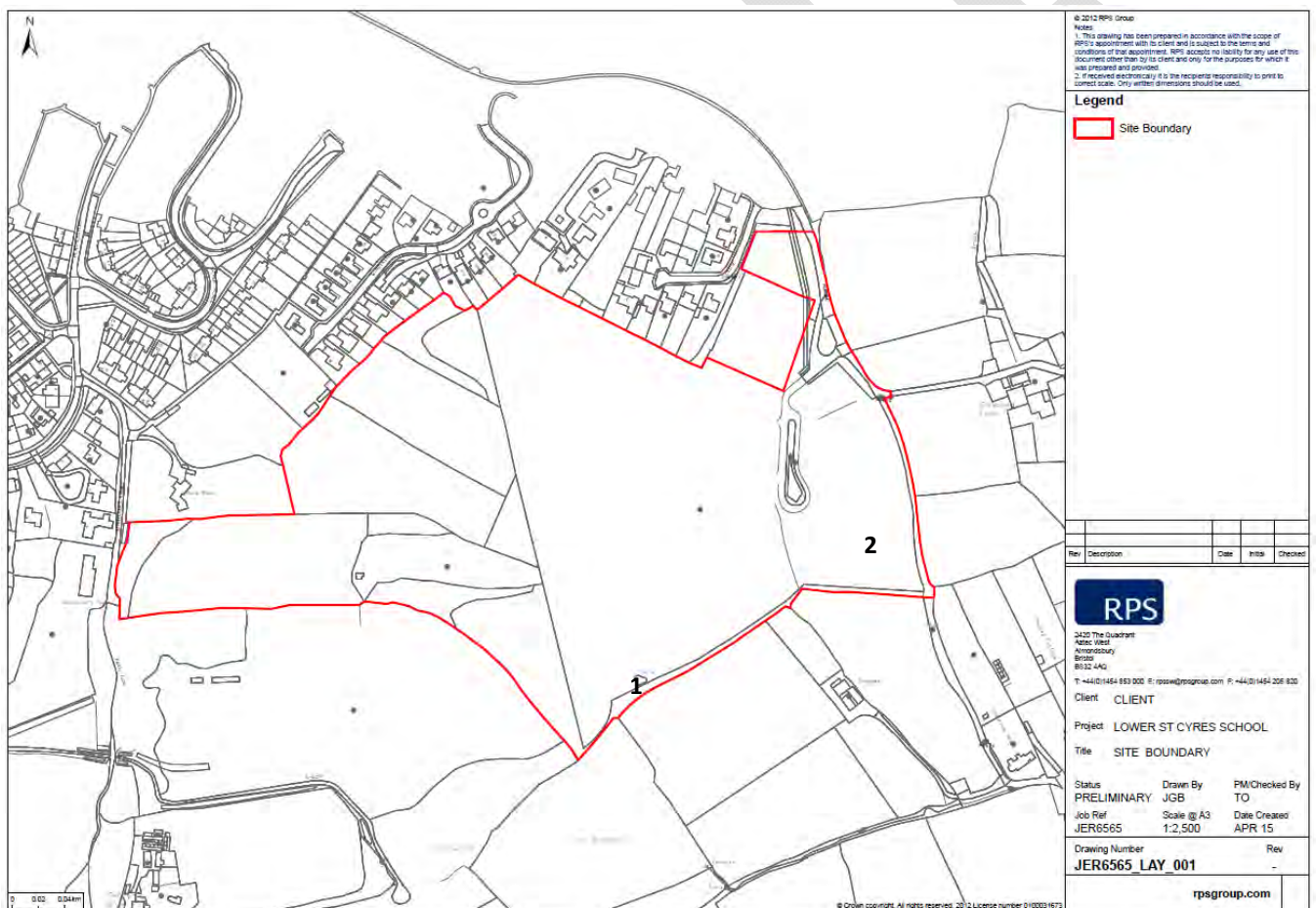
**Introduction**

This report describes the details of great crested newt (*Triturus cristatus*) (GCN) surveys of two ponds in the grounds of the St Cyres School sports fields in Penarth. The site is situated at Murch Road in Penarth (GBOS ST 16543 70748). The proposed works involve site clearance, groundworks and construction of new school buildings.

**Proposed Development Site**

The site is situated on Murch Rd in Penarth. The proposed development site boundary is shown in Figure 1. An initial survey identified two ponds, both within the site boundary.

**Figure 1. St. Cyres site boundary and the locations of the two ponds (Locations 1 and 2)**



**Pond 1 (Woodland Pond)**

Pond 1 was situated in an area of semi-natural deciduous woodland at the south end of the site, and is entirely shaded by the woodland canopy. The pond measured approximately 7m x 6m, which increased to 9m x 7m after heavy rainfall. The pond and its banks has a shallow gradient and in its



deepest sections measures 35cm in depth (extending to 37cm after heavy rainfall). The pond supported no emergent or macrophyte plant species, although ash saplings have established in the base of the pond which is lined by several seasons of leaf fall.

The pond contained litter, including two plastic school chairs, a tractor tyre and an opened, unlabelled 5 litre chemical bottle.

**Pond 2 (Field Pond)**

Pond 2 was situated in the southeast of the site within the grassland field and appears to have been deliberately constructed. The pond is circular with vertical sides, measuring 4m x 4m and is 10-35cm deep. The pond supports bulrush and duckweed, and is fringed by bramble scrub along the eastern edge.

## Methodology

### ***Habitat Suitability Assessment***

The two ponds onsite were assessed following the great crested newt Habitat Suitability Index (HSI) (Oldham et al. 2000). The HSI is given by assigning a value to each of 10 variables (Appendix) including the size of pond area, water quality and level of shading. The tenth root of the product of these variables is then calculated. This generates the HSI, a numerical index between 0 and 1. The HSI score is used to ascribe the suitability of the pond where a score of 1 represents optimal habitat for great crested newts. The system is insufficiently predictive to allow the conclusion that a pond with a high score will definitely support great crested newts whilst those with a low score will not, and therefore such assessments are generally supported by field surveys.

### ***Presence / Absence surveys***

Surveys for the presence of great crested newts require a minimum of 4 visits per year, with at least 2 visits between mid-April and mid-May to record peak numbers of GCN (English Nature, 2001). Standard survey methodologies of torch survey, egg search and bottle trapping were used in this survey. Descriptions of the methods are given in Table 1:

**Table 1. Great crested newt survey methods**

|                 |   |
|-----------------|---|
| Torch Survey    | Ponds illuminated using a high powered torch, in order to detect presence of great crested newts in the ponds. Particularly targets males during courtship and display behaviour.               |
| Egg Search      | A direct search of emergent and submerged vegetation for great crested newt eggs. Egg surveys can must be undertaken during late spring and early summer (April to June) when eggs are present. |
| Bottle Trapping | Live-trapping. Bottle traps are placed at edge of pond each survey evening, and checked for newts before 10 am the following morning (Gent and Gibson, 1998).                                   |

### ***Survey Conditions***

The dates of the survey visits, and the environmental conditions during each survey are given in Table 2.

**Table 2: Summary of Survey Conditions.**

|  | <b>Visit 1</b>  | <b>Visit 2</b>  | <b>Visit 3</b>  | <b>Visit 4</b>  |
|--|-----------------|-----------------|-----------------|-----------------|
|  | <b>04/05/15</b> | <b>05/05/15</b> | <b>12/05/15</b> | <b>18/05/15</b> |

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|                        |                      |                      |               |                 |
|------------------------|----------------------|----------------------|---------------|-----------------|
| Air temperature (°C)   |                      |                      |               |                 |
| <i>Evening</i>         | 11                   | 10                   | 9             | 12              |
| <i>Morning</i>         | 10                   | 9                    | 8             | 7               |
| Water temperature (°C) |                      |                      |               |                 |
| <i>Evening</i>         | 9                    | 8                    | 8             | 9               |
| <i>Morning</i>         | 9                    | 8                    | 8             | 9               |
| Precipitation and wind | Heavy Rain<br>1-2 Bf | Light Rain<br>1-2 Bf | Clear<br>0 Bf | Clear<br>3-4 Bf |

**Table 3: Summary of Pond Conditions.**

|   | Visit 1<br>04/05/15 | Visit 2<br>05/05/15 | Visit 3<br>12/05/15 | Visit 4<br>18/05/15 |
|---|---------------------|---------------------|---------------------|---------------------|
| <b>Pond 1</b>                             |                     |                     |                     |                     |
| Vegetation cover<br>(Low, medium or high) | Low                 | Low                 | Low                 | Low                 |
| Turbidity<br>(Low, medium or high)        | Low                 | Low                 | Low                 | Low                 |
| Water quality<br>(Good, moderate, poor)   | Poor                | Poor                | Poor                | Poor                |
| <b>Pond 2</b>                             |                     |                     |                     |                     |
| Vegetation cover<br>(Low, medium or high) | High                | High                | High                | High                |
| Turbidity<br>(Low, medium or high)        | Low                 | Low                 | Low                 | Low                 |
| Water quality<br>(Good, moderate, poor)   | Good                | Good                | Good                | Good                |

## Results

### Habitat Suitability Index (HSI)

Summary HSI results for the two ponds are shown in Table 3. Pond 1 was considered to have poor suitability for great crested newts. Pond 2 was considered to have average suitability. The full scoring for each pond is presented in Appendix 1.

**Table 4: Summary HSI Results.**

| Waterbody | Score | Suitability for GCNs |
|-----------|-------|----------------------|
| P1        | 0.29  | Very Poor            |
| P2        | 0.61  | Average              |

### Presence/Absence Survey

No great crested newts were detected with any of the survey techniques. This indicates a likely absence of a breeding population in the survey ponds.

Invertebrate species noted in Pond 1 were rat-tailed maggots *Eristalis tenax*, the larvae of the drone fly. This species is associated with poor quality, low oxygenated, often polluted water bodies.

In Pond 2, common frog *Rana temporaria* larvae (tadpoles) and a relatively diverse invertebrate community including dragonfly nymphs, whirligig beetles, hoglouse *Asellus aquaticus* and leeches were detected.

## Evaluation and Potential Impacts

### **Great Crested Newts**

On the grounds that the presence of great crested newts onsite is unlikely, the proposed works are not considered to have an impact on any populations of great crested newts.

### **Other Amphibians**

The proposed development will involve the loss of Pond 2. This will reduce the available breeding habitat for common frog on the site.

## Recommendations

### **Great Crested Newts**

No further consideration for great crested newts required.

### **Other Amphibians**

On the basis that breeding habitat for common frog may be lost as part of the proposed development, it is recommended that efforts are made to improve the water quality of Pond 1. This will involve removal of the submerged material.

## References

- English Nature (2001) *Great Crested Newt Mitigation Guidelines*. ISBN 1 85716 568 3.
- Gent, A. and Gibson, S. (1998). *Herpetofauna Workers' Manual*. Peterborough, UK. Joint Nature Conservation Committee.
- Oldham, R.S., Keeble, J., Swan, M.J.S. & Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal*, **10**, 143–155.

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## Appendix1 : Habitat Suitability Index Form

| Great Crested Newt HSI Summary of Scoring System & Scores                                       |                              |  |                                     |                                  |
|---|------------------------------|--|-------------------------------------|----------------------------------|
| Pond Feature<br>(Bold) and<br>Options   | Potential<br>Field<br>Scores | Notes on Criteria  | Pond 1<br>(Woodland Pond)<br>Scores | Pond 2<br>(Field Pond)<br>Scores |
| <b>SI<sub>1</sub> Geographic Location</b>   |                              |  |                                     |                                  |
| A (optimal)   | 1                            |  |                                     |                                  |
| B (marginal)  | 0.5                          |  | 0.5                                 | 0.5                              |
| C (unsuitable)  | 0.01                         |  |                                     |                                  |
| <b>SI<sub>2</sub> Pond area</b>   | SI                           |  |                                     |                                  |
| Pond surface area (m <sup>2</sup> )   |                              |  | 0.05                                | 0.05                             |
| <b>SI<sub>3</sub> Pond drying</b>   |                              |  |                                     |                                  |
| Never   | 0.9                          | Never dries  |                                     |                                  |
| Rarely  | 1.0                          | Dries no more than two years in ten or only in drought                     |                                     |                                  |
| Sometimes   | 0.5                          | Dries between three years in ten to most years                             | 0.5                                 | 0.5                              |
| Annually  | 0.1                          | Dries annually   |                                     |                                  |
| <b>SI<sub>4</sub> Water quality</b>   |                              |  |                                     |                                  |
| Good  | 1.0                          | Abundant and diverse invertebrate community                                |                                     |                                  |
| Moderate  | 0.67                         | Moderate invertebrate diversity  |                                     | 0.67                             |
| Poor  | 0.33                         | Low invertebrate diversity, few submerged plants                           |                                     |                                  |
| Bad   | 0.01                         | Polluted, pollution-tolerant inverts, no submerged plants                  | 0.01                                |                                  |
| <b>SI<sub>5</sub> Shade</b>   |                              |  |                                     |                                  |
| Estimate percentage perimeter shaded to at least 1m from shore                                  |                              |  | 0.2                                 | 1                                |
| <b>SI<sub>6</sub> waterfowl</b>   |                              |  |                                     |                                  |
| Absent  | 1                            | No evidence  | 1                                   | 1                                |
| Minor   | 0.67                         | Waterfowl present, but little sign of impacts                              |                                     |                                  |
| Major   | 0.01                         | Severe impact of waterfowl   |                                     |                                  |
| <b>SI<sub>7</sub> Fish</b>  |                              |  |                                     |                                  |
| Absent  | 1                            | No records of fish stocking & no fish revealed during survey               | 1                                   | 1                                |
| Possible  | 0.67                         | No evidence, but local conditions suggest fish may be present              |                                     |                                  |
| Minor   | 0.33                         | Small numbers of crucian carp, goldfish or stickleback known to be present |                                     |                                  |
| Major   | 0.01                         | Dense populations of fish known to be present                              |                                     |                                  |
| <b>SI<sub>8</sub> Ponds</b>   | SI                           |  |                                     |                                  |
| Ponds within 1km of survey pond, not separated by major barriers (total number divided by 3.14) |                              |  | 0.69                                | 0.69                             |

|   |      |  |             |             |
|---|------|--|-------------|-------------|
| <b>SI<sub>9</sub> Terrestrial habitat</b> |      |  |             |             |
| Good                                      | 1    |  | 1           | 1           |
| Moderate                                  | 0.67 |  |             |             |
| Poor                                      | 0.33 |  |             |             |
| None                                      | 0.01 |  |             |             |
| <b>SI<sub>10</sub> Macrophytes</b>        | SI   |  | 0.3         | 0.8         |
| <b>Score</b>                              |      |  | <b>0.29</b> | <b>0.61</b> |

Draft

## ***Appendix 2***

### ***Great Crested Newt Legislation and Licensing***

GCNs and their terrestrial habitat are protected by the Wildlife and Countryside Act 1981 (as amended) and are classified as European Protected species under The Conservation of Habitats and Species Regulations 2010. This makes it an offence to kill, injure or disturb GCNs and to destroy any place used for rest or shelter by a newt.

Development work can only be permitted to affect GCNs and their habitat under a European Protected Species (EPS) licence from Natural England.

Licences in respect of European Protected Species affected by development can be granted under Section 53(3) (e) of The Conservation of Habitats and Species Regulations 2010, for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature, and beneficial consequences of primary importance for the environment.

Under The Conservation of Habitats and Species Regulations 2010 licences can only be issued if Natural England are satisfied that: (i) there is no satisfactory alternative and (ii) the action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

The implications for the proposed development work are that any construction activities should not result in the death, injury or disturbance of individual GCNs should they be found to occur on the site. This means that if they are present on site then measures will need to be put in place to provide for their individual protection. In addition, the development should not result in the destruction or damage of breeding habitat or terrestrial habitat of great crested newts. A licence from Natural England would be required to permit development works to proceed should GCNs be found and harm or injury to individual newts and/or destruction/ damage of habitat are likely.



## Appendix EDP 3 Habitat Descriptions and Illustrative Photographs

- A3.1 An initial Extended Phase 1 Habitat Survey was undertaken by RPS in May 2015. Following progression of a planning application, a further update survey was undertaken by EDP on 19 April 2017 to verify previous findings, whilst also determining any material changes to those habitats previously identified for the Application Site.
- A3.2 The survey technique adopted for the initial habitat assessment was at a level intermediate between a standard Phase 1 survey technique<sup>17</sup>, based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 Survey. This level of survey does not aim to compile a complete floral and faunal inventory for the site.
- A3.3 The level of survey involves identifying and mapping the principal habitat types and identifying the dominant plant species present in each principal habitat type. In addition, any actual or potential protected species or species of principal importance are identified and scoped. The distribution of habitats surveyed is illustrated in **Plan EDP 1**, with habitat descriptions and photographs provided below.

### Results

#### **Poor Semi-improved grassland**

- A3.4 The eastern half of the Application Site comprises two semi-improved grassland fields (F1-F2) and former playing fields associated with the former school, whilst the western half of the Application Site comprises six grassland fields (F3-F8) and their densely vegetated boundaries. Poor semi-improved grassland across the Application Site is characterised by a relatively short sward (0.3 centimetres high) subject to regular cutting.
- A3.5 Grassland habitat is typically dominated by common bent (*Agrostis capillaris*) whilst Yorkshire fog (*Holcus lunatus*), meadow foxtail (*Alopecurus pratensis*), perennial rye-grass (*Lolium perenne*) and crested dog's-tail (*Cynosurus cristatus*) are also frequent. False oat-grass (*Arrhenatherum elatius*), small cat's tail (*Phleum bertolonii*) and cock's-foot (*Dactylis glomerata*) were also recorded. Cuckoo flower (*Cardamine pratensis*) is particularly abundant within Field 1 whilst patches of white clover (*Trifolium repens*), meadow buttercup (*Ranunculus acris*) and creeping buttercup (*Ranunculus repens*), common sorrel (*Rumex acetosa*), broad leaved dock (*Rumex obtusifolius*) field speedwell, dandelion (*Taxacum officinalis*) and common vetch (*Vicia sativa*) are also present throughout the sward. Occasional patches of hard rush (*Juncus effusus*) and soft rush (*Juncus inflexus*) are prevalent in the southern half of Field F1.

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<sup>17</sup> Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).



**Photo EDP 1:** Semi-improved grassland Field 2 looking north.

- A3.6 The western fields support a comparable grassland assemblage, although white clover and ribwort plantain (*Plantago lanceolata*) are more abundant, whilst common vetch is less frequent. Occasional bluebell (*Hyacinthoides non-scripta*) has colonised grassland margins from woodland margins.



**Photo EDP 2:** Semi-improved grassland Field 6 looking west.

### **Broadleaved Semi-natural Woodland**

- A3.7 Broadleaved woodland, treelines and native hedgerow habitat are widespread across the western half of the Application Site, forming mature, outgrown boundaries of six grassland fields, in addition to comprising the north western, western and southern boundaries of this western half.
- A3.8 Field boundaries across the western half of the Application Site typically comprise understorey species including hawthorn (*Crataegus monogynea*), blackthorn (*Prunus spinosa*), ash (*Fraxinus excelsior*), spindle (*Euonymus europaeus*), hazel (*Corylus avellana*), English oak (*Quercus robur*), dogwood (*Cornus sanguinea*), silver birch (*Betula pendula*) and willow (*Salix sp.*). With respect to the peripheral boundaries, the north western boundary supports numerous English oak standards. The ground flora community is dominated by common ivy (*Hedera helix*) with occasional occurrences of dog's mercury (*Mercurialis perennis*), broadleaved dock, Herb-Robert (*Geranium robertianum*), and lesser celandine (*Ranunulus ficaria*).
- A3.9 The south western boundary of the Application Site also encompasses woodland associated with Cross Common SINC, comprising mature woodland dominated primarily by ash but with oak also present. Field maple, dogwood and wild privet (*Ligustrum vulgare*) comprise the understorey, with outgrown hazel stools noted as abundant throughout this SINC.



**Photo EDP 3:** Broadleaved semi-natural woodland on the southern boundary of Field 6.

### **Plantation Woodland**

- A3.10 The northern and southern boundaries of the eastern half of the Application Site comprise broadleaved plantation woodland. Plantation woodland forming the northern

boundary supports predominantly semi-mature stands of English oak, poplar (*Populus sp.*), ash, silver birch, and wild cherry (*Prunus avium*). Field maple (*Acer campestre*), hazel, sycamore (*Acer pseudoplatanus*) and blackthorn are also present. The southern boundary is similarly defined by a broad band of plantation woodland comprising a mix of English oak, ash, hawthorn, field maple, wild cherry and silver birch.



**Photo EDP 4:** Plantation woodland along the southern boundary of the Application Site.



**Photo EDP 5:** Plantation woodland along the northern boundary of the Application Site.

### **Native Species-poor Hedgerows with Trees**

A3.11 The two northernmost fields located across the western half of the Application Site are bound by unmanaged, overgrown species-poor hedgerows H4 and H5 measuring approximately 5m high and 1.5-2m wide, and are dominated by blackthorn, hawthorn, spindle and ash. Mature oak trees are also present therein. The base of species-poor hedgerows H4 and H5 are colonised by common ivy with occasional cleavers (*Gallium aparine*) and broadleaved dock.



**Photo EDP 6:** Native species-poor hedgerow delineates boundaries of the north westernmost fields.

### **Native Species-rich Hedgerow with Trees**

A3.12 Hedgerow H1 and H2 associated with the eastern boundary of the Application Site comprises outgrown, native, species-rich hedgerow supporting English oak, ash, field maple, hazel, dogwood, hawthorn, blackthorn and elm (*Ulmus sp.*). Bramble (*Rubus fruticosus* agg.) is also present throughout these hedgerows. A ground flora community is represented by herb-Robert, celandine, lords-and-ladies (*Arum maculatum*) and dog's mercury, in addition to common ivy, common nettle (*Urtica dioica*) and cleavers.

A3.13 Additionally, Hedgerow H3, associated with the northern, wooded boundary of the westernmost field, supports blackthorn, hawthorn, ash, oak and spindle, with hazel and willow occasionally present.



**Photo EDP 7:** Native species-rich hedgerows H1 and H2 delineating eastern boundary of Application Site.

### **Dense Scrub**

A3.14 Dense scrub is typically dominated by bramble with occasional tree saplings. A small patch of scrub is located within the south-west corner of Field F2. Dense bramble thickets also delineate the western boundaries of Fields F4 and F5. A line of semi-mature English oaks and conifers are also present in association with these boundaries.

### **Scattered Trees**

A3.15 A number of scattered tree standards are also present adjacent to the demolished footprint of the former school and include English oak, silver birch, silver maple, wild cherry and (*Salix babylonica*).

### **Standing Water**

A3.16 A shallow (circa 10-centimetre-deep) pond (P1), almost dry, is located within plantation woodland along the southern boundary of the Application Site. This pond is heavily shaded by overhanging trees and leaf litter is abundant within the waterbody. The pond supports no macrophyte plant species. Bank side habitat is, similarly, largely devoid of vegetation. Several items of refuse had been dumped immediately adjacent to this pond.



**Photo EDP 8:** P1 located within plantation woodland on southern boundary of the Application Site.

- A3.17 P2 is located in the centre of the school field bordered by dense bramble on the eastern side and with gently sloping banks approximately 0.5 metre high. Emergent vegetation and marginal vegetation comprises reedmace (*Typha sp.*), soft rush and willowherb (*Epilobium sp.*). The water surface is entirely covered by lesser duckweed (*Lemna minuta*).

#### **Amenity Grassland**

- A3.18 Small patches of amenity grassland are associated with the entrance to the former school and are characterised by a predominantly short sward frequently mown. Amenity grassland is species-poor with perennial rye-grass dominant. Daisy (*Bellis perennis*), dandelion and ribwort plantain occur occasionally.



**Photo EDP 9:** P2 located within centre of Field F1.

### ***Buildings and Hardstanding***

- A3.19 A stone brick building presumed to be a former pump station is located in the south west corner of Field F1. The flat roof is partially collapsed whilst open doors provide access to the interior of the structure. A large area of brick and concrete hardstanding and rubble piles is located within the north of the of the Application Site, where the buildings of the now demolished school once stood.



**Photo EDP 10:** Derelict building located within south west corner of Field I surrounded by dense scrub.





**Photo EDP 11:** Demolished remains of former school.

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## Appendix EDP 4 Breeding Bird Survey

### Methodology

- A4.1 The Application Site supports a range of habitats suitable for breeding birds, with a number of records of protected/notable species returned from the desk study. A single 'pilot' breeding bird survey (BBS), was therefore undertaken on 22 April 2017 to assess the Application Site's potential to support breeding birds of conservation concern and to determine whether further detailed survey work would be necessary to inform the application.
- A4.2 The pilot BBS survey was undertaken with reference to standard methodology, entailing a modified Common Bird Census (CBC) 'territory mapping' approach, which involves the completion of three visits to the Application Site between approximately mid-April and late July; i.e. at the height of the main breeding bird season for lowland Britain.
- A4.3 Following best practice, the survey visit was timed to start at, or just before, first light, to coincide with the period of peak activity for birds, particularly passerine songbird species. The survey was also undertaken during suitable weather conditions; i.e. days/periods with strong winds and heavy or persistent rain were generally avoided.
- A4.4 In common with the CBC, the survey methodology involved walking to within 50m of all parts of the Application Site and recording bird species present and their activity status, with a particular emphasis placed upon those elements considered to relate to, or be indicative of, breeding. This ensured that the survey identified all birds using the margins of the Application Site, as well as those in the interior.
- A4.5 The survey was carried out at an appropriate time of year for the locality, and in suitable weather conditions. It is therefore considered that the results provide a representative overview of the breeding bird interest at the Application Site.
- A4.6 Following the completion of the surveys, the breeding status of each bird species identified was determined according to the nature and frequency of the elements recorded, as set out in **Table EDP A4.1**.

**Table EDP A4.1:** Summary of Field Evidence used to Determine Breeding Bird Status.

| Status      | European Bird Census Council (EBCC) Criteria for Categorisation of Breeding Status   |
|-------------|--|
| Confirmed   | <ul style="list-style-type: none"> <li>• Distraction-display or injury feigning;</li> <li>• Used nest or eggshells found (occupied or laid within period of survey);</li> <li>• Recently fledged young (nidicolous species) or downy young (nidifugous species);</li> <li>• Adults entering or leaving nest-site in circumstances indicating occupied nest (including high nest or nest-holes, the contents of which cannot be seen) or adult seen incubating;</li> <li>• Adult carrying faecal sac or food for young;</li> <li>• Nest containing eggs; and</li> <li>• Nest with young seen or heard.</li> </ul> |
| Probable    | <ul style="list-style-type: none"> <li>• Pair observed in suitable nesting habitat in breeding season;</li> <li>• Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two different days a week or more apart at the same place;</li> <li>• Courtship and display;</li> <li>• Visiting a probable nest site;</li> <li>• Agitated behaviour or anxiety calls from adults;</li> <li>• Brood patch on adult examined in the hand; and</li> <li>• Nest building or excavating nest-hole.</li> </ul>  |
| Possible    | <ul style="list-style-type: none"> <li>• Species observed in breeding season in possible nesting habitat; and</li> <li>• Singing male(s) present (or breeding calls heard) in breeding season.</li> </ul>  |
| Non-breeder | <ul style="list-style-type: none"> <li>• Feeding birds only;</li> <li>• Birds flying over only; and</li> <li>• Lack of suitable breeding habitat.</li> </ul>   |

A4.7 An assessment of the individual bird species recorded in the study area, as well as the overall assemblage, has been made with reference to the national conservation status of the different breeding species according to the following key lists/criteria:

- Schedule 1 of the Wildlife and Countryside Act (1981 as amended) – affords greater protection to certain breeding species that are considered appropriately at risk nationally and are listed additional protection under Schedule 1 accordingly;
- Birds of Conservation Concern 2: The Population Status of Birds in Wales (BoCC) - Under this approach UK bird populations are assessed, using quantitative criteria, to determine the population status of each species and then placed on one of three lists; Red, Amber or Green:
  - Red list species are of high conservation concern, being either globally threatened, having historical UK population declines between 1800 and 1995 or a rapid population decline, or breeding range contraction by 50% or more in the last 25 years;

- Amber list species are of medium conservation concern due to a number of factors, for example having suffered between 25% and 49% contraction of UK breeding range or a 25-49% reduction in breeding or non-breeding populations over the last 25 years. Species which have a five year mean of 1-300 breeding pairs in the UK, or an unfavourable European conservation status, or for which the breeding population in the UK represents 20%, or more of the European breeding populations are also listed on the Amber list; and
- Green list species have a favourable conservation status;
- Species of Principle Importance included under Section 42 (Wales) of the Natural Environment and Rural Communities (NERC) Act 2006;
- The UK Biodiversity Action Plan (UK BAP); and
- Species status as defined in the 2014 Annual Bird Report by the Gower Ornithological Society, 'Gower Birds'.

A4.8 Where species are listed as having Green status within the BoCC report and having no other special conservation status, pair estimates have not been calculated. These species have instead been given a frequency rating within the Application Site based on the surveyor's judgement and an assessment of the likelihood of their breeding.

### **Limitations**

A4.9 It is considered that the level of survey undertaken provides a detailed account of the breeding bird community within the Application Site, together with an indication of the breeding abundances of each species. However, it should be noted that this level of survey will typically not provide exact breeding population figures for each species.

A4.10 Due to the relatively low number of survey visits compared to the relatively detailed field evidence required to confirm breeding, the results may offer a range in the breeding population of certain species that is relatively large. This can be particularly true for cryptic or skulking species, or species that inhabit areas that are difficult to access, such as dunnoek (*Prunella modularis*) breeding within dense scrub.

## **Results**

### **Species Richness**

A4.11 A total of 26 species of bird were recorded within the Application Site during the pilot survey. Of those, nine (35%) were of some conservation concern or are legally protected in some way. Six of those species were listed on the Welsh Birds of Conservation Concern (BoCC) Amber list and three on the Red list. Of the BoCC species on site, four (33%) were considered to be non-breeders and six (66%) possible breeders. The results are illustrated on **Plan EDP 3**.

A4.12 Species recorded during the survey that receive legal protection under Schedule 1 of the Wildlife and Countryside Act (1981) or are of conservation concern are listed along with their breeding status within the Application Site in **Table EDP A4.2**.

**Table EDP A4.2:** Birds of Conservation Concern Recorded During Survey, their Status On-Site and their Legal Protection.

| Species   | Protection/ Wales Status | On-site Status   |
|---|--------------------------|------------------|
| Bullfinch<br>( <i>Pyrrhula pyrrhula</i> )           | Red List                 | Possible breeder |
| Willow warbler<br>( <i>Phylloscopus trochilus</i> ) | Red List                 | Possible Breeder |
| Herring gull<br>( <i>Larus argentatus</i> )         | Red List<br>Section 42   | Non-breeder      |
| Song thrush<br>( <i>Turdus philomelos</i> )         | Amber List<br>Section 42 | Possible Breeder |
| Coal tit<br>( <i>Periparus ater</i> )               | Amber List               | Possible breeder |
| Long-tailed tit<br>( <i>Aegithalos caudatus</i> )   | Amber List               | Possible breeder |
| Lesser black-backed gull<br>( <i>Larus fuscus</i> ) | Amber List               | Non-breeder      |
| Goldcrest<br>( <i>Regulus regulus</i> )             | Amber List               | Non-breeder      |
| Swallow<br>( <i>Hirundo rustica</i> )               | Amber List               | Non-breeder      |
| Dunnock<br>( <i>Prunella modularis</i> )            | Green List               | Possible Breeder |
| Blackbird<br>( <i>Turdus merula</i> )               | Green List               | Non-breeder      |
| Blackcap<br>( <i>Sylvia atricapilla</i> )           | Green List               | Non-breeder      |
| Wren<br>( <i>Troglodytes troglodytes</i> )          | Green List               | Non-breeder      |
| Wood pigeon<br>( <i>Columba palumbus</i> )          | Green List               | Non-breeder      |
| Blue Tit<br>( <i>Cyanistes caeruleus</i> )          | Green List               | Non-breeder      |
| Robin<br>( <i>Erithacus rubecula</i> )              | Green List               | Non-breeder      |
| Carrion crow<br>( <i>Corvus corone</i> )            | Green List               | Non-breeder      |
| Chiff Chaff<br>( <i>Phylloscopus collybita</i> )    | Green List               | Non-breeder      |
| Great Tit<br>( <i>Parus major</i> )                 | Green List               | Non-breeder      |
| Jay<br>( <i>Garrulus glandarius</i> )               | Green List               | Non-breeder      |
| Magpie<br>( <i>Pica pica</i> )                      | Green List               | Non-breeder      |
| Goldfinch<br>( <i>Carduelis carduelis</i> )         | Green List               | Non-breeder      |
| Jackdaw<br>( <i>Corvus monedula</i> )               | Green List               | Non-breeder      |
| Pied Wagtail<br>( <i>Motacilla alba</i> )           | Green List               | Non-breeder      |
| Sparrowhawk<br>( <i>Accipiter nisus</i> )           | Green List               | Non-breeder      |

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| <b>Species</b>                        | <b>Protection/ Wales Status</b> | <b>On-site Status</b> |
|---------------------------------------|---------------------------------|-----------------------|
| Nuthatch<br>( <i>Sitta europaea</i> ) | Green List                      | Non-breeder           |

#### ***Abundance and distribution***

A4.13 The vast majority of bird species recorded during the survey were associated with areas of dense vegetation including woodland parcels, with such areas considered to offer greater opportunities for nesting and foraging for a wide range of species relative to those areas of open grassland present across the remainder of the Application Site.

A4.14 The majority of birds recorded during the survey comprise mostly common resident and migrant passerines of Green list status, although low numbers of species of concern were recorded, albeit primarily concentrated across the western half of the Application Site in association with woodland and hedgerow boundaries. Such species include those typically associated with urban edge habitats.

#### ***The Overall Assemblage***

A4.15 The assemblage of breeding bird species recorded onsite is typical for the range and quality of habitats present, and for its geographic and topographic location, being an urban edge location. However, the western half of the Application Site supports a higher diversity of species and abundance of birds owing to the extent of dense vegetation offering suitable cover for nesting birds and a foraging resource.

A4.16 No Schedule 1 bird species were recorded onsite, and only a small proportion of the bird assemblage were species of conservation concern. The breeding bird assemblage in the Application Site is therefore considered to be of no more than local value.

A4.17 The full results of the breeding bird survey completed in April 2017 are provided in **Table EDP A4.3**.

**Table EDP A4.3:** Full Breeding Bird Survey Results.

| Species   | Protection/<br>Wales Status | Regional Status*  | On-site<br>Status | Population within the study area   |
|---|-----------------------------|---|-------------------|--|
| Bullfinch<br>( <i>Pyrrhula pyrrhula</i> )           | Red List                    | Fairly common breeding resident.  | Possible breeder  | Two possible breeding pairs: registrations of this species were linked to the mature hedgerow (a singing male) and woodland habitats (a calling pair) within the western half of the Application Site.   |
| Willow warbler<br>( <i>Phylloscopus trochilus</i> ) | Red List                    | Abundant breeding summer visitor.   | Possible Breeder  | Three possible breeding pairs: a willow warbler was recorded singing within the semi-natural woodland habitat within the centre of the Application Site, whilst a second bird was recorded singing within the hedgerow habitat delineating the most northerly field parcel. A further willow warbler was identified singing within woodland habitat along the southern boundary of the Application Site. |
| Herring gull<br>( <i>Larus argentatus</i> )         | Red List<br>Section 42      | Common resident and winter visitor but in reduced numbers. Very few breeding in the peninsula. Roofs more in use than previously. | Non-breeder       | A single bird was recorded flying over the site. No birds were recorded on site. It is considered that no suitable breeding habitat exists within the site boundary for this species.  |
| Song thrush<br>( <i>Turdus philomelos</i> )         | Amber List<br>Section 42    | Common resident and breeds. Decrease apparent.  | Possible Breeder  | Three possible breeding pairs were recorded. Firstly, a potential breeding pair were identified within suitable habitat in the eastern half of the Application Site adjacent to the remains of the former school. An additional two birds were recorded singing within the western hedgerow and southern woodland boundaries.  |
| Coal tit<br>( <i>Periparus ater</i> )               | Amber List                  | Common breeding resident, particularly in coniferous woodland.  | Possible breeder  | One possible breeding pair: a single coal tit was recorded singing within plantation woodland in the far north east corner of the Application Site, adjacent to the medical centre located off-site.   |
| Long-tailed tit<br>( <i>Aegithalos caudatus</i> )   | Amber List                  | Fairly common breeding resident.  | Possible Breeder  | A single possible breeding pair was identified within the central hedgerow in the north of the Application Site.   |
| Lesser black-backed gull<br>( <i>Larus fuscus</i> ) | Amber List                  | Fairly common resident breeding in small numbers on the coast and urban roofs. Fairly common passage visitor.                     | Non-breeder       | Occasional birds were recorded flying over the site. No birds were recorded on site and it is considered that no suitable breeding habitat exists within the site boundary for this species.   |
| Swallow<br>( <i>Hirundo rustica</i> )               | Amber List                  | Common summer visitor and breeds.   | Non-breeder       | Swallow was recorded flying over the western most field within the Application Site.   |



| <b>Species</b>                               | <b>Protection/<br/>Wales Status</b> | <b>Regional Status*</b>                  | <b>On-site<br/>Status</b> | <b>Population within the study area</b>   |
|--|-------------------------------------|--|---------------------------|---|
| Dunnock<br>( <i>Prunella<br/>modularis</i> ) | Green List                          | Common resident, breeding<br>widespread. | Possible<br>Breeder       | Eight possible breeding pairs: a relatively abundant species, with breeding<br>behaviour recorded within hedgerow and woodland habitats across the Application<br>Site. |

\* Regional status of species in 2013 as detailed in Gower Birds (Gower Ornithological Society, 2014).

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**Appendix EDP 5**  
**Bats - Tree Climbing Survey**  
**(RPS, Report Reference 170310 R JER 6565, March 2017)**

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**RPS**

Bats - Tree Climbing Survey

St Cyres, Dinas Powys, Vale of Glamorgan

On behalf of Barratt Homes



**Date:** 16/03/2017

**Our Ref:** JER6565

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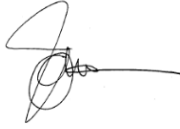
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# Quality Management


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# Amendment Record

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JER6565-ECO-009\_D\_170310

Tree Climbing Survey Plan

# 1 Introduction

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- 1.1.1 This survey and report was carried out by Mr Steve Wadley (AVA Ecology Ltd) on behalf of RPS.
- 1.1.2 The site is centred at Grid Reference ST16259 70775 and is a former school grounds near to Dinas Powys. The site is a series of fields bordered by woodland and intersected by overgrown hedgerows and tree lines.
- 1.1.3 The objective of this study is to identify evidence of any use of the trees by bat species. This survey report aims to assess the level of usage and classification of any roost present.

## 2 Methodology

---

### 2.1 Field Survey

- 2.1.1 The methods used were appropriate to achieve the aims of the survey and follow Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd Edition) The Bat Conservation Trust London and BS 42020:2013 *Biodiversity* (Code of practice for planning and development).
- 2.1.2 The trees were inspected initially from ground level using binoculars, endoscope and a high powered torch. Any trees which were identified as having potential roost features at height were climbed using a ropes and harnesses and closely inspected. Only those tree which showed potential for bats were then climbed and inspected to inspect potential roost features at height. Climbed trees were mapped and marked with metallic numbered tags and a red paint dot for future identification.
- 2.1.3 The survey was undertaken by Steve Wadley assisted by Graham Edwards. Steve has 5 years' experience of bat conservation, research and survey work and holder of a Natural Resources Wales (NRW) bat licence (74520:OTH:CSAB:2016) and is also qualified in tree climbing and aerial rescue. The surveyor also holds a Natural England (NE) level 4 bat survey licence (Number 2016-20666-CLS-CLS) and VBRV licence.

### 2.2 Classification of Trees

- 2.2.1 All assessments of potential are based on feature type, dimensions, orientation and information available in the "Bat Tree Habitat Key" (Andrews 2010) as defined in *Table 2.1*.

**Table 2.1: Definition of Potential Value:**

| Potential Value       | Classification  |
|-----------------------|---|
| Negligible potential: | No evidence of bats and no potential for bat roosting within the tree canopy.   |
| Low Potential:        | Tree features have a possibility of roosting by very small number of bats but considered very unlikely usually 1 feature of low potential. For example; an open and shallow hole.   |
| Moderate potential:   | Tree features have potential for low to medium numbers of roosting bats and considered to be fairly likely to be used at some time during the year. Usually 2 or 3 features with no evidence of bats i.e. an open hazard beam with no evidence of bats and a knot hole with a small decay column. |

|                 |  |
|-----------------|--|
| High potential: | Tree features regarded to have high potential for medium to high numbers of bats, extended decay columns, enclosed hazard beams, woodpecker holes, bark flaking etc. |
|-----------------|--|

## 2.3 Survey Constraints

- 2.3.1 Weather conditions throughout the surveys were poor and one tree feature which may have been accessible in dry conditions was unable to be accessed. Also, one or two of the trees were dead and had severely decayed limbs with potential roost features which could not be accessed. However, this was not noted as a significant constraint and did not unduly affect the outcome of the survey results.
- 2.3.2 Limitations in the length of the endoscope and physical nature of the features meant that not all the features could be adequately inspected.
- 2.3.3 Bee's nests in two of the trees prevented access but again this was not seen as significant.

### 3 Results

**Table 3.1: Tree Climbing Survey Results**

| Tree Climbing Survey Ref. | RPS Tree Ref. | Species | Height | DBH       | Notes on PRF's (orientation, height & feature description)  | Potential Value (Roosting bats) | Tag  |
|---------------------------|---------------|---------|--------|-----------|---|---------------------------------|------|
| 1                         | T16           | Oak     | 9m     | 0.62 m    | Hollow at base with bee's nest present.<br>No visible elevated features seen from ground inspection   | Low                             | 1301 |
| 2                         | T134          | Oak     | 11m    | Twin stem | Hollow at base<br>Dense ivy cover could conceal features.<br>Decay column from ground to 1.5m, Cavity extending 1m+ upwards above the top of the decay column       | Moderate                        | 1302 |
| 3                         | T39           | Poplar  | 17m    | 0.71 m    | Hazard beam at 15m - open feature with low potential. (Now missing due to storm damage).<br>Hazard beam at 18m – 60x20cm with no evidence of bats                   | Low                             | 1303 |
| 4                         | G13           | Poplar  | 20m    | Twin stem | Small leaning tree with partial uprooting<br>Hazard beam split at 2m  | Moderate                        | 1304 |
| 5                         | T43           | Poplar  | 21m    | 0.66 m    | Hazard beam but no cavity   | Negligible                      | 1305 |
| 6                         | T44           | Poplar  | 22m    | 0.72 m    | Hazard beam at 5m. Broken branch with open cavity at 5.5m.  | Low                             | 1306 |
| 7*                        | W1            | Willow  | 18m    | 1m        | Hole at 3m extends upwards into the trunk. Branch overhanging fence with multi holes and hollows. Potential in dead branches at top of canopy but unsafe to access. | High                            | 1307 |

| Tree Climbing Survey Ref. | RPS Tree Ref. | Species         | Height | DBH       | Notes on PRF's (orientation, height & feature description)   | Potential Value (Roosting bats) | Tag  |
|---------------------------|---------------|-----------------|--------|-----------|--|---------------------------------|------|
| 8*                        | W1            | Oak             | 15m    | 1m        | No obvious cavity features but thick ivy stems and dense cover.  | Low (Moderate)                  | 1308 |
| 9                         | T93           | Oak             | 16m    | 0.98 m    | Split branch at 4m<br>Broken branches at 6m<br>Hazard beam with multiple features at 8m<br>No evidence of use by bats found<br>Photo Reference (See Photo 3) | High                            | 1309 |
| 10                        | G22           | Group of 5 Oaks | 20m    | 1m        | Five ivy-covered trees, one with significant decay at the base<br>No cavities in the canopy<br>No evidence of bats was found                                 | Low                             | 1310 |
| 11                        | T105          | Oak             | 11m    | Twin stem | Dense ivy cover.<br>No obvious cavity features beneath ivy cover   | Moderate                        | 1311 |
| 12                        | T92           | Oak             | 12m    | 0.88 m    | Two holes in a branch at 3m.<br>Broken branch at 8m, shallow features with no potential to be used by bats   | Negligible                      | 1312 |
| 13                        | T100          | Oak             | 10m    | Twin Stem | Hollow at base of tree trunk<br>No cavities found in canopy  | Low                             | 1313 |
| 14                        | T95           | Oak             | 11m    | 0.47 m    | Hole at base of tree<br>Broken branch at 4m with flaking bark  | Low                             | 1314 |
| 15                        | T94           | Oak             | 16m    | 1.4m      | Hollow at base, lapsed pollard with bee's nest in trunk at 1.5m.<br>Bark flaking at 0.5m<br>Large knot hole at 5m<br>Not climbed due to bee's nest.          | Moderate                        | 1315 |
| 16                        | T90           | Oak             | 12m    | 0.47 m    | Hollow at base of tree trunk<br>No cavities found in canopy  | Low                             | 1316 |

| Tree Climbing Survey Ref. | RPS Tree Ref. | Species | Height | DBH    | Notes on PRF's (orientation, height & feature description)  | Potential Value (Roosting bats) | Tag  |
|---------------------------|---------------|---------|--------|--------|---|---------------------------------|------|
| 17                        | T85           | Oak     | 16m    | 0.53 m | Hole in trunk at 5m not viable for use by bats, no potential<br>Hazard beam at 8m but not safely accessible for inspection  | Low (Moderate)                  | 1317 |
| 18                        | T83           | Oak     | 17m    | 1.35 m | Deep hole in main stem at 0.5m leading into hollow tree.<br>At 6m knot hole in branch but not viable as a roost.  | Moderate                        | 1318 |
| 19                        | T81           | Oak     | 11m    | 0.52 m | Ivy clad tree with lateral split in branch at 5m. No evidence of bats and low potential.  | Low                             | 1319 |
|                           |               |         |        |        | At 2.5m is a hole on the underside of a branch with possible staining on the bark next to the hole.   | High                            |      |
| 20                        | T78           | Oak     | 8m     | 0.63 m | Hole in a branch at 2.5m with staining but no droppings or other evidence of use  | High                            | 1320 |
| 21                        | T73           | Oak     | 11m    | 0.72 m | Ivy clad tree<br>Minor bark flaking at 0.5m<br>No cavities found in the trunk or branches   | Low                             | 1321 |
| 22                        | T113          | Oak     | 17m    | 0.88 m | At 4m on the field side is a cut of branch with holes, bees nest present.<br>At 6m on field side is a branch tear at 6m in the centre of the tree is a broken lateral branch.<br>Woodland side of tree at 5m is a branch with bark flaking.<br>At 4m over the fence is a hollow branch with ivy cover.<br>None of the features have evidence of bats but tree has overall high potential. | High                            | 1322 |

| Tree Climbing Survey Ref. | RPS Tree Ref. | Species | Height | DBH    | Notes on PRF's (orientation, height & feature description)  | Potential Value (Roosting bats) | Tag    |
|---------------------------|---------------|---------|--------|--------|---|---------------------------------|--------|
| 23                        | T91           | Oak     | 15m    | 0.87 m | Feature on up-side of branch at 4m extends up to 0.5m and narrows significantly providing high potential<br>No evidence of bats but evidence of defunct birds nest                        | High                            | 1323   |
| 24                        | T88           | Oak     | 9m     | 0.51 m | Storm damaged tree.<br>Branch at 2.5m extending towards field, decay column midway along branch. The decay column extends towards tree and has staining indicating potential use by bats. | High (for low numbers of bats). | 1324   |
| 25                        | T107          | Oak     | 15m    | 0.88 m | Hazard beam over boundary fence at 4m, enclosed with gap, no evidence of bats.  | Moderate                        | No tag |



## Summary

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- 3.1.1 The purpose of this bat scoping survey report is to assess the use of trees at St Cyres, Dinas Powys by roosting bat species. The trees were inspected in February 2017 with no leaves on the canopy therefore allowing greater observation of potential roost features.
- 3.1.2 The trees at the site were initially surveyed by Mr Steve Wadley from ground level following guidance contained in Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) The Bat Conservation Trust London and BS 42020:2013 Biodiversity (Code of practice for planning and development).
- 3.1.3 From the aerial inspection, a total of 11 trees were identified with low potential for roosting bats, 6 trees with moderate potential and 7 with high potential.
- 3.1.4 There was no confirmed physical evidence of bats was identified in any of the trees. However, two oak trees (T19 and T20) showed signs of staining. This type of staining can be caused by bat urine and droppings but could also be as a result of tannings exuding around defects in the structure of the tree.
- 3.1.5 Further survey will be required for all high and moderate value trees that will be subject to felling in order to confirm the presence/absence of bat roosts. This will include emergence/ re-entry surveys from trees.
- 3.1.6 Confirmed roosts should be classified in terms of species, numbers of bats and status. Felling of trees with confirmed roosts must be covered by an NRW European Protected Species Development Licence supported by appropriate alternative roost feature creation and species protection measures.
- 3.1.7 All trees of high and moderate value to be removed should be subject to sectional felling with all limbs gently lowered to ground using ropes. Cut material should be left undisturbed on the ground for 48 hours before removing from the site or being used to create deadwood habitat.
- 3.1.8 For trees of low or negligible value for bats, no further survey is recommended and no specific felling working methods are proposed.

## Glossary

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|                       |   |
|-----------------------|---|
| Hazard Beam:          | Longitudinal split in a branch                                    |
| Knot hole:            | Old branch insertion which has decayed                            |
| Bark flaking:         | Dead bark peeling away to create gap behind                       |
| Bark inclusion:       | Dead area between two co-dominant limbs                           |
| Decay column:         | Vertical or horizontal area of wood decay within a branch or stem |
| PRF:                  | Potential roost feature   |
| Exudates:             | Water and / or debris emerging from a hollow or hole              |
| Hollow:               | Open area within a tree stem or branch                            |
| Hole:                 | Cavity within a stem or branch                                    |
| Crevice:              | Small hole, usually not very deep.                                |
| Staining:             | Darkened area of bark or wood                                     |
| Tanning:              | Wood sap with natural dye.  |
| Lapsed pollard:       | Pollard which has regrown to maturity                             |
| Twin / Multi-stemmed: | Two or more stems growing from one trunk.                         |

# Drawing

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**Appendix EDP 6**  
**Update Bat Tree Climbing Survey**  
**(Ava Ecology, Report Reference AVA/EDP/StCyres/01/2017)**

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Bat Surveys of trees  
at  
St Cyres  
Dinas Powys  
Vale of Glamorgan

*Author:* Steve Wadley

*Commisioned by:* EDP

*Report Reference No.:* AVA/EDP/StCyres/01/2017

*Version:* V1

*Issue Date:* 19/07/2017

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Report authors:

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Document Control:

|                 |                                  |
|-----------------|----------------------------------|
| Client          | EDP                              |
| Site / Job      | St Cyres                         |
| Report Title    | Bat surveys of trees at St Cyres |
| Report Ref.     | AVA/EDP/StCyres/01/2017          |
| Local Authority | Vale of Glamorgan                |

| Version | Status                | Changes | Author/Editor | Position | Date       |
|---------|-----------------------|---------|---------------|----------|------------|
| 1       | 1 <sup>st</sup> Draft | N/A     | Steve Wadley  | Director | 19/07/2017 |

|                    | Name          | Position  | Date       | Initial |
|--------------------|---------------|-----------|------------|---------|
| Reviewed by        | Joanna Wadley | Ecologist | 19/07/2017 | JW      |
| Approved for Issue | Steve Wadley  | Director  | 19/07/2017 | SW      |
| Issued by          | Steve Wadley  | Director  | 19/07/2017 | SW      |

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## Executive Summary:

The purpose of this aerial bat survey report is to assess the use of 5 of the trees at St Cyres, Dinas Powys (See results) by roosting bat species. The trees were previously inspected by Steve Wadley in February 2017 with no leaves on the canopy therefore allowing greater observation of potential roost features. The trees were then climbed in July 2017 and closely inspected to assess the potential of the features.

Of the five trees climbed only one tree has high potential for bats, the remainder have been re-classified as either low or no potential (See results).

## 1 Introduction

This survey and report was carried out by Mr Steve Wadley of AVA Ecology Ltd. Mr Wadley has 5 years' experience of bat conservation, research and survey work. He holds a Natural England (NE) level 4 bat survey licence (Number 2016-20666-CLS-CLS) and VBRV licence as well as a Natural Resources Wales (NRW) bat licence (74520a:OTH:CSAB:2016) He is also qualified in tree climbing and aerial rescue.

Mr Wadley is actively involved in woodland bat research in South East Wales (Wye Valley Bechsteins and Barbastelle Project & Ladypark NNR Woodland Bat Project), chair of Gloucestershire bat group and is a NRW Licence VBRV trainer in Wales.

### Site Description

The site is centred at Grid Reference ST16259 70775 and is a former school grounds near to Dinas Powys. The site is a series of small fields bordered by woodland and intersected by mature tree lines.

### 1.1 Aims of Study

The objective of this study is to identify evidence of any use of the trees by bat species. This aerial tree survey report aims to assess the level of usage, classification of any roost present.

## 2 Methodology

### 2.1 Field Survey

The methods used were appropriate to achieve the aims of the survey and follow **Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3<sup>rd</sup> Edition) The Bat Conservation Trust London and BS 42020:2013 Biodiversity (Code of practice for planning and development).**



The 5 trees were climbed using a ropes and harnesses and closely inspected using an endoscope and torch.

|              |                      |                            |
|--------------|----------------------|----------------------------|
| Date         | 13/07/2017           | Notes                      |
| Weather      | good / clear         |                            |
| Cloud Cover  | %                    |                            |
| Temperature  | 19°C                 |                            |
| Wind Speed   | 0-5mph               |                            |
| <b>Name</b>  | <b>Bat Licence</b>   | <b>Experience</b>          |
| Steve Wadley | 74520a:OTH:CSAB:2016 | Experienced bat specialist |

### 3 Results

| Tree | Tag  | EDP number | Species | Height | DBH       | Notes on PRF's (orientation, height & feature description)   |
|------|------|------------|---------|--------|-----------|--|
| 1    | 1301 | T16        | Oak     | 9m     | 0.62      | Active bees hive at base of tree, therefore not climbed. Surveyed from ground level and still considered low potential. No visible features apart from minor bark flaking.         |
| 2    | 1302 | T134       | Oak     | 11m    | Twin stem | Hollow at base, no evidence of bats. Hollow branch feature at 1.5, no evidence of bats (slugs present).<br><br>Downgraded to low potential.  |
| 3    | 1303 | T39        | Poplar  | 20m    | .71m      | Hazard beam at around 18m, no evidence of bats, still classified as low potential.   |
| 4    | 1309 | T93        | Oak     | 16     | .98m      | Hazard beam at 8m, no evidence of bats but is of <b>high</b> potential.<br><br>Broken branches at 6m have no potential for bats and no evidence of bats. Overall potential is High |



|   |      |     |       |  |     |  |
|---|------|-----|-------|--|-----|--|
| 5 | 1304 | G13 | Polar |  | .7m | Open feature (Hazard Beam),<br>downgraded to no potential for bats<br>due to limitations of the feature. |
|---|------|-----|-------|--|-----|--|

## 4 Constraints

4.1 Bee's nests in 1 of the trees prevented access but again this was not seen as significant.

## 5 Glossary of terms & definitions

Hazard Beam: Longitudinal split in a branch

Knot hole: old branch insertion which has decayed

Bark flaking: Dead Bark areas

Bark inclusion: Dead area between two co-dominant limbs

Woodpecker hole: Hole made by woodpeckers

Decay column: Vertical or horizontal area of wood decay within a branch or stem

PRF: Potential roost feature

Exudates: Water and / or debris emerging from a hollow or hole

Hollow: Open area within a tree stem or branch

Hole: Cavity within a stem or branch

Crevice: small hole, usually not very deep.

Staining: Darkened area of bark or wood sometimes caused by bat urine / faeces or tannin.

Tanning: Wood sap with natural dye.

Lapsed pollard: Pollard which has regrown to maturity



Twin / Multi-stemmed: 2 or more stems growing from one trunk.

Base: Bottom of tree trunk where it meets the ground

Aerial inspection: Inspection of the tree at height over 1.5m

**Definitions:**

Nil potential: No evidence of bats and no potential for bat roosting within the tree canopy.

Low Potential: Tree features have a possibility of roosting by very small number of bats but considered very unlikely usually 1 feature of low potential. i.e. an open and shallow hole.

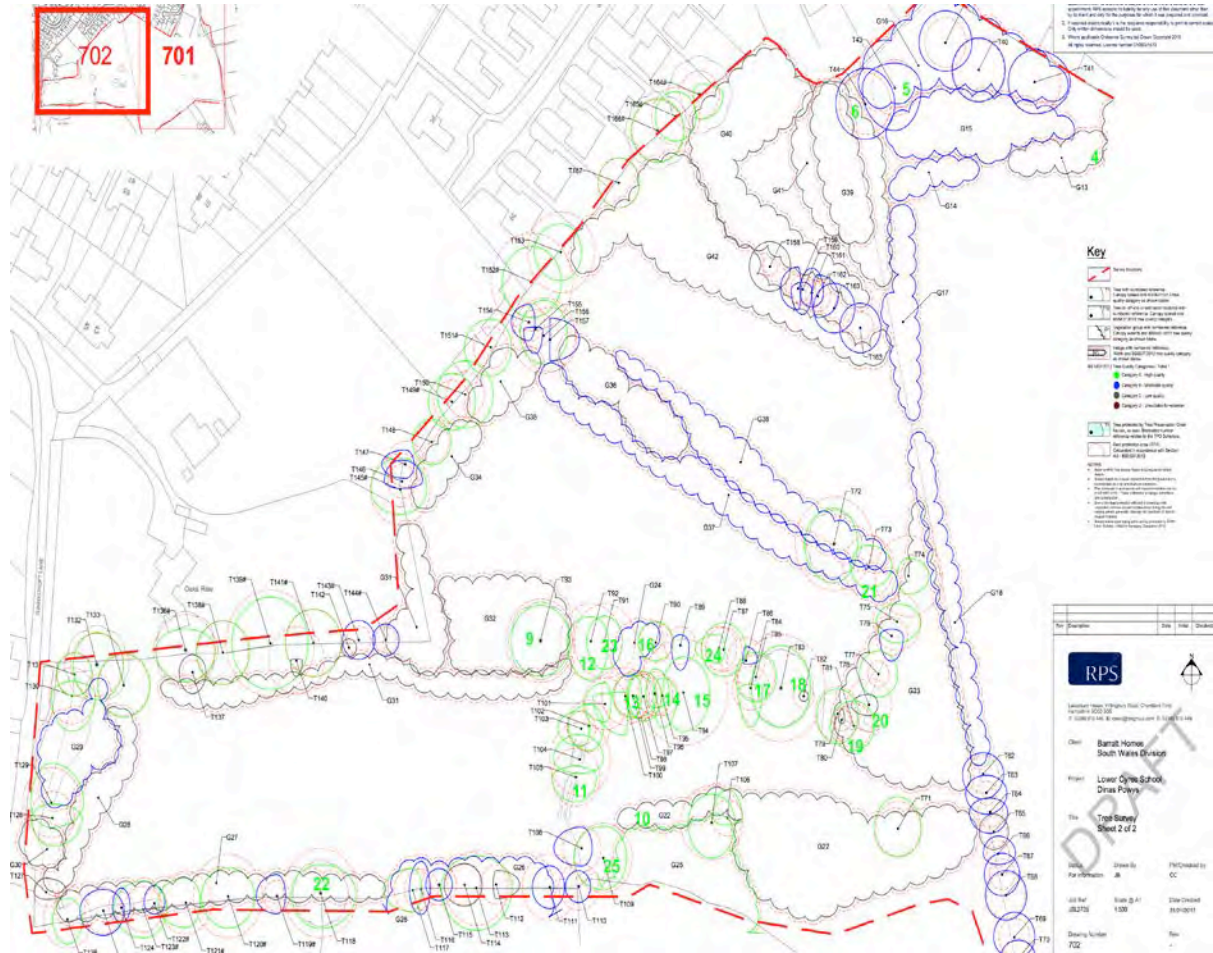
Moderate potential: Tree features have potential for low to medium numbers of roosting bats and considered to be fairly likely to be used at some time during the year. Usually 2 or 3 features with no evidence of bats i.e. an open hazard beam with no evidence of bats and a knot hole with a small decay column.

High potential: Tree features regarded to have high potential for medium to high numbers of bats, extended decay columns, enclosed hazard beams, woodpecker holes, bark flaking etc.

Note: All assessments of potential are based on feature type, dimensions, orientation and information available in the "Bat Tree Habitat Key" (Andrews 2010).



Appendix 1 Tree locations





## Appendix EDP 7 Update Great Crested Newt Survey

### Methodology

#### Habitat Suitability Assessment

- A7.1 Two ponds are located within the boundaries of the Application Site as illustrated at **Plan EDP 2**.
- A7.2 An update Habitat Suitability Index (HSI) assessment, as developed by Oldham et al. (2000)<sup>18</sup>, was therefore completed to assess the suitability of on-site waterbodies to support great crested newt. The survey was completed during the Extended Phase 1 survey on 19 April 2017. The HSI assessment follows a standardised assessment criteria using habitat features such as water quality, fish/waterfowl presence and surrounding terrestrial habitat quality to derive a suitability score, or 'index'. Water bodies with high scores are considered more likely to support great crested newts compared to those with lower scores. HSI scores and the inferred suitability of the ponds assessed to support great crested newts are described within **Table EDP A7.1**.

**Table EDP A7.1:** HSI Scores and Inferred Pond Suitability.

| HSI Score | Pond Suitability to Support Great Crested Newts |
|-----------|---|
| <0.5      | Poor suitability                                |
| 0.5-0.59  | Below average suitability                       |
| 0.6-0.69  | Average suitability                             |
| 0.7-0.79  | Good suitability                                |
| >0.8      | Excellent suitability                           |

#### Environmental DNA Sampling

- A7.3 To determine the presence/likely absence of great crested newt within the single waterbody, water sampling was undertaken on 19 April 2017. Environmental DNA (eDNA) is DNA that is collected from the environment in which an organism lives. In aquatic environments, animals including amphibians shed cellular material into the water via their saliva, urine, faeces, skin cells, etc. This DNA may persist for several weeks, and can be collected through a water sample, and analysed to determine if the target species of interest (great crested newt) is/has been present in the water body.
- A7.4 Each sample was undertaken by a great crested newt licenced EDP ecologist and assistant in accordance with those methodologies set out by the Freshwater Habitats Trust<sup>19</sup> and using separate sterile equipment packs provided by Surescreen for the collection of eDNA samples. Briefly, the protocol involves:

<sup>18</sup> Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.

<sup>19</sup> GCN eDNA protocol, P. Williams, Freshwater Habitats Trust. August 2013.



- Collecting 20 water samples from selected areas evenly spread around the accessible perimeter pond including both open water and vegetated areas;
- At each sampling location, a ladle of water is collected by stirring the water column without stirring up sediment, and poured into the provided sampling bag. When all 20 ladles are collected, the bag is shaken thoroughly;
- 15ml of this mixed sample is then pipetted into each of six conical tubes containing preserving fluid and each tube is shaken thoroughly to homogenize the sample. There are six tubes per pond; and
- These tubes are then labelled appropriately and couriered to the Surescreen laboratory for real-time polymerase chain reaction (PCR) analysis as detailed within Biggs *et al.* (2014)<sup>20</sup>.

## Results

### ***Habitat Suitability Assessment***

- A7.5 The results of the habitat suitability assessment of the pond surveyed for its suitability to support populations of GCN are summarised within **Table EDP A7.2**.

---

<sup>20</sup> Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F 2014. Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.

**Table EDP A7.2:** Pond Habitat Suitability Assessment of the waterbodies within the Application Site.

| Suitability Index     | Criteria            | Definition   | Possible Score | P1   | P2   |
|-----------------------|---------------------|--|----------------|------|------|
| <b>Sl<sub>1</sub></b> | Geographic Location | Zone A - optimal   | 1              | 0.5  | 0.5  |
|                       |                     | Zone B - marginal  | 0.5            |      |      |
|                       |                     | Zone C - unsuitable  | 0.01           |      |      |
| <b>Sl<sub>2</sub></b> | Pond Area           | Pond surface area to the nearest 50m <sup>2</sup>  | *              | 0.05 | 0.05 |
| <b>Sl<sub>3</sub></b> | Permanence          | Never Dries  | 0.9            | 0.5  | 0.5  |
|                       |                     | Rarely dries (Dries no more than 2/10 years or in drought only)                          | 1              |      |      |
|                       |                     | Sometimes dries (Dries between 3/10 years to most years)                                 | 0.5            |      |      |
|                       |                     | Dries annually   | 0.1            |      |      |
| <b>Sl<sub>4</sub></b> | Water Quality       | Good (abundant & diverse invertebrate community)   | 1              | 0.01 | 0.33 |
|                       |                     | Moderate (moderate invertebrate community)   | 0.67           |      |      |
|                       |                     | Poor (low invertebrate diversity, few submerged plants)                                  | 0.33           |      |      |
|                       |                     | Bad (clearly polluted, pollutant tolerant invertebrates present, no submerged plants)    | 0.01           |      |      |
| <b>Sl<sub>5</sub></b> | Shade               | % shade of pond perimeter to at least 1m from the shore                                  | *              | 0.2  | 1    |
| <b>Sl<sub>6</sub></b> | Waterfowl           | Absent (no evidence of waterfowl, excluding moorhen)                                     | 1              | 1    | 1    |
|                       |                     | Minor (waterfowl present, though little impact)  | 0.67           |      |      |
|                       |                     | Major (severe impact of waterfowl)   | 0.01           |      |      |
| <b>Sl<sub>7</sub></b> | Fish                | Absent (no records of fish stocking and no fish seen during survey)                      | 1              | 1    | 1    |
|                       |                     | Possible (no evidence of fish, but conditions suggest presence)                          | 0.67           |      |      |
|                       |                     | Minor (small numbers of crucian carp, goldfish or stickleback)                           | 0.33           |      |      |
|                       |                     | Major (dense populations of fish present)  | 0.01           |      |      |
| <b>Sl<sub>8</sub></b> | Pond Count          | No. ponds within 1 km of survey pond not separated by major barriers and divided by 3.14 | *              | 0.38 | 0.38 |

| Suitability Index  | Criteria    | Definition  | Possible Score | P1          | P2                   |
|--|-------------|---|----------------|-------------|----------------------|
| <b>SI<sub>9</sub></b>  | Terrestrial | Good (extensive habitat offering good opportunities for foraging and shelter surrounding pond)                              | 1              | 1           | 1                    |
|  |             | Moderate (habitat offering opportunities for foraging and shelter, but not extensive and does not completely surround pond) | 0.67           |             |                      |
|  |             | Poor (habitat with poor structure, offering limited opportunities for foraging and shelter)                                 | 0.33           |             |                      |
|  |             | None (No suitable habitat around pond)  | 0.01           |             |                      |
| <b>SI<sub>10</sub></b>   | Macrophytes | % pond surface area occupied by macrophyte cover (excluding duckweed) and submerged plants reaching the surface             | *              | 0.3         | 0.9                  |
| <b>HSI Score = (SI<sub>1</sub>*SI<sub>2</sub>*SI<sub>3</sub>*SI<sub>4</sub>*SI<sub>5</sub>*SI<sub>6</sub>*SI<sub>7</sub>*SI<sub>8</sub>*SI<sub>9</sub>*SI<sub>10</sub>)<sup>1/10</sup></b> |             |   |                | <b>0.28</b> | <b>0.52</b>          |
| <b>Pond Suitability</b><br>(<0.5 = poor; 0.5-0.59 = below average; 0.6-0.69 = average; 0.7-0.79 = good; >0.8 = excellent)  |             |   |                | <b>Poor</b> | <b>Below Average</b> |

\* HSI score = (SI<sub>1</sub>\*SI<sub>2</sub>\*SI<sub>3</sub>\*SI<sub>4</sub>\*SI<sub>5</sub>\*SI<sub>6</sub>\*SI<sub>7</sub>\*SI<sub>8</sub>\*SI<sub>9</sub>\*SI<sub>10</sub>)<sup>1/10</sup>

### **Environmental DNA Sampling**

A7.6 No evidence of great crested newt eDNA was found for either of the waterbodies surveyed. Analysis was conducted in the presence of the following controls: extraction blank; and appropriate positive and negative PCR controls for each of the TaqMan assays (great crested newt, inhibition, and degradation). All controls were noted to have performed as expected. A summary of the results is provided in **Table EDP A7.3** below.

**Table EDP A7.3:** Summary of eDNA Results.

| <b>Pond No.</b> | <b>Kit ID</b> | <b>Detection of Triturus cristatus</b> | <b>No. of positive repetitions</b> | <b>Inhibition</b> | <b>Degradation</b> |
|-----------------|---------------|--|------------------------------------|-------------------|--------------------|
| P1              | 30780         | Negative                               | 0                                  | No                | No                 |
| P2              | 30781         | Negative                               | 0                                  | No                | No                 |

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## Appendix EDP 8 Reptile Survey

### Methodology

- A8.1 To confirm the presence or likely absence of common reptile species and the extent of their usage across the Application Site, detailed refugia-based reptile surveys were undertaken throughout the Application Site. With reference to best practice guidance<sup>21</sup>, seven survey visits were undertaken across May and June 2017. The approximate locations and numbers of reptile refugia is illustrated on **Plan EDP 4**.
- A8.2 A total of 185 artificial refugia comprising roofing felt sheets measuring approximately 0.5m x 0.5m were deployed within suitable reptile habitat across the Application Site on 12 May 2017. Reptile refugia were left undisturbed *in situ* for approximately one week prior to the commencement of the survey visits. Detailed weather conditions recorded during each survey visit undertaken throughout 2017 are summarised in **Table EDP A8.1**.

**Table EDP A8.1:** Date, timing and weather conditions of reptile survey visits undertaken during 2017.

| Visit No. | Date       | Start-Finish Time | Air Temp Range (°C) | Wind Speed (Beaufort) | Cloud Cover (%) | Rain                    |
|-----------|------------|-------------------|---------------------|-----------------------|-----------------|-------------------------|
| 1         | 18/05/17   | 10:00-11:15       | 13.4-13.8           | 2-3                   | 5-10            | Nil                     |
| 2         | 22/05/17   | 09:30-10:45       | 15.8-17.4           | 1-2                   | 40-80           | Nil                     |
| 3         | 24/05/17   | 09:30 - 11:00     | 16.2-17.9           | 1-3                   | 0-5             | Nil                     |
| 4         | 26/05/17   | 08:30-09:30       | 16.8-17.8           | 3-4                   | 0               | Nil                     |
| 5         | 30/05/17   | 09:30-10:40       | 15.2-16.2           | 1-3                   | 100             | Temporary light drizzle |
| 6         | 01/06/2017 | 09:30-10:00       | 17.2-17.8           | 1-2                   | 50              | Nil                     |
| 7         | 06/06/17   | 16:00-17:30       | 16.9-17.6           | 4-5                   | 30-50           | Nil                     |

- A8.3 During each survey visit, artificial refugia were individually checked by experienced ecologists with any reptiles observed recorded, along with notes on their life stage (adult/juvenile) and sex where possible.
- A8.4 A peak count of the total number of individuals of a particular species was recorded. Peak counts were then used to estimate approximate population size for each reptile

<sup>21</sup> Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10, Froglife, Halesworth; DMRB (2005) *Nature conservation advice in relation to reptiles and roads. Volume 10, Section 4, Part 7, HA/116/05*. DMRB.

species recorded, in accordance with published guidance<sup>22</sup> and are summarised with respect to widespread reptiles in **Table EDP A8.2**.

**Table EDP A8.2:** Population size class estimates.

| Species       | Population Size Estimate |         |           |
|---------------|--------------------------|---------|-----------|
|               | Low                      | Medium  | High      |
| Slow-worm     | < 50/ ha                 | >50/ ha | > 100/ ha |
| Common lizard | < 20/ ha                 | >40/ ha | > 80/ ha  |
| Grass snake   | < 2/ ha                  | 2-4/ ha | > 4/ ha   |
| Adder         | < 2/ ha                  | 2-4/ ha | > 4/ ha   |

### Limitations

A8.5 Reptile surveys undertaken within the Application Site were completed during suitable weather conditions and during optimum months for reptile surveys. The temperatures recorded for all reptile surveys in 2017 are also considered to be within the recommended parameters for optimal conditions and as such are not considered to have affected the survey findings.

### Results

A8.6 Reptile surveys confirmed the presence of slow-worm within the Application Site (see **Plan EDP 4**). Full details of the number of individuals and peak survey count for slow-worm is given in **Table EDP A8.3**.

**Table EDP A8.3:** Number, and peak survey count, of reptiles recorded within Application Site.

| Visit                                    | Visit Date | Slow-worm  |      |       |
|--|------------|------------|------|-------|
|  |            | Adult      | Juv. | Total |
| 1  | 18/05/17   | 0          | 0    | 0     |
| 2  | 22/05/17   | 3          | 1    | 4     |
| 3  | 24/05/17   | 2          | 0    | 2     |
| 4  | 26/05/17   | 1          | 0    | 1     |
| 5  | 30/05/17   | 1          | 0    | 1     |
| 6  | 01/06/2017 | 4          | 1    | 5     |
| 7  | 06/06/17   | 3          | 1    | 4     |
| <b>Maximum Count Recorded per Visit:</b> |            | <b>5</b>   |      |       |
| <b>Population Size Class Estimate:</b>   |            | <b>Low</b> |      |       |

A8.7 A peak survey count of 5 slow-worm was recorded on the sixth reptile survey visit (1 June 2017), indicating the presence of a low population supported by the Application Site. The results indicate that slow-worm are largely associated with hedgerow boundaries within the western half of the Application Site, although low numbers were also associated with northern boundary adjacent to plantation woodland.

<sup>22</sup> Herpetofauna Groups of Britain and Ireland (1998). *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards*. HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs).






## **Appendix EDP 9 Non-statutory Designations**



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**BIODIVERSITY INFORMATION  
SEARCH (SPECIES):**

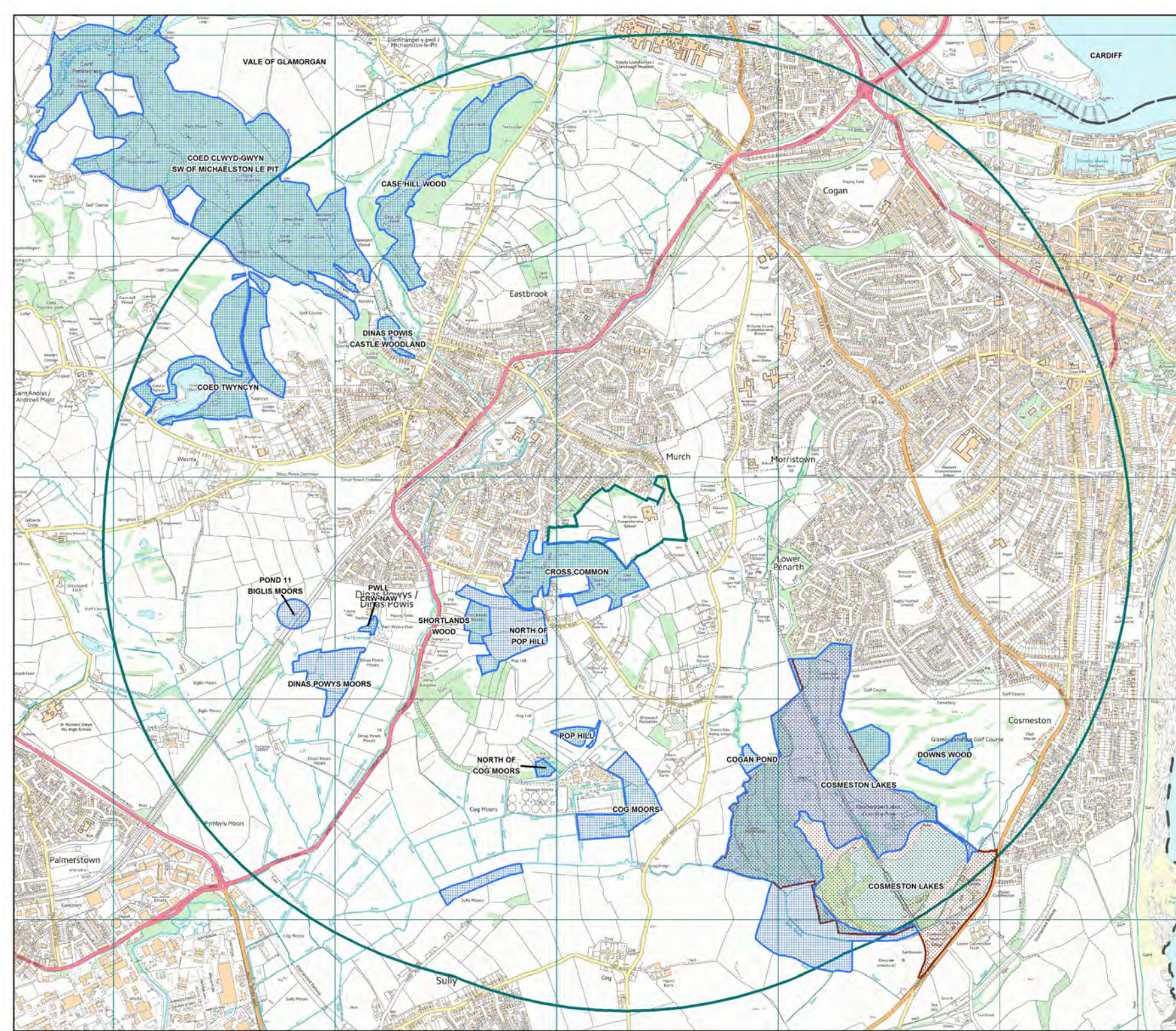
**ST CYRES  
(ST1655170880)**

-  Centre of Search Area
-  2km Search Buffer
-  Site of Importance for Nature Conservation
-  Country Park
-  Unitary Authority Boundary

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Plot produced on 22/06/2015 on behalf of RPS Planning and Development by



| <b>Vale of Glamorgan – Review of Priority Habitats and SINC</b>   |   |
|---|---|
| <b>Site number:</b> 44-1-W1   | <b>Site name:</b> Cross Common/The Breeches |
| <b>Grid reference:</b> ST158705   | <b>Area (hectares):</b>                     |
| <b>Survey date:</b> 7.9.09  |   |
| <b>Summary description</b>  |   |
| <p>This large block of calcareous woodland appears to have resulted from the gradual amalgamation of several different copses over time. Mature woodland is W8 and is dominated by a tall canopy of ash; most trunks are clothed by ivy. Some large and apparently old pedunculate oak trees are growing close to the road. There is a calcicolous shrub understorey with much field maple, dogwood and wild privet. Outgrown hazel stools are locally abundant and traveller's-joy festoons parts of the canopy.</p> <p>The canopy is dense and closed and the woodland floor is dark. Ivy forms an extensive carpet in such areas and woodland indicator species are typically scarce in the woodland interior. Dog's mercury and stinking iris are among the few herbs able to withstand the dark conditions. Other species are more frequent along the road-bank.</p> |   |
| <b>Priority habitats identified by Environment Systems (Insert from attached list):</b>   |   |
| Woodland - broadleaved  |   |
| <b>Priority habitats on site validated by field survey: (Insert from attached list):</b>  |   |
| Native woodland   |   |
| <b>Current management (including problems and opportunities for biodiversity enhancement)</b>   |   |
| <p>There seems to be no active management and the closed canopy has severely restricted the light getting to the woodland floor; in consequence the ground flora has been diminished. Canopy and understorey thinning would help to restore the wood.</p>   |   |
| <b>Assessment against SINC criteria required (YES/NO)</b>   |   |
| Yes   |   |

**Species list for SINC assessment (include Dominant species, SINC Indicator species)**

|                                 |          |
|---------------------------------|----------|
| <b>No of indicator species</b>  | <b>9</b> |
| Fraxinus excelsior              | D        |
| Hedera helix                    | D        |
| Acer campestre                  | F-A      |
| Brachypodium sylvaticum         | F-A      |
| Corylus avellana                | F-A      |
| Iris foetidissima               | F-A      |
| Ligustrum vulgare               | F-A      |
| Mercurialis perennis            | F-A      |
| Quercus robur                   | F-A      |
| Thamnobryum alopecurum          | F-A      |
| Carex sylvatica                 | Present  |
| Conopodium majus                | Present  |
| Euonymus europaeus              | Present  |
| Polystichum setiferum           | Present  |
| Primula vulgaris                | Present  |
| Viola reichenbachiana/riviniana | Present  |

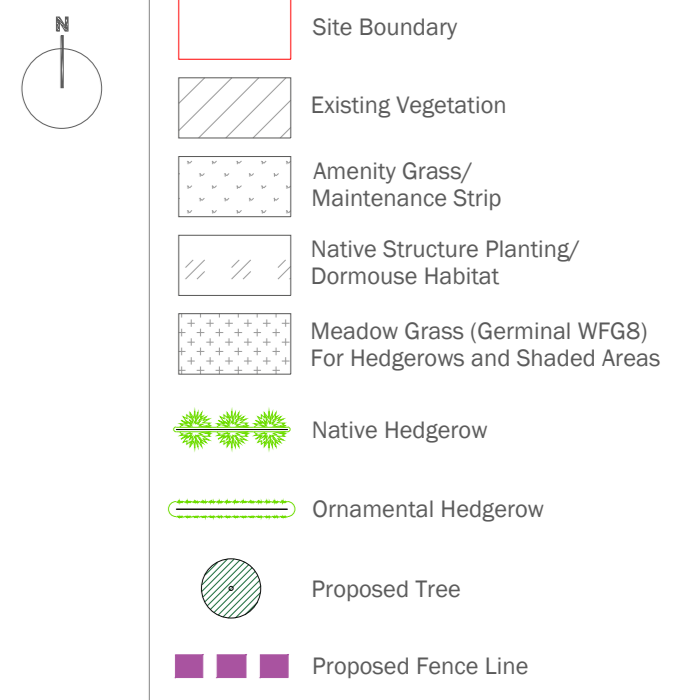
Fauna observations:

**Additional Information**

Survey was undertaken close to Cross Common Road.

**Appendix EDP 10**  
**Detailed Soft Landscape Strategy - Plans 1 to 7**  
**(EDP3927/03a 08 August 2017 AL/KH)**

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**Protective Fencing for Dormouse Habitat**  
 All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

**Dormouse Habitat and Native Structure Planting Areas**  
 Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.



Tree Pit Detail

- 1x tanalised timber tree stake 2m, 75mm Ø driven into backfilled pit to provide support to the tree.
2. **RootRain** Metro irrigation system or similar. Place around top of root ball and nail to supporting stake, ensuring filler cap finishes slightly above mulch level.
3. **Re**Root root barrier with root deflecting ribs installed between tree root ball and hard surfaces/services where there is a risk of root damage as the tree grows outward. As a general rule root barriers should be installed in locations where hard surfaces and/or services are located within four metres of the tree stem. Install closer to the paving/service than the tree, to allow space for the tree roots to grow into the space available, with the ribs facing the tree. Note this may mean not placing the barrier within the tree pit, but further away within its own trench. Root barriers must extend a minimum of 2m lengths beyond the expected canopy of the mature tree. The top of the root barrier should be set as close to the soil surface as possible without being visible.
4. 50mm square galvanized wire mesh bent in circle 320mm Ø and nailed to tree stake to protect tree from damage by people and animals. Bottom of mesh should be 300mm above ground level to allow strimmer guard to be fitted and prevent litter and grass/weeds building up around the base of the tree. Top of mesh should be below the first lateral branch.
5. Use 2x Tree Tie GLB25A with GLPFA spacer sleeve or similar to secure tree to support post.
6. 50mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture.
7. Excavate tree pit to sufficient size to accommodate tree root ball. Loosen any compaction in base of excavated pit to aid drainage. The tree should be planted at a depth where the root flare is still visible, just breaching the soil surface following backfilling.
8. Backfill tree pit with subsoil and topsoil excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality, then soil ameliorants may be used sparingly or imported topsoil compliant with BS3882 should be used.
9. **Strimmer guard** by Arbortech or similar to be fitted around base of tree to protect from damage by grass maintenance machinery primarily, but also to provide an additional layer of defense against animal browsing.

The notes above are intended as a basic guide only. For further guidance on tree planting refer to BS 8545:2014 Section 10.

Products suggested in italics above are available from Green Blue Urban (<http://greenblueurban.com/>) and Arbortech ([www.arbortech.co.uk](http://www.arbortech.co.uk)).

**Tree Maintenance and Management During 5 Year Establishment Period**

Immediately following planting, the tree should be watered thoroughly. Following this, and with regard to prevailing weather conditions, newly planted trees should be watered regularly during periods of dry weather. If the tree pit has been specified with an irrigation pipe, this should be used as the primary method of watering. If no irrigation pipe is specified, the square metre of ground around the tree should be soaked to field capacity (refer to BS 8545:2014 for further detail) by surface watering. Watering frequency is more important than quantity to prevent the root ball of the newly planted tree from drying out.

All trees are fitted with protective guards to prevent animal damage. These should be checked regularly to ensure they remain in place and are providing adequate protection against the animals in the area. If damage to trees from browsing by animals still occurs, additional measures may be required.

A formal assessment of young tree health and development should be carried out annually by a qualified arborist who will be able to advise on solutions should any problems be picked up. During this assessment any stakes and ties should be checked to ensure they are providing support but not damaging the tree, and that the tree is still firmly seated in the ground. If the tree has become loose in the ground, the soil around the base should be re-firmed and stakes and ties adjusted accordingly.

The mulched area around the base of the tree should be kept clear of competing vegetation and weeds at all times.

Tree stakes and ties should be removed once the tree has established a strong enough root system to support itself, likely to be 1-2 years after planting. Strimmer guards should remain in place until the end of the five year establishment, with adjustments or segments added as necessary to facilitate tree growth. Tree guards should only be removed if they are beginning to restrict tree growth or if it is felt the risk of damage has significantly reduced due to strong tree growth and development or changes in the surrounding environment.

Formative pruning should be carried out in accordance with BS 3998 as required throughout the five year establishment period.

For further guidance on tree maintenance during establishment refer to BS 8545:2014 Section 11.

**Planting Schedule**

| Trees | Number  | Species                                | Girth   | Height    | Specification                                    |
|-------|---------|--|---------|-----------|--|
|       | 995 No. | <i>Crataegus monogyna</i>              |         | 60-80cm   | B :1+1 :Transplant: Seed Raised                  |
|       | 21 No.  | <i>Malus sylvestris</i>                |         | 60-80cm   | 1+1 :Transplant: Seed Raised                     |
|       | 137 No. | <i>Carpinus betulus</i>                |         | 40-60cm   | B :1u1 :Seedlings: Undercut                      |
|       | 17 No.  | <i>Acer campestre</i>                  | 12-14cm | 175-200cm | B :Light Standard :Clear Stem 175-200            |
|       | 8 No.   | <i>Prunus subhirtella 'Autumnalis'</i> | 10-12cm | 250-300cm | Light Standard :Clear Stem 150-175 :3/5 brks     |
|       | 8 No.   | <i>Pyrus communis 'Concorde'</i>       |         | 175-200cm | Half Standard :Clear Stem 100-125 :3 brks :C     |
|       | 9 No.   | <i>Malus sylvestris</i>                | 10-12cm | 250-300cm | Light Standard :Clear Stem 150-175 :3 brks       |
|       | 10 No.  | <i>Pyrus calleryana 'Chanticleer'</i>  | 10-12cm | 250-300cm | Light Standard :Clear Stem 150-175 :3 brks       |
|       | 28 No.  | <i>Acer campestre 'Elsrijk'</i>        | 10-12cm | 300-350cm | Selected Standard :Clear Stem min. 200 :4 brks   |
|       | 2 No.   | <i>Malus domestica 'Sunset'</i>        |         |           | Half Standard :Clear Stem 100-125 :4 brks :C     |
|       | 428 No. | <i>Acer campestre</i>                  |         | 60-80cm   | B :1u1 :Seedlings: Undercut                      |
|       | 467 No. | <i>Euonymus europaeus</i>              |         | 60-80cm   | B :1+2 :Transplant: Seed Raised Branched :5 brks |
|       | 929 No. | <i>Malus sylvestris</i>                |         | 60-80cm   | C :1+1 :Transplant: Seed Raised                  |
|       | 853 No. | <i>Quercus robur</i>                   |         | 60-80cm   | B :1+1 :Transplant: Seed Raised                  |

| Shrubs | Number  | Species                                   | Pot Size | Height  | Specification                                     | Density          |
|--------|---------|---|----------|---------|---|------------------|
|        | 21 No.  | <i>Cornus sanguinea</i>                   | 2L       | 40-60cm | Branched :3 brks                                  | 1/m              |
|        | 35 No.  | <i>Corylus avellana</i>                   |          | 60-80cm | B :1+2 :Transplant: Seed Raised :3 brks           | 1/m              |
|        | 51 No.  | <i>Ilex aquifolium</i>                    | 2L       | 40-60cm | Leader With Laterals                              | 1/m              |
|        | 51 No.  | <i>Prunus spinosa</i>                     |          | 40-60cm | B :1+1 :Branched :2 brks                          | 1/m              |
|        | 51 No.  | <i>Rosa canina</i>                        |          | 60-80cm | B:Transplant: Seed Raised :3 brks                 | 1/m              |
|        | 35 No.  | <i>Viburnum lantana</i>                   |          | 60-80cm | B: 1+2: Transplant: Seed Raised :Branched :3 brks | 1/m              |
|        | 21 No.  | <i>Viburnum opulus</i>                    | 3L       | 40-60cm | Branched :4 brks                                  | 1/m              |
|        | 230 No. | <i>Buxus sempervirens</i>                 | 5L       | 30-40cm | Bushy : 8 breaks                                  | 4/m <sup>2</sup> |
|        | 230 No. | <i>Lonicera nitida</i>                    | 2L       | 30-40cm | Bushy : 3 breaks                                  | 4/m <sup>2</sup> |
|        | 154 No. | <i>Salvia officinalis 'Tricolor'</i>      | 1L       | 30-40cm | Full Pot  | 4/m <sup>2</sup> |
|        | 290 No. | <i>Lonicera nitida 'May Green'</i>        | 3L       |         | Bushy :4/6 brks                                   | 5/m <sup>2</sup> |
|        | 167 No. | <i>Sarcococca humilis</i>                 | 3L       | 20-30cm | Bushy :4/6 brks                                   | 5/m <sup>2</sup> |
|        | 180 No. | <i>Choisya 'Aztec Pearl'</i>              | 3L       | 30-40cm | Bushy :5/6 brks                                   | 3/m <sup>2</sup> |
|        | 189 No. | <i>Euonymus fortunei 'Emerald Gaiety'</i> | 3L       | 20-30cm | Bushy :5/6 brks                                   | 3/m <sup>2</sup> |
|        | 303 No. | <i>Viburnum davidii</i>                   | 3L       | 20-30cm | Bushy :3 brks                                     | 3/m <sup>2</sup> |
|        | 87 No.  | <i>Hebe 'Red Edge'</i>                    | 3L       |         | Bushy :5 brks                                     | 5/m <sup>2</sup> |
|        | 87 No.  | <i>Lavandula angustifolia 'Hidcote'</i>   | 3L       | 20-30cm | Bushy :5 brks                                     | 5/m <sup>2</sup> |
|        | 79 No.  | <i>Salvia officinalis 'Tricolor'</i>      | 2L       | 20-30cm |   | 5/m <sup>2</sup> |
|        | 80 No.  | <i>Hebe rakaiensis</i>                    | 3L       |         | Bushy :5 brks                                     | 3/m <sup>2</sup> |
|        | 87 No.  | <i>Lonicera nitida 'Baggesen's Gold'</i>  | 3L       | 30-40cm | Bushy :3 brks                                     | 3/m <sup>2</sup> |
|        | 65 No.  | <i>Phormium 'Sundowner'</i>               | 3L       | 30-40cm | 7 leaves  | 3/m <sup>2</sup> |
|        | 177 No. | <i>Lavandula angustifolia 'Hidcote'</i>   | 10L      | 30-40cm | Bushy : 9 brks : C                                | 3/m <sup>2</sup> |
|        | 130 No. | <i>Lavandula x intermedia 'Alba'</i>      | 2L       | 15-20cm | Bushy : 5 brks : C                                | 3/m <sup>2</sup> |
|        | 59 No.  | <i>Viburnum davidii</i>                   | 10L      | 30-40cm | Bushy : 5 brks : C                                | 3/m <sup>2</sup> |
|        | 97 No.  | <i>Vinca major</i>                        | 5-7.5L   |         | Several Shoots : 5 brks : C                       | 5/m <sup>2</sup> |
|        | 144 No. | <i>Euonymus fortunei 'Emerald Gaiety'</i> | 10L      | 30-40cm | Bushy : 11 brks : C                               | 3/m <sup>2</sup> |
|        | 126 No. | <i>Lonicera pileata</i>                   | 3L       |         | Bushy :5/6 brks                                   | 5/m <sup>2</sup> |
|        | 126 No. | <i>Vinca minor</i>                        | 2L       |         | Several shoots :3 brks                            | 5/m <sup>2</sup> |
|        | 114 No. | <i>Mahonia aquifolium 'Apollo'</i>        | 3L       | 20-30cm | Branched :2 brks                                  | 3/m <sup>2</sup> |
|        | 25 No.  | <i>Berberis thunbergii</i>                | 3L       | 40-60cm | Branched :5 brks                                  | 3/m <sup>2</sup> |
|        | 25 No.  | <i>Ilex aquifolium</i>                    | 5-7.5L   | 60-80cm | Leader With Laterals                              | 3/m <sup>2</sup> |
|        | 25 No.  | <i>Lonicera nitida 'Baggesen's Gold'</i>  | 5-7.5L   | 40-60cm | Bushy :5 brks                                     | 3/m <sup>2</sup> |
|        | 25 No.  | <i>Mahonia x media 'Winter Sun'</i>       | 10L      | 60-80cm | Bushy :3 brks                                     | 3/m <sup>2</sup> |
|        | 52 No.  | <i>Vinca major</i>                        | 1.5-2L   |         | Several shoots :3 brks                            | 3/m <sup>2</sup> |
|        | 41 No.  | <i>Euonymus fortunei 'Emerald Gaiety'</i> | 10L      | 30-40cm | Bushy : 11 brks : C                               | 4/m <sup>2</sup> |
|        | 34 No.  | <i>Hebe 'Amy'</i>                         | 2L       | 20-30cm | Bushy : 3 brks : C                                | 4/m <sup>2</sup> |
|        | 34 No.  | <i>Lavandula angustifolia 'Hidcote'</i>   | 10L      | 30-40cm | Bushy : 9 brks : C                                | 4/m <sup>2</sup> |
|        | 29 No.  | <i>Vinca major</i>                        | 3L       |         | Several Shoots : 3 brks : C                       | 6/m <sup>2</sup> |
|        | 13 No.  | <i>Hebe 'Amy'</i>                         | 2L       | 20-30cm | Bushy : 3 brks : C                                | 3/m <sup>2</sup> |
|        | 8 No.   | <i>Lavandula angustifolia 'Hidcote'</i>   | 7.5L     | 30-40cm | Bushy : 9 brks : C                                | 3/m <sup>2</sup> |
|        | 8 No.   | <i>Lonicera nitida</i>                    | 3L       | 30-40cm | Bushy : 4 brks : C                                | 3/m <sup>2</sup> |
|        | 13 No.  | <i>Vinca major</i>                        | 1.5-2L   |         | Several Shoots : 3 brks : C                       | 5/m <sup>2</sup> |
|        | 467 No. | <i>Cornus sanguinea</i>                   | 2L       | 40-60cm | Branched :3 brks                                  | 1/m <sup>2</sup> |
|        | 929 No. | <i>Corylus avellana</i>                   |          | 60-80cm | B :1+2: Transplant: Seed Raised :3 brks           | 1/m <sup>2</sup> |
|        | 467 No. | <i>Ilex aquifolium</i>                    | 2L       | 40-60cm | Leader With Laterals                              | 1/m <sup>2</sup> |
|        | 929 No. | <i>Prunus spinosa</i>                     |          | 40-60cm | B :1+1 :Branched :2 brks                          | 1/m <sup>2</sup> |
|        | 929 No. | <i>Rosa canina</i>                        |          | 60-80cm | B:Transplant: Seed Raised :3 brks                 | 1/m <sup>2</sup> |
|        | 467 No. | <i>Viburnum lantana</i>                   |          | 60-80cm | B: 1+2: Transplant: Seed Raised :Branched :3 brks | 1/m <sup>2</sup> |
|        | 467 No. | <i>Viburnum opulus</i>                    | 3L       | 40-60cm | Branched :4 brks                                  | 1/m <sup>2</sup> |

**Herbaceous**

| Number  | Species                                  | Pot Size | Specification | Density          |
|---------|--|----------|---------------|------------------|
| 185 No. | <i>Nepeta nervosa</i>                    | 3L       |               | 4/m <sup>2</sup> |
| 167 No. | <i>Bergenia 'Rotblum'</i>                | 2L       | Full Pot      | 5/m <sup>2</sup> |
| 80 No.  | <i>Nepeta 'Six Hills Giant'</i>          | 5L       | Full Pot: C   | 3/m <sup>2</sup> |
| 243 No. | <i>Bergenia 'Bressingham White'</i>      | 5L       | Full Pot: C   | 5/m <sup>2</sup> |
| 161 No. | <i>Salvia officinalis 'Purpurascens'</i> | 5L       | Full Pot: C   | 5/m <sup>2</sup> |
| 77 No.  | <i>Mentha spicata</i>                    | 3L       | Full Pot: C   | 5/m <sup>2</sup> |
| 109 No. | <i>Bergenia 'Rotblum'</i>                | 3L       | Full Pot      | 5/m <sup>2</sup> |
| 104 No. | <i>Helleborus orientalis</i>             | 3L       | Full Pot      | 3/m <sup>2</sup> |
| 41 No.  | <i>Nepeta 'Six Hills Giant'</i>          | 5L       | Full Pot: C   | 6/m <sup>2</sup> |
| 41 No.  | <i>Triarella cordifolia</i>              | 5L       | Full Pot: C   | 6/m <sup>2</sup> |
| 13 No.  | <i>Mentha spicata</i>                    | 1L       | Full Pot: C   | 5/m <sup>2</sup> |
| 69 No.  | <i>Salvia officinalis 'Purpurascens'</i> | 2L       | Full Pot: C   | 5/m <sup>2</sup> |

**Climbers**

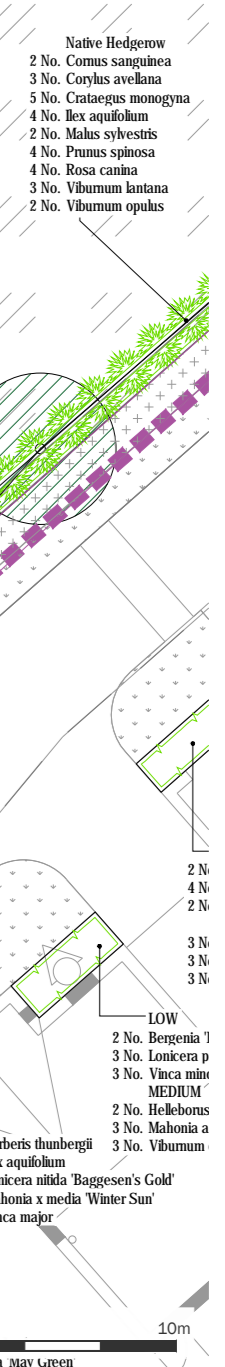
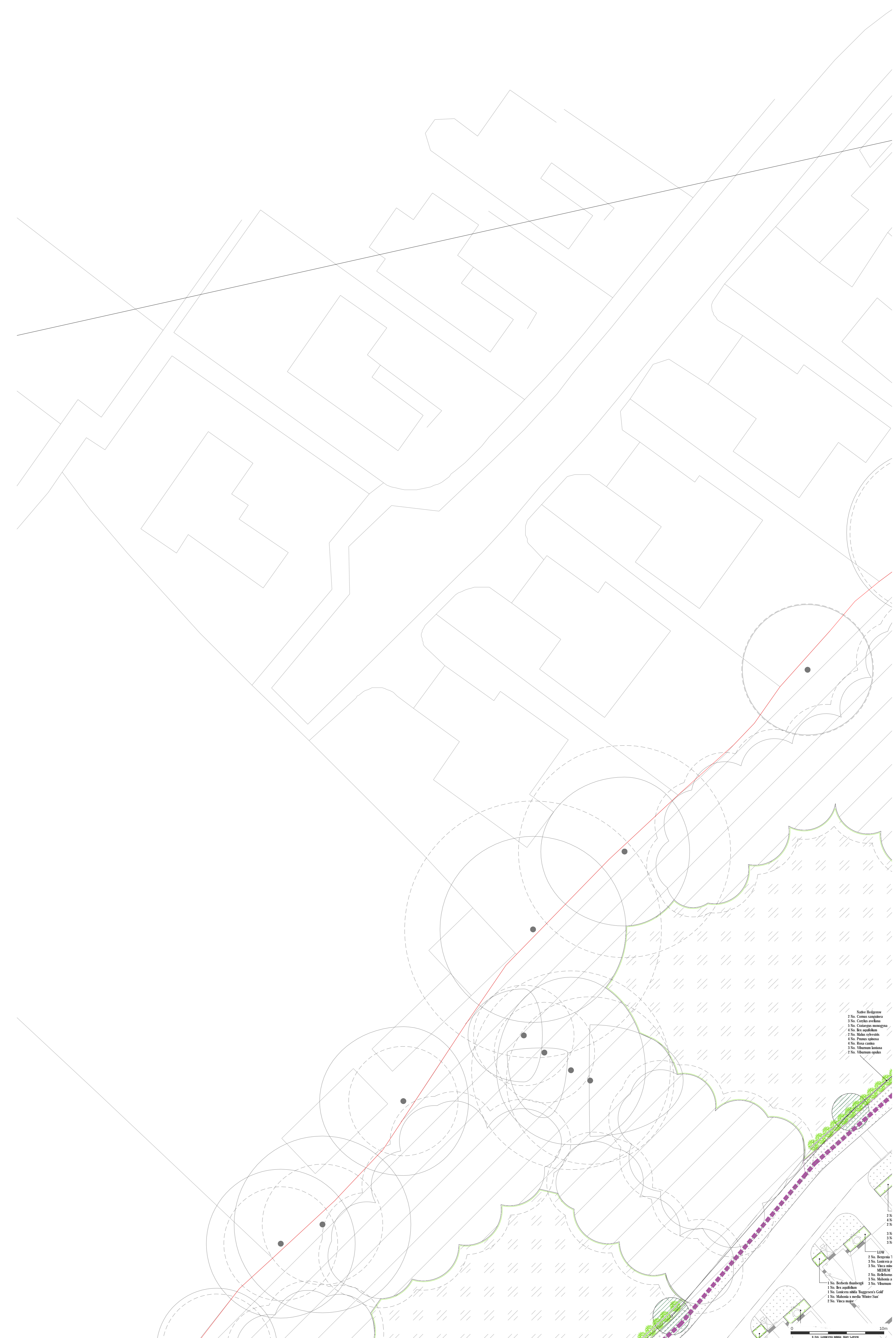
| Number   | Species                      | Pot Size | Specification                   | Density          |
|----------|------------------------------|----------|---------------------------------|------------------|
| 154 No.  | <i>Hedera helix</i>          | 0.5L     | Several shoots: 2 breaks        | 4/m <sup>2</sup> |
| 1042 No. | <i>Lonicera periclymenum</i> | 3L       | Several Shoots :3/4 brks :Caned | 1/m <sup>2</sup> |

**Bulbs**

| Number  | Species                          | Bulb Size      | Density          |
|---------|----------------------------------|----------------|------------------|
| 264 No. | <i>Allium cristophii</i>         | 10/+ (Topsize) | 5/m <sup>2</sup> |
| 29 No.  | <i>Hyacinthoides non-scripta</i> | 8/9            | 6/m <sup>2</sup> |
| 8 No.   | <i>Allium 'Globemaster'</i>      | 20/+           | 5/m <sup>2</sup> |
| 53 No.  | <i>Hyacinthoides non-scripta</i> | 8/9            | 5/m <sup>2</sup> |

**Ferns**










| Number | Species                     | Pot Size | Specification | Density          |
|--------|-----------------------------|----------|---------------|------------------|
| 40 No. | <i>Dryopteris filix-mas</i> | 1.5-2L   | Full Pot: C   | 3/m <sup>2</sup> |



Project Name: **BDW (South Wales)**  
 Project Site: **St. Cyres, Dinas Powys**  
 Drawing Title: **Soft Landscape Strategy - Sheet 1 of 7**  
 Date: 08 AUGUST 2023  
 Drawing Number: EDP007103A  
 Scale: 1:500  
 Client: **edp** the environmental dimension partnership  
 www.edp-uk.co.uk  
 EDP007103A 08 AUGUST 2023





-  Site Boundary
-  Existing Vegetation
-  Amenity Grass/ Maintenance Strip
-  Native Structure Planting/ Dormouse Habitat
-  Meadow Grass (Germinid WFGS) For Hedgerows and Stripped Areas
-  Native Hedgerow
-  Ornamental Hedgerow
-  Proposed Tree
-  Proposed Fence Line



**Protective Fencing for Dormouse Habitat**

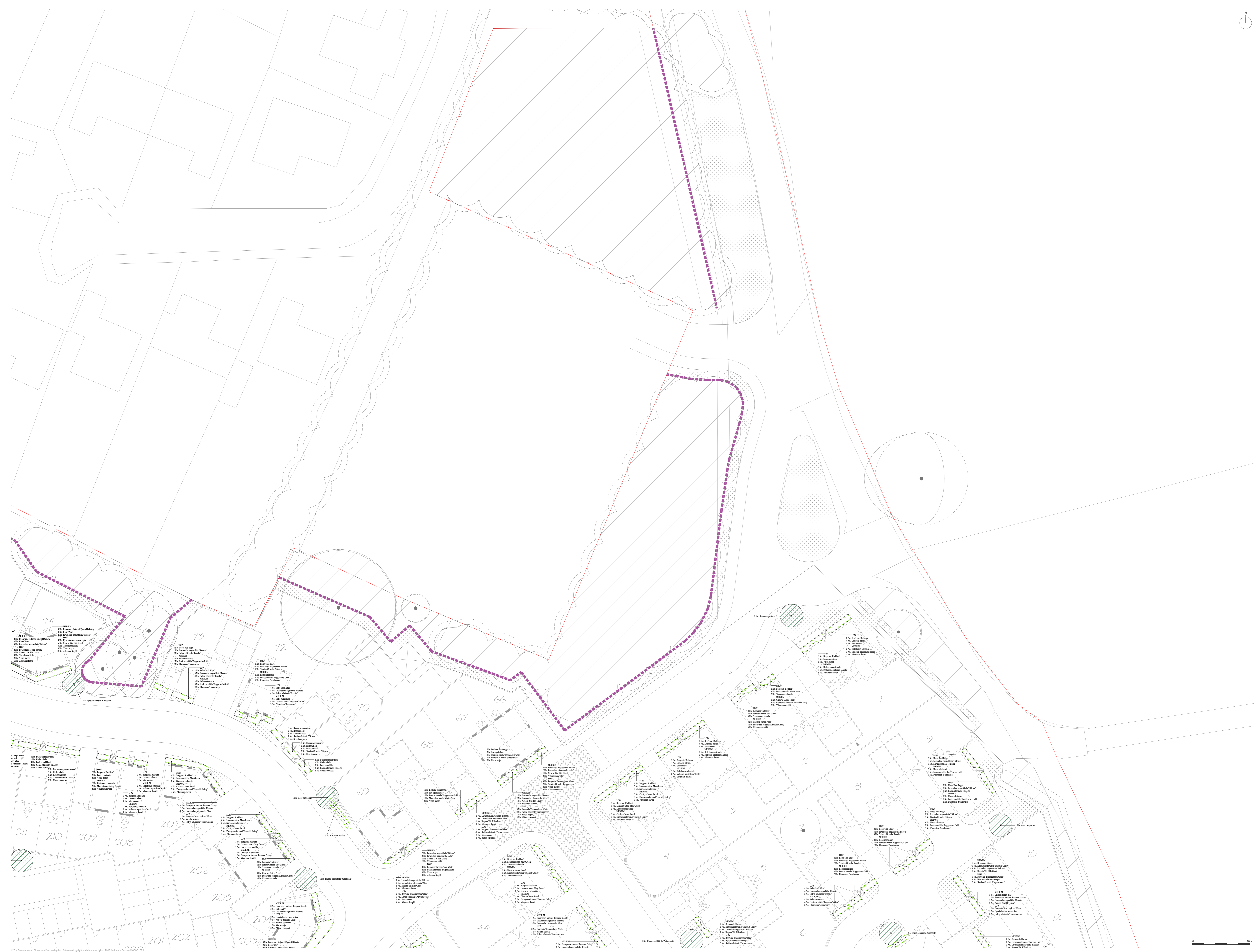
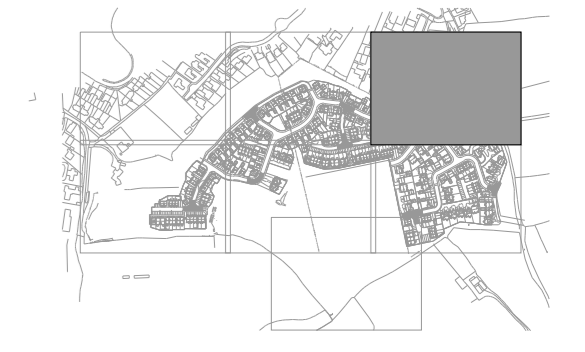
All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

**Dormouse Habitat and Native Structure Planting Areas**

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

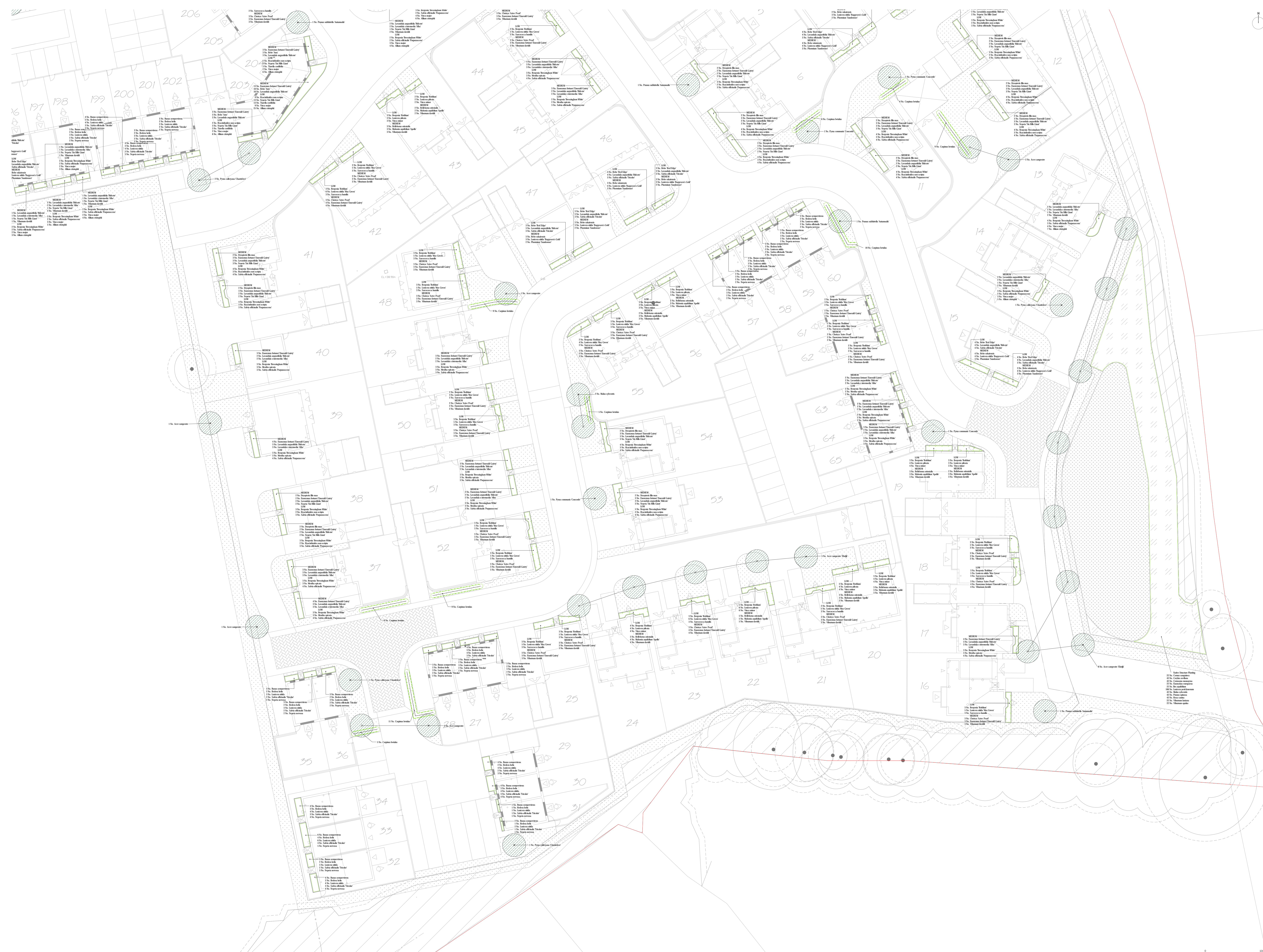
Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landscape whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.









- Site Boundary
- Existing Vegetation
- Amenity Grass/ Maintenance Strip
- Native Structure Planting/ Dormouse Habitat
- Meadow Grass (Germinl WFGS) For Hedgehows and Striped Areas
- Native Hedgehog
- Ornamental Hedgehog
- Proposed Tree
- Proposed Fence Line



**Protective Fencing for Dormouse Habitat**

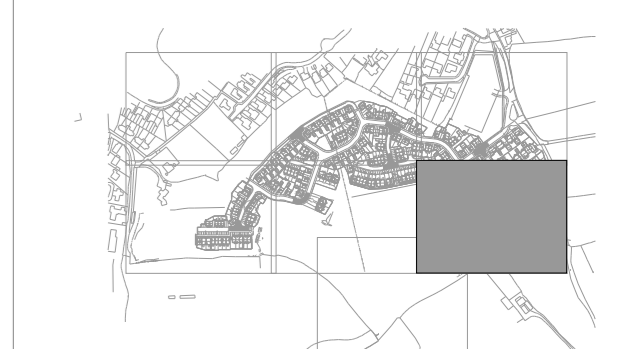
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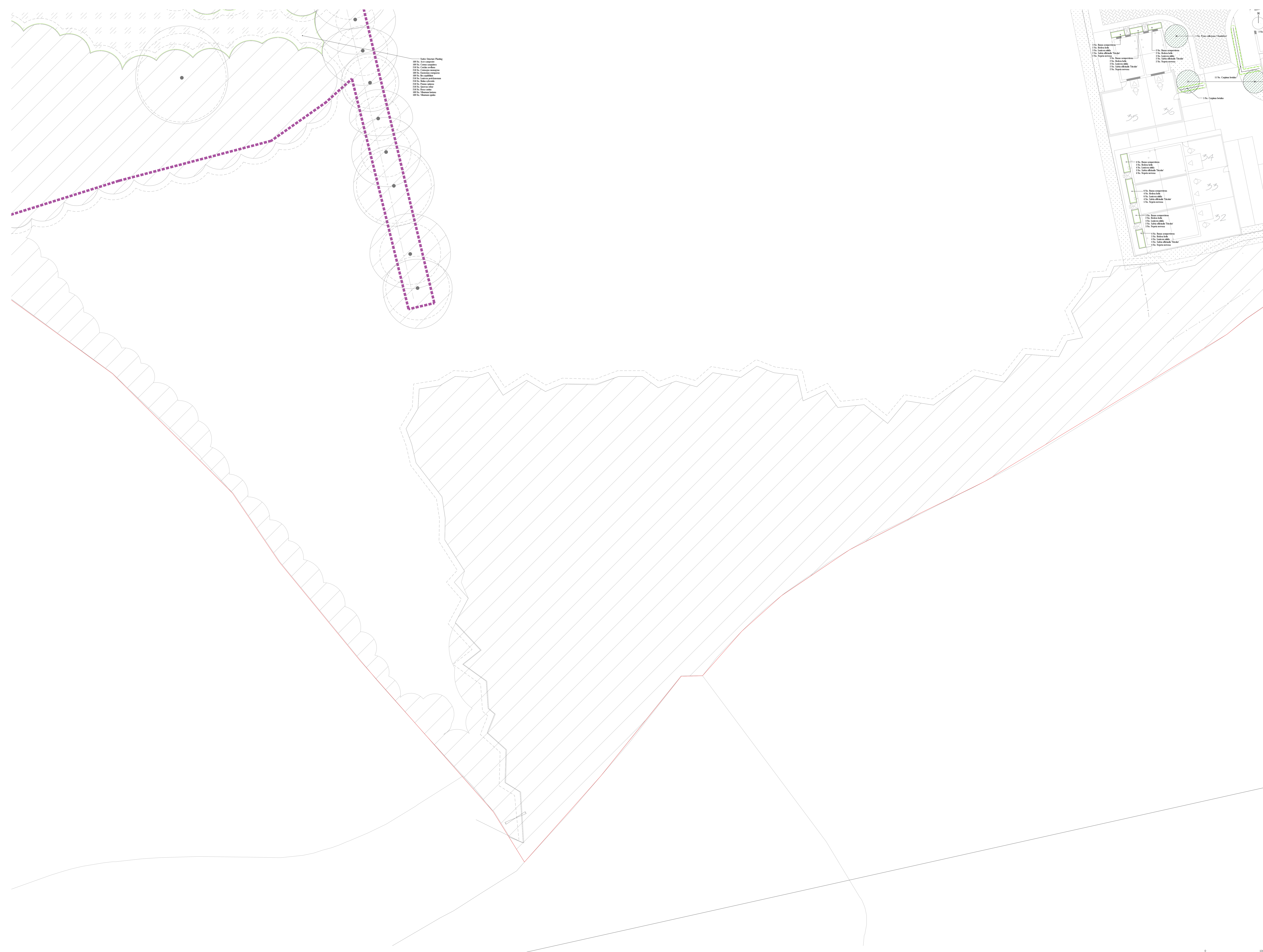
**Dormouse Habitat and Native Structure Planting Areas**

Combined with the proposed native hedgehog planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thicket hedgehows connect to broadleaved woodlands.

Planting strategy in these areas is to create habitat with target species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.





- Latin Species Planting**
- 20 No. *Quercus robur*
  - 20 No. *Quercus agrifolia*
  - 20 No. *Quercus petraea*
  - 20 No. *Quercus ilex*
  - 20 No. *Quercus pubescens*
  - 20 No. *Quercus robur*
  - 20 No. *Quercus agrifolia*
  - 20 No. *Quercus petraea*
  - 20 No. *Quercus ilex*
  - 20 No. *Quercus pubescens*
  - 20 No. *Quercus robur*
  - 20 No. *Quercus agrifolia*
  - 20 No. *Quercus petraea*
  - 20 No. *Quercus ilex*
  - 20 No. *Quercus pubescens*

- Site Boundary
- Existing Vegetation
- Amenity Grass/Maintenance Strip
- Native Structure Planting/Dormouse Habitat
- Meadow Grass (Germinal NFGS) For Hedgerows and Shaded Areas
- Native Hedgerow
- Ornamental Hedgerow
- Proposed Tree
- Proposed Fence Line



**Protective Fencing for Dormouse Habitat**

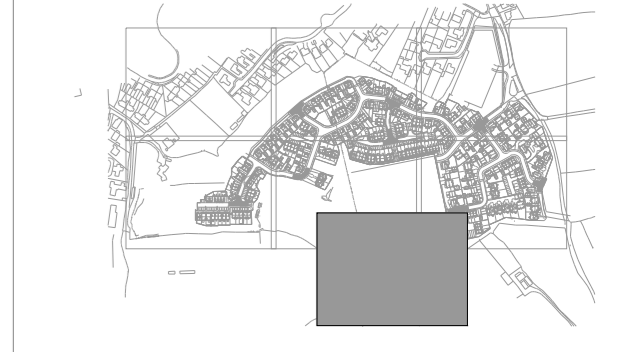
All areas of existing and proposed new Dormouse Habitat are to be protected by agricultural fencing to facilitate habitat establishment whilst preventing public access and recreational use. Fencing will comprise of durable treated fence posts and wire, as illustrated above. Straining posts and struts should be installed at a maximum of every 50m and at all changes of direction and significant changes of level. Intermediate posts should be at 3.5m centres.

**Dormouse Habitat and Native Structure Planting Areas**

Combined with the proposed native hedgerow planting, these areas have been designed as Dormouse habitat. All proposed vegetation has been chosen to benefit and encourage existing Dormouse populations to thrive in areas where shrubby glades, scrub and thick hedgerows connect to broadleaved woodland.

Planting strategy in these areas is to create habitat with larger species to be planted closer to existing woodland, with lower lying shrubs and scrub species planted closer to the development. This will create natural woodland edge landform whilst allowing light into the proposed development.

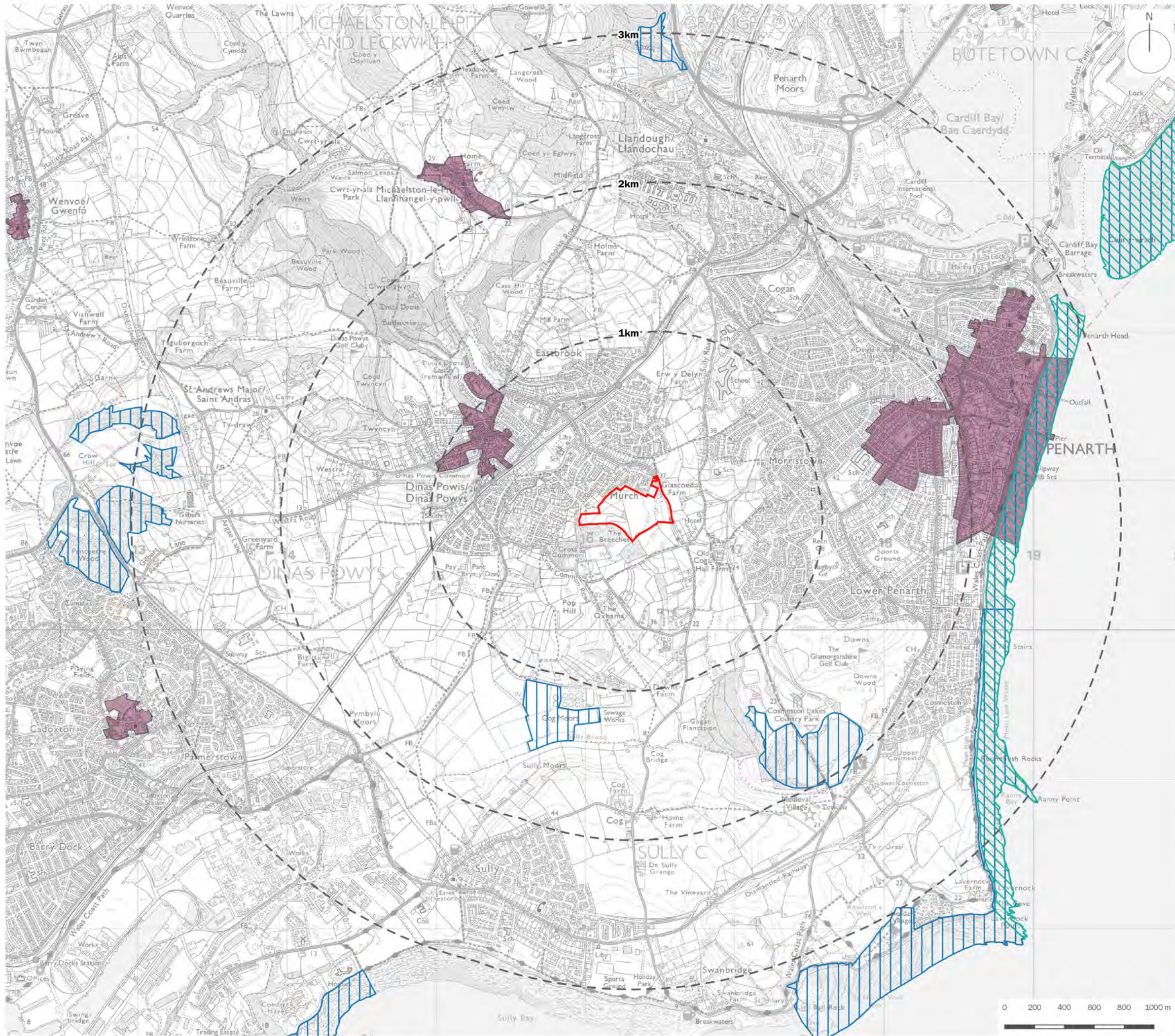
Protection should be given to these areas and the native structure planting must include robust woodland management operations, to ensure that the Dormouse habitat is maintained.








## Plans

- Plan EDP 1** International and National Statutory Designations  
(EDP3927/06a 08 August 2017 JH/EW)
- Plan EDP 2** Phase 1 Habitat Plan  
(EDP3927/01b 08 August 2017 LB/KH)
- Plan EDP 3** Breeding Bird Survey Results- Birds of Conservation Concern  
(EDP3927/04a 0 2017 JH/EW)
- Plan EDP 4** Reptile Survey Results  
(EDP3927/08a 08 August 2017 LB/EW)

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-  Site Boundary
-  Range Rings (at 1km intervals)
-  RAMSAR Wetlands
-  Sites of Specific Scientific Interest
-  Conservation Areas

client  
**Barratt and David Wilson Homes, South Wales**

project title  
**Land at St. Cyres, Dinas Powys**

drawing title  
**Plan EDP 1: International and National Statutory Designations**

date 08 AUGUST 2017 drawn by JH  
drawing number EDP3927/06a checked EW  
scale Refer to scale bar QA LH



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Cirencester 01285 740427 Cardiff 02921 671900 Shrewsbury 01939 211190







- Site Boundary
- Trees with High Bat Roost Potential
- Trees with Moderate Bat Roost Potential
- Trees with Low Bat Roost Potential
- Trees with Negligable Bat Roost Potential
- Scattered Tree
- ∨∨∨ Intact hedge - Native species-rich
- Intact hedge - Species-poor
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Dense Continuous Scrub
- SI Poor semi-improved Grassland
- Ponds
- A Amenity Grassland
- Hardstanding
- Fence

client  
**Barratt and David Wilson Homes, South Wales**

project title  
**Land at St. Cyres, Dinas Powys**

drawing title  
**Plan EDP 2: Phase 1 Habitat Plan**

|                |                    |          |    |
|----------------|--------------------|----------|----|
| date           | 08 AUGUST 2017     | drawn by | LB |
| drawing number | EDP3927/01b        | checked  | KH |
| scale          | Refer to scale bar | QA       | LH |

**edp** the environmental dimension partnership

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- Site Boundary
- Red Species
- Amber Species
- Green Species (Breeding)

**Bird Species**

- HG Herring Gull
- CT Coal Tit
- D Dunnock
- BF Bullfinch
- ST Song Thrush
- LB Lesser Black-backed Gull
- WW Willow Warbler
- LT Long-tailed Tit

client  
**Barratt and David Wilson Homes, South Wales**

project title  
**Land at St. Cyres, Dinas Powys**

drawing title  
**Plan EDP 3: Breeding Bird Survey Results - Birds of Conservation Concern**

|                |                    |          |    |
|----------------|--------------------|----------|----|
| date           | 08 AUGUST 2017     | drawn by | JH |
| drawing number | EDP3927/04a        | checked  | EW |
| scale          | Refer to scale bar | QA       | LH |



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- Site Boundary
- Reptile Refugia Locations
- Slowworm Recorded During Visual Inspection (peak count 5)

client  
**Barratt and David Wilson Homes, South Wales**

project title  
**Land at St. Cyres, Dinas Powys**

drawing title  
**Plan EDP 4: Reptile Survey and Results**

|                |                    |          |    |
|----------------|--------------------|----------|----|
| date           | 08 AUGUST 2017     | drawn by | LB |
| drawing number | EDP3927/08a        | checked  | EW |
| scale          | Refer to scale bar | QA       | LH |



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