



Land off Cross Common Dinas Powys, Vale of Glamorgan Bat Tree Assessment and Survey

For Edenstone Homes

July 2017

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1 Introduction

1.1 Survey Brief

Outline Planning application No 2015/00392/OUT has been granted by the Vale of Glamorgan for the construction of fifty (50) residential dwellings on land adjacent to Cross Common Road, Dinas Powys.

In line with Condition 15 and further comments made in e mails correspondence received from the County Ecologist for the Vale of Glamorgan, Terraqua Ecological Services Ltd have been commissioned by Edenstone Homes to undertake a bat tree assessment and associated survey work as required to inform the potential of trees within and immediately outwith the development footprint to support roosting bats and therefore inform key elements of the design of the development such as lighting. The assessment will also inform the need for an appropriate Natural Resources Wales European Protected Species Derogation Licence to facilitate the development.

The survey was undertaken in June/July 2017.

1.2 Client Details

The survey was undertaken on behalf of Edenstone Homes, First Floor, Building 102, Wales Business Park, Magor, NP26 3DG.

2 Background

2.1 Rational

Outline Planning application: No 2015/00392/OUT has been granted by the Vale of Glamorgan for the construction of fifty (50) residential dwellings on land adjacent to Cross Common Road, Dinas Powys.

In line with Condition 15- The development shall be carried out in accordance with the recommendations of the submitted Ecological Mitigation Strategy Revision C (Celtic Ecology - February 2015) and the letter received from Celtic Ecology (dated 30 November 2015), with respect to protected species.

The above includes the requirement for Bat Survey Work and Tree Assessments:

A number of trees will be lost from the site as a result of the development and associated infrastructure works. Trees are important features for bats providing potential roosting and feeding habitats. As all bats are afforded a very high degree of legal protection the identification of roosting sites is of high importance in order to ensure all legal obligations with regard to bats are met.

All trees within the site have previously been assessed as to their potential and actual use by bats, however as bats can change roosts, occupy previously un-used trees and move between roosts over the season updated surveys are required to ensure that any such roosts are identified, and due consideration given to the retention and protection of such trees or appropriate applications and licences made to Natural Resource Wales for their removal.

2.2 Ecology

Together with dormice and hedgehogs, bats are the only British mammal to go into hibernation during colder months only emerging occasionally during this time in spells of warmer weather (VWT 1993)

There are 18 resident species of Bat (*Chiroptera*) found in Great Britain consisting of two families *Rhinolophidae* and *Vespertilionidae*. *Rhinolophidae* or horseshoe bats comprise of

only two U.K. species the Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) and the Lesser Horseshoe Bat (*Rhinolophus hipposideros*). The family *Vespertilionidae* make up the majority of bat species found in Great Britain and include species such as Natterer's Bat (*Myotis nattereri*), Bechstein's Bat (*Myotis bechsteini*) and Pipistrelle Bat (*Pipistrellus pipistrellus*).

All British bat species feed whilst on the wing, predated on a multitude of invertebrate species which they detect using their unique echolocation which is also used by bats to find their way (Lawrence and Brown 1967)

Bats can utilise a wide range of roost sites, including trees, caves, mines, buildings and other man-made structures. Trees afford potential roosts including maternity roosts and hibernation roosts. Of the 18 species of bat found in Great Britain 11 species are considered rare, vulnerable or endangered

2.3 Legal Status

All Bat species are afforded full protection under the Wildlife and Countryside Act 1981 and the Conservation of habitats and Species Regulations 2010 (as amended). All bat species are listed as European protected species of animals.

Schedules 5 and 6 of the Wildlife and Countryside Act 1981 subsequently amended by the Countryside and Rights of Way Act 2000 makes it an offence for any person to:

- Intentionally kill, injure or take a bat
- Possess or control a live or dead bat
- Intentionally or recklessly damage, destroy or obstruct access to any place used for shelter or protection by a bat.
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection

3 Survey Methodologies

3.1 General

3.1.1 Survey Personnel and Experience

The surveys were undertaken by experienced consultants, Carmen Jones MSc MCIEEM and Dyfrig Jones BSc, licensed by Natural Resources Wales (NRW) to undertake bat work. Licence number 74327: OTH: CSAB: 2016, assisted during the dawn re-entry surveys by Lewis Samuel (Environmental Student) and Marged Elen Jones (retired teacher) both of whom have 3 years of experience in assisting on bat surveys.

Carmen Jones is an experienced bat worker with over 12 years' experience in bat work including survey and mitigation production. Dyfrig Jones is an experienced bat worker with over 15 years' experience of bat work including a period exceeding eight years as associate on the above licence. Carmen and Dyfrigs experience includes both survey and mitigation production.

3.1.2 Survey Dates

The survey was undertaken using four separate methodologies:

- a daylight assessment of the trees in order to identify the potential for use by bats this element also included tree climbing to verify the features noted,
- emergence surveys undertaken at dusk to ascertain the use being made of specific trees by bats
- a dawn re-entry survey of identified bat roosts to verify use
- activity survey of the site undertaken to ascertain the location of any important commuting or feeding areas used by bats

The surveys were undertaken on the following dates:

Table 1 Survey dates, times and prevailing weather conditions

Date	Survey Type	Weather Conditions
11/06/2017	Daylight Tree Assessments	Dry and warm Air Temperature 20°C.
15/06/2017	Daylight Tree Assessment (Climbing)	Dry and warm Air Temperature 23°C.
11/06/2017	Emergence Survey Tree T9	Dry Cloud Cover 1/8 Oktas. Winds moderate SW Air Temperature start 18°C end 14°C
15/06/2017	Emergence Survey Tree T8	Cloud Cover 1/8 Oktas. Winds moderate SW Air Temperature start 21°C end 17°C
17/06/2017	Emergence Survey Tree TP02	Cloud Cover 3/8 Oktas. Winds moderate SW Air Temperature start 19°C end 13°C
21/06/2017	Emergence Survey Tree TP01	Cloud Cover 2/8 Oktas. Winds moderate WSW Air Temperature start 22°C end 16°C
10/07/2017	Dawn Survey	Dry Cloud Cover 2/8 Oktas. Winds moderate SW Air Temperature start 14°C end 16°C
11/06/2017	1 st Activity Transect	Dry Cloud Cover 3/8 Oktas. Winds moderate SW Air Temperature start 22°C end 17°C
18/07/2017	2 nd Activity Transect	Dry Cloud Cover 2/8 Oktas. Winds moderate SW Air Temperature start 18°C end 15°C

3.2 Tree Assessments

The assessment was carried out in June 2017 by Carmen Jones MIEEM and Dyfrig Jones both experienced bat surveyors licensed by Natural Resources Wales.

All trees with a diameter of greater than 30cm at breast height (dbh) were assessed. Trees of less than 30cm dbh are generally unsuitable for use by bats and were therefore not considered further unless they were considered to have features suitable for roosting bats.

An assessment was made of each tree as to their potential as bat roosts by inspecting important tree features, including:

- Tree and Branch Splits
- Old Woodpecker Holes
- Rot Holes (through the removal of branches)
- Hollow Trunks, Branches or Root
- Loose Bark
- Tree Cavities (in root buttresses and coppice stools)
- Dense epicormic Growth
- Dense Ivy growth
- Bat and Bird boxes

The presence of features considered important for roosting bats was used to categorise each tree as to its potential for use as a roost based upon the following criteria:

Table 2 Criteria used to categorise assessed trees as to suitability as bat roosts

Category		Category Description
1*	Trees used by bats or tree with potential for use by large number of bats	Trees with direct evidence of current use by bats. Includes sighting or hearing bats, or the presence of fresh droppings. Large features suitable for use by a number of bats or as a maternity roost
1	Tree with features suitable for use by a single bat	Significant features present suggesting possibility of use by individual bats further survey work required
2	Trees with some potential for use by bats	These will be trees of an age and structure that while lacking any obvious features make their use by bats a possibility
3	Trees with negligible potential for use by bats	Few/no opportunities for roosting bats

The initial assessment of the trees was undertaken from the ground using 10x40 close focusing binoculars and a powerful torch. Further to these assessment, and where deemed safe, the trees were climbed to further assess any noted features.

The actual presence of bats was determined by the identification of characteristic field signs including:

- Holes, cracks, broken limbs and loose bark with black streaks below caused by oozing droppings

- Smooth edges around holes and cracks caused by bats rubbing on wood when entering and leaving the roost
- Droppings below access points
- Audible chattering of bats
(JNCC, 2004)
- Visual confirmation of bats within features using endoscope

3.3 Emergence Survey Methodology (Trees)

Emergence surveys were undertaken on all trees that were categorised as being 1 & 1* during the tree assessments. The emergence surveys were carried out on the dates shown in Table 1 and were undertaken during suitable weather conditions.

All surveys commenced 30 minutes before sunset and continued for a period of 90 minutes after sunset. Two surveyors, Carmen Jones MSc MIEEM and Dyfrig Jones BSc, both licensed and experienced in carrying out emergence survey work were positioned at points around the tree where previous surveys had indicated any potential to conceal bats, in order to observe the emergence of any bats from these features. All areas of the tree (areas with suitability for bats) were visible to at least one of the surveyors.

The number and species of any bats leaving the tree was recorded. Two time expansion detectors EM3 and Echo Meter Touch were used both with the capacity to save data to an SD card for future analysis. All detectors also showed real time spectrograms for identification in the field. A Petterson D-200 heterodyne detector was also used for the immediate identification of bat species in the field.

3.4 Dawn Survey Methodology (Trees)

A single dawn re-entry survey was undertaken on trees TPO1 and TPO2. This was considered necessary to verify the species of bat and number of individuals using those trees due to the difficulties of fully observing the tree features in dark conditions due to the extensive canopies of nearby trees and extensive activity in the immediate vicinity of those trees during the emergence surveys.

3.5 **Activity Survey**

Bat activity surveys were undertaken across the site. The survey included a single walked transect around the site with the transect walked on two separate occasions. The survey transect was walked in a reverse direction on the second survey visit in order to ensure as far as possible that early emerging bats were detected on at least one of the survey visits. Any bats observed were identified and their flight direction noted.

Two time-expansion detectors EM3+ and Echo Meter Touch were used all with the capacity to save data to an SD card for future analysis. All detectors also showed real time spectrograms for identification in the field. A Petterson D-200 and a Bat Box Duet (heterodyne detectors) were also used for the immediate identification of bat species in the field.

4 **Results**

4.1 **Tree Assessment**

Four (4) trees were assessed as being of category 1 and/or 1* (T8, T9, TPO 1 and TPO2) .

Two (2) trees in Group G5 and Tree T2 were initially assessed as category 1, but following climbing the features noted from the ground were identified as only being folds in healed wounds and not fissures/cracks as initially assessed.

All other trees within the survey area were assessed as category 3 or below.

4.2 **Emergence Survey**

Following the tree assessments, a total of four (4) trees, identified as having a high potential for use by bats, were surveyed using an emergence survey technique. These were Trees T8, T9, TPO1 and TPO2.

Bats were recorded emerging from all four of the trees during their respective emergence surveys.

Table 3 Emergence Survey Results

Tree ID	Emergence Survey Results
T8	Two (2) Common pipistrelle bats emerged and were noted feeding over treeline G11 and pasture to south
T9	1 soprano pipistrelle bat was noted emerging and disappeared to SW, A bat (Poss ID as a Noctule) was noted leaving T9 in an easterly direction along hedgerow (<i>visibility compromised by tree/vegetation cover</i>)
TPO1	Four (4) soprano pipistrelle and two (2) common pipistrelle noted emerging (activity in this location was significant and may represent greater use of tree roost)
TPO2	Two (2) soprano pipistrelle and one (1) common pipistrelle noted emerging (activity in this location was significant and may represent greater use of tree roost)

4.3 Dawn re-entry Survey

As referenced in Section 3.4 a dawn re-entry survey was undertaken to verify the use made of TPO1 and TPO 2 respectively.

Table 4 Dawn re-entry Survey Results

Tree ID	Emergence Survey Results
TPO1	Three (3) soprano pipistrelle and five (5) common pipistrelle were noted active around the tree at dawn and entered the tree canopy and did not emerge
TPO2	Two (2) soprano pipistrelle and one (1) common pipistrelle noted returning to features in high branches

It should be noted that TPO1 and TPO2 have extensive intertwined branches and even during the dawn re-entry survey, with the exception of those bats noted returning to features in the high branches of TPO2 it cannot be conclusively said to which tree those bats noted above were returning. However, given that both trees have extensive features suitable for use by roosting bats, both trees should be considered as bat roosts.

4.4 Activity Survey

Bat activity around the site was moderate on both visits. Common pipistrelle and Soprano pipistrelle bats were the most common species recorded. Noctule bats were also recorded on both survey visits (in particular around the eastern boundary) as were Natterers and Daubentons (western boundary) bats.

(It should be noted that a noctule bat was probably recorded emerging from Tree T9 (visibility compromised) but the general direction of commuting was in line with activity records for noctule bats within the site.

Bat activity was highest around TPO1/TPO2 and the open pasture/woodland boundary to the SE of these trees and along the hedgerow (Tree group G10) forming a continuous link from T8 east to the woodland. Both Common and Soprano pipistrelle bat species were recorded as foraging over the grasslands/pasture forming the southern parcel of land within the development.

Daubentons bats were recorded around the woodland edge and watercourse in the NW corner of the site.

Daubentons, common pipistrelle, soprano pipistrelle, natterers and noctule bats were noted/recorded along the western boundary (Cardiff Road) of the site. Activity along this roadside corridor and river corridor beyond was constant throughout the survey periods. The signal strength recorded was variable suggesting activity was both within the survey boundary but also to the west of Cardiff Road and the Cadoxton River corridor.

Details of transect routes and recorded activity are shown in Appendix II.

5 **Conclusions**

Four (4) trees T8, T9, TPO 1 and TPO2 were confirmed as bat roosts for a small number of relatively common species (common pipistrelle and soprano pipistrelle bats) and potentially a noctule bat.

Foraging activity across the site was constant throughout the survey periods which would indicate that the habitat within and immediately outwith the survey boundary supported a good food source for bats.

Other than the identified bat roosts, no other trees within the survey boundary exhibited features that would be used by roosting bats. It should however be noted that the potential of trees as

bat roosts can change quickly given the intrinsic nature of the structures of trees and the impact of high winds and other natural factors on limb retention etc.

The dark areas associated with woodland and hedgerow boundaries have been identified as commuting and foraging areas for bats. In order to ensure that such important bat habitats are protected the retention of dark corridors and the prevention of light spillage into such areas should form a fundamental part of the proposed green infrastructure for the site.

All lighting within the development should be designed to ensure as far as possible that light spillage into these peripheral habitats is prevented. A dark corridor plan has been produced as part of concurrent plan (Ecology Design Statement and Management Plan; Land off Cross Common. TerraAqua Ecological Services July 2017) for the site.

5 Recommendations

Bats are afforded the highest degree of legal protection.

Should any of the identified bat roosts (T8, T9, TPO1 and TPO2) require removal and/or arboricultural work a Natural Resources Wales European Protected Species Licence should be obtained to facilitate the works are undertaken within the legislation.

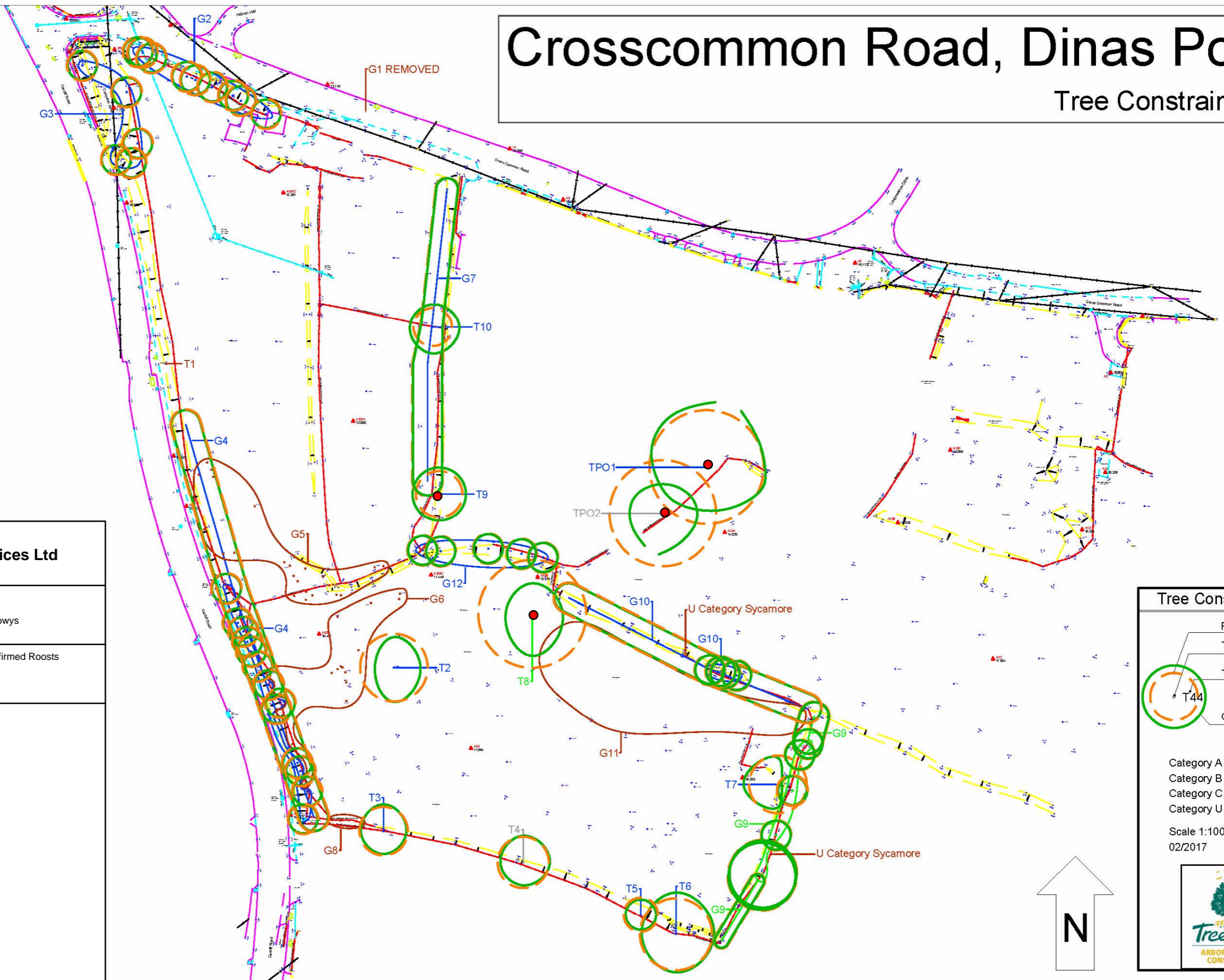
Due to the potential for bats to utilise trees at any time and on an opportunistic basis, and the fact that features suitable for bats can appear in trees following storm damage or other environmental factors it is recommended that all trees are assessed for damage prior to their removal and advice sought should there appear to be any variation from their current integrity.

Should bats be observed or suspected during any Arboricultural works then all work must cease and advice sought from the ecologist. No works should re-commence until the ecologist is satisfied that it is safe to continue or until all appropriate licences have been obtained.

Appendix I
Tree Bat Roost Location Plan

Crosscommon Road, Dinas Powis

Tree Constraints Plan



10m

TerrAqua Ecological Services Ltd

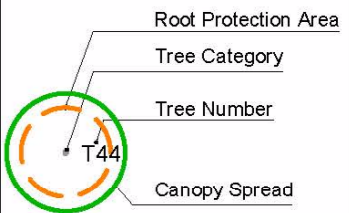
Client & Project: Edenstone Homes;
Cross Common, Dinas Powys

Drawing Title: Bat Tree Assessment; Confirmed Roosts

Legend:

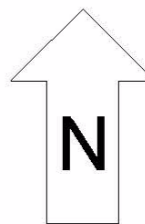
● Bat Roost

Tree Constraints Plan



- Category A Trees ●
- Category B Trees ●
- Category C Trees ●
- Category U Trees ●

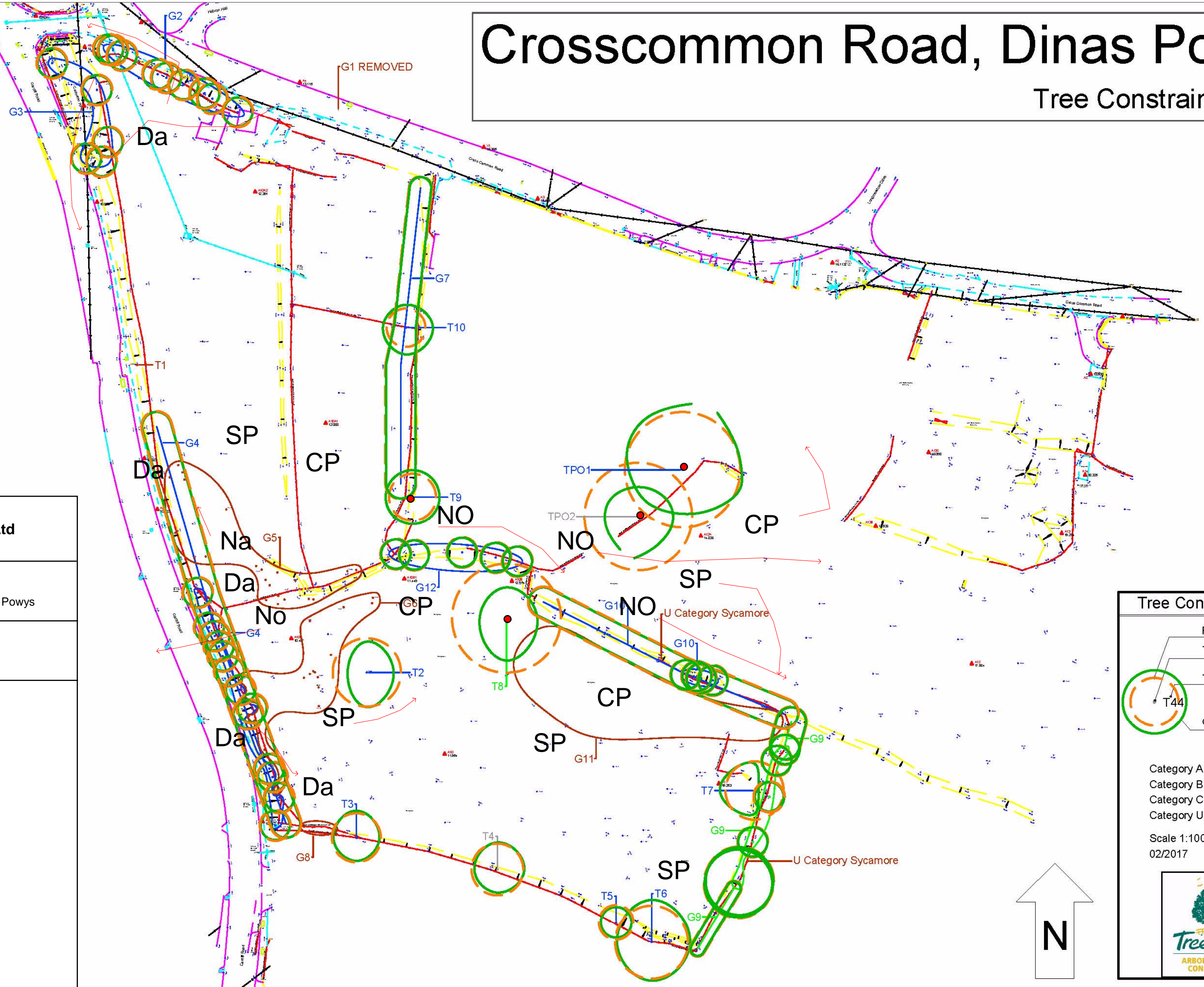
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02/2017



Appendix II
Bat Activity Plan

Crosscommon Road, Dinas Powis

Tree Constraints Plan



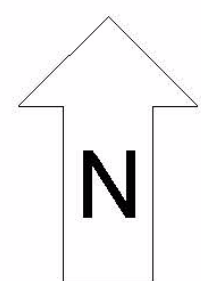
10m

Tree Constraints Plan

- Root Protection Area
- Tree Category
- Tree Number
- Canopy Spread

Category A Trees ●
 Category B Trees ●
 Category C Trees ●
 Category U Trees ●

Scale 1:1000 @A3
 02/2017



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Client & Project:	Edenstone Homes; Cross Common, Dinas Powys
Drawing Title:	Bat Activity
Legend:	
CP	Common Pipistrelle
SP	Soprano Pipistrelle
NO	Noctule
Na	Natterer's
Da	Daubenton's
	Direction of travel