



Castle Crescent, Reading

Protected Species Surveys and Bat Mitigation Strategy

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Castle Crescent, Reading

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Castle Crescent, Reading

Protected Species Surveys and Bat Mitigation Strategy

EXECUTIVE SUMMARY

This report has been prepared by Ecological Planning & Research Ltd (EPR) on behalf of Mr R. Brown in relation to a planning application for the redevelopment of 1 - 3 Castle Crescent, Reading. Current proposals for the site entail the conversion of the existing Grade 2 listed “main house” building and demolition of the former coach house and garage buildings, followed by the construction of a new building in the south-east of the site, to provide new residential accommodation. The remaining redeveloped area will undergo landscaping as part of proposals. This report contains a summary of the findings of an Ecological Appraisal at the site as well as a detailed description and analysis of subsequent Phase bat and reptile surveys.

The Initial Ecological Appraisal survey during August 2014 (EPR, 2014) identified the presence of features suitable to support roosting bats on the main house and coach house buildings and a basement with potential to support bat hibernation roosts in the former. Garden areas at the Site were considered to have potential to support common species of reptile. Following the results of this survey, further works at the site entailed bat activity and hibernation surveys and a reptile presence/likely absence survey.

No evidence of reptiles was recorded at the site. Bat activity surveys identified the presence of two small Pipistrelle bat roosts in the main house building, which are considered to be occasional summer roosts. A small Common Pipistrelle bat hibernation roost was identified in the main house basement. It is not considered likely that the building supports either a maternity roost, hibernation roost or other significant roost. No bats were recorded emerging from/re-entering the coach house during surveys.

In light of survey results, implementation of appropriate measures will be necessary in order to mitigate/compensate for loss of known bat roosts at the site, as part of redevelopment proposals. Full details of a mitigation strategy including timing of works, pre-demolition surveys, supervised demolition, the incorporation of suitable bat roosting features within the new building/ on onsite and boundary trees and landscaping recommendations are described in this report. A Natural England European Protected Species licence in respect of bats will be required for the proposed works to proceed.

Also outlined below are appropriate mitigation strategies with regarding to nesting birds and residual reptile potential at the Site. Suitable ecological enhancement measures are also described.

It is considered that full implementation of the mitigation and enhancement recommended herein should ensure that there are no significant negative impacts on Protected Species as a result of the proposed redevelopment and that the scheme would therefore comply with relevant planning policy and legislation. Ecological matters should therefore not present any significant barrier to redevelopment of the site.

Castle Crescent, Reading

Protected Species Surveys and Bat Mitigation Strategy

1. INTRODUCTION

Introduction

- 1.1 Ecological Planning & Research (EPR) Ltd. were commissioned by Barton Willmore on behalf of their client Mr R. Brown in August 2014 to undertake an Ecological Appraisal at Castle Crescent, Reading (hereafter the “Site”) to provide information to support a planning application for redevelopment of the Site.
- 1.2 Initial Ecological Appraisal works at the site comprised a desktop study followed by a site visit during which onsite habitats were mapped and assessed for their ecological value and an initial internal and external inspection of onsite buildings and trees was completed, in respect of their bat roosting potential.
- 1.3 For full details of the Appraisal results, please refer to the Ecological Appraisal letter Report (EPR, P14/41-1A, September 2014). During the survey it was noted that the main house and coach house buildings at the Site had features suitable to support roosting bats. The former amenity garden on site provided some suitability to support common species of reptile.
- 1.4 Following the results of the Ecological Appraisal, it was recommended that further Phase 2 bat and reptile survey work be carried out at the site, in order to fully assess any potential Protected Species assemblage present. Surveys completed included bat activity and hibernation surveys as well as a reptile presence/likely absence survey. These were carried out between September 2014 and June 2015.
- 1.5 This report summarises relevant details from the Ecological Appraisal and describes methodologies and results of the Phase 2 bat and reptile surveys as well as recommendations arising from assessment of this data. Information from the desk-based and field survey works to date has been used to assess potential ecological opportunities and constraints likely to arise in respect of current redevelopment proposals for the Site. Recommendations are made for relevant mitigation, compensation and enhancement measures deemed necessary for the redevelopment to proceed in accordance with applicable nature conservation legislation and planning policy, particularly in respect of bats.

Site Location and Description

- 1.6 The Site is located at number 1 -3 Castle Crescent, directly southwest of Reading town centre, at National Grid Reference SU 709 727 (see **Map 1** for site location). It comprises a large derelict Grade II listed building (the “main house”), an adjacent former coach house and dilapidated garages, with associated hardstanding and former amenity garden area,

and measures approximately 0.3 hectares in total (see **Map 2** for onsite habitats, Target Notes at **Appendix 1**).

- 1.7 Directly surrounding the Site is a residential urban landscape. The commercial centre of Reading is located approximately 500m to the north-east. Urban development stretches at least 5.5km to the west of the Site and up to 7km to the east into Woodley and Caversham and is interspersed with open park spaces and woodland copses. South of the Site, the Coley residential development continues for 750m, beyond which begins an open agricultural landscape within which large expanses of water are present in relative proximity to the town outskirts. The River Thames is located 2 km north of the Site, and the Kennet and Avon canal 1.8 km to the south. The M4 motorway runs 3.5km south-west of the site.

Outline of Proposals

- 1.8 Current proposals for the Site are for its redevelopment for residential use, entailing conversion of the main house to provide flats, and demolition of separate former coach house and garage buildings to allow for the construction of a new 2-storey housing block in the south-west. Redevelopment works will be accompanied by associated landscaping of public open space.

Relevant Nature Conservation Legislation and Planning Policy

- 1.9 Legislation and policy relevant to the consideration of potential ecological constraints and opportunities associated with the proposed works at the Site is set out under **Appendix 2**.
- 1.10 In undertaking bat and reptiles survey work, and preparing recommendations due regard has been paid to the following:
- Best practice guidance, including that detailed within the Guidelines for Ecological Impact Assessment (EclA) in the United Kingdom (IEEM, 2006) and the Bat Conservation Trust (BCT) Bat Surveys, Good Practice Guidelines (BCT, 2012);
 - The National Planning Policy Framework (NPPF);
 - National and international wildlife legislation, including the Conservation of Habitats and Species Regulations 2010 (the 'Habitats Regulations') and the Wildlife and Countryside Act 1981 (both as amended);
 - Biodiversity conservation priorities set out under the Natural Environment and Rural Communities (NERC) Act 2006, as well as the UK and Reading Biodiversity Action Plans (BAPs); and
 - Nature conservation policy under the local planning system, namely that detailed within the Reading Borough Council Core Strategy (2008) (in place ahead of an emerging Local Plan document).

Relevant Protect Legislation for Reptiles

- 1.11 All species of reptile are protected under the provisions of Wildlife & Countryside Act 1981 and the Habitats and Species Regulations 2010 (both as amended). Under this legislation it is considered an offence to recklessly or intentionally harm reptiles or offer them for sale.

Relevant Protection Legislation for Bats

- 1.12 All species of bat are protected under the provisions of the Wildlife & Countryside Act 1981 and the Habitats and Species Regulations 2010 (both as amended). Under the former, it is an offence to deliberately kill, capture, or significantly disturb bats, or to damage or destroy their breeding sites or resting places, whether occupied or not. The latter protects bats from harm, disturbance and sale.
- 1.13 In order for works that may result in such an offence to legally take place, a European Protected Species Mitigation Licence (EPSL) is required; to be issued by Natural England.
- 1.14 For such a licence to be issued, Natural England, as the licensing authority, must be satisfied that the proposed works meet the following three derogation tests:
- That the activity is '*in the interests of public health and safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment*';
 - That there is '*no satisfactory alternative*' to the activity;
 - That the activity is '*not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their range*'.

Biodiversity Action Plans

- 1.15 **Table 1.1** shows priority species within the local and national BAPs which are relevant to the Site, where "SAP" indicates the existence of a "species action plan" and "PS" "priority species" under the Reading BAP (RBAP) or UKBAP.

Table 1.1: Priority Species within relevant BAPs

Species		UKBAP	RBAP
<u>Reptiles</u>			
Slow Worm	<i>Anguis fragilis</i>	PS	SAP
<u>Mammals</u>			
Pipistrelle sp.	<i>Pipistrellus sp.</i>	SAP	SAP
Daubenton's bat	<i>Myotis daubentonii</i>	SAP	SAP
Noctule	<i>Nyctalus noctula</i>	SAP	SAP
Brown long-eared bat	<i>Plecotus auritus</i>	SAP	SAP
Natterer's bat	<i>Myotis nattereri</i>	SAP	SAP
Serotine	<i>Eptesicus serotinus</i>	SAP	SAP

Key: PS = Priority Species, SAP = Priority Species for which a Species Action Plan has been prepared.

2. METHODOLOGY

Introduction

Methodologies used to carry out Ecological Appraisal and Phase 2 Protected Species survey work at the Site as well as analyse and evaluate survey results are summarised below.

Defining the Zone of Influence

- 2.1 In order to define the spatial scope of Phase 2 Protected Species survey work, it was necessary to predict the likely Zone of Influence (Zol) of any redevelopment at the Site. The zone of influence of a proposed development is defined in the Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment (EcIA) guidelines as '*...the areas/ (ecological) resources that may be affected by the biophysical changes caused by a development, both in the construction and operational phases*'.
- 2.2 The Zol has been based on the results of the initial Ecological Appraisal, undertaken to identify the areas and ecological resources that are likely to be affected by the scheme, with consideration of the type of activities that may occur. With reference to Box 6 in the EcIA guidelines (IEEM, 2006), the Zol is predicted to be restricted to the Site boundary for all features, with the exception of bats.
- 2.3 It is considered that the Zol of the redevelopment proposals for bats is unlikely to extend beyond the Site boundary and immediately adjacent habitats, except for where changes to habitats and environmental conditions on Site may affect local bat populations, due to impacts upon commuting/foraging habitat upon which nearby roosts may be dependent.

Desktop Research

- 2.4 As part of the Ecological Appraisal, a desk study was carried out in order to gather existing biodiversity and contextual information in respect of the Zol, by identifying existing features of ecological value in the local area which may have implications for the Site proposals. This contributed to an assessment of the Site's potential ecological value.
- 2.5 The desktop study involved interrogation of internet resources, including the Multi-Agency Geographic Information Centre (MAGIC) and National Biodiversity Network (NBN) Gateway as well as current and historic mapping resources and aerial photographs. A request was made to Thames Valley Environmental Records Centre for all protected and notable species records as well as information regarding nature conservation designations within 2 and up to 5km radiuses of the Site respectively.
- 2.6 Full results of the desktop study are provided within the 2014 Ecological Appraisal letter report. **Map 1** shows the location of nature conservation designations in relation to the Site. **Map 4** shows Protected Species records. Desktop data are discussed, where relevant, in the below text.

Reptile Survey Methodologies

Reptile Habitat Assessment

- 2.7 An initial reptile habitat assessment was carried out as part of Ecological Appraisal survey visit. The assessment entailed inspection of suitable onsite and boundary habitats for their potential to support reptile species. Suitable reptile habitat may include rough grassland

and/or scrub and shrub vegetation providing appropriate foraging resources, in the form of invertebrates and/or small amphibians and mammals (depending on the reptile species), shelter and basking places, preferably with connectivity to the surrounding landscape via suitable habitat.

Reptile Presence/Likely Absence Survey

- 2.8 Reptile presence/likely absence survey at the Site was carried out in accordance with best practice guidelines (Froglife, 1999) and entailed the laying of 29 refugia, comprising felt, onduline and tin sheets of approximately 50cmx50cm dimensions within suitable rough grassland habitat in the former amenity garden area to the rear of the main house.
- 2.9 Following a suitable period of “bedding in”, survey visits were made to the Site during which a suitably-qualified ecologist checked beneath each of the refugia for the presence of basking reptiles. Location, species, sex, and lifestage were recorded for any reptiles found. For each of the survey visits, appropriate metadata including survey timings, weather conditions (temperature, wind speed/direction, cloud cover, recent rainfall) and any survey limitations were also noted.
- 2.10 A total of five survey visits were completed, in accordance with best practice guidelines and Natural England standard requirements. Reptile survey visits were completed within the peak activity period (March-October), between September and October 2014.
- 2.11 Details of the reptile survey timings are given in **Table 2.1**.

Table 2.1 – Reptile Survey Timings.

Survey Number	Survey Date
1	29/09/14
2	02/10/14
3	05/10/14
4	10/10/14
5	16/10/14

Evaluation and Assessment of Reptile Survey Results

- 2.12 Onsite reptile habitat and presence/likely absence survey results have been assessed in accordance with methods recommended under best practice guidelines (Froglife, 1999) and Natural England standard requirements.

Bat Survey Methodologies

Initial Bat Building/Tree Inspection

- 2.13 A daytime inspection of all buildings and trees within and along the Site boundary was undertaken as part of the Ecological Appraisal survey on 28th August 2014 by Dr Lynsey Robinson, an experienced ecologist and Natural England bat survey licence holder (WML-A34 - Level 2 (Class Licence), registration number 2014-3348-CLS-CLS). **Maps 2 and 3** show the location of onsite buildings and the position of all internal void spaces.

- 2.14 The buildings were subject to an internal and external search for evidence of current or historic bat roosts and features with the potential to support roosting bats. Such evidence may include:
- The presence of bats (living or dead);
 - Bat droppings on surfaces on and/or immediately adjacent to the building; and
 - Staining or scratch marks around suitable bat roost locations or potential access points into the building.
- 2.15 During the internal inspection all accessible areas of onsite buildings, including loft spaces and the main house basement were searched, using a high power torch (Clulight/Led Lenser P7).
- 2.16 The exterior of the buildings was inspected for evidence of bats, using a high-powered torch (model as above) and binoculars. Roosts may be present in inaccessible locations such as between the roof tiles and felt, or in cracks/holes in walls, where neither bats nor their signs are always visible to the surveyor. Therefore, in line with best practice guidelines (BCT, 2012), potential bat roosting features and access points, such as gaps under soffits and roof tiles were also noted during the survey.
- 2.17 Onsite and boundary trees were inspected from ground level, using binoculars and a high-powered torch, as appropriate, in order to identify features with potential to support bat roosts and evidence of bat roosting activity. Potential roost features may include cracks, rot holes, Wood Pecker holes, loose bark, hollows/cavities and dense epicormic growth. Evidence of bat use can include droppings, staining and scratch marks and smooth surfaces around cavities.

Bat Activity Surveys

- 2.18 Bat activity surveys comprised fixed-point dusk emergence and dawn re-entry surveys. As recommendations for further survey were made close to the end of peak bat activity period (which runs between May and September), it was advised that the activity survey programme continued into the 2015 peak survey period. A total of two surveys were completed, in line with BCT guidelines for survey of a medium potential building.
- 2.19 Both surveys were carried out during the active bat season, as detailed under BCT Guidelines. The second bat activity survey occurred within the peak bat activity period. Details of the timings of the emergence/re-entry surveys are given in **Table 2.2**.

Table 2.2: *Bat Activity Survey Timings*

Type	Date	Start	End	Sunset/Sunrise	Duration
Dusk Emergence	22/09/14	18:30	20:30	18:59	2 hrs
Dusk Emergence	15/06/15	21:00	22:51	21:19	1 hr 51 min
Dawn Re-entry	16/06/15	03:20	04:47	04:46	1 hr 27 min

- 2.20 During surveys, surveyors were positioned at suitable vantage points to observe bats as they emerged from/re-entered roosts within the onsite buildings. Sight lines encompassed the majority of building elevations, but particular focus was placed on previously-identified features with bat roosting potential. The initial survey utilised 4 surveyors covering all

aspects of the main house and coach house buildings. Following the results of this visit, the second survey employed a reduced number of 3 surveyors to focus upon the main house only.

- 2.21 Each of the surveyors was equipped with a Pettersson 240x or Batbox III bat detector and a map of the Site on which to record bat passes. Radios were used to allow surveyors to communicate with one another, so that flight paths and activity could be accurately recorded.
- 2.22 For each of the surveys, appropriate metadata describing variables with the potential to affect survey results was noted. This covered weather conditions (temperature, wind speed/direction, cloud cover, recent rainfall) and any significant survey limitations.
- 2.23 During surveys detailed information was recorded for all bat passes:
 - Species of bat (where known);
 - Time of activity;
 - Behaviour of bats (identified using flight patterns and call characteristics as heard on the bat detector);
 - Direction of flight (if seen); and
 - Any occurrence of emergence from or re-entry to the buildings.

Bat Hibernation Survey

- 2.24 Following the initial building inspection, the basement was subject to 2 further internal inspection visits as well as remote detector monitoring to assess the potential presence of hibernating bats. Remote detector monitoring was carried out over three periods during the peak hibernation period (BCT, 2012), during January and February 2015. Monitoring period length was governed by detector battery life. Internal inspections were completed during Site visits to set-up static bat detector equipment, to minimise potential for disturbance.
- 2.25 Details of the timings of the hibernation survey works are given in **Table 2.3**.

Table 2.3 – Bat Hibernation Survey Timings.

Remote Monitoring Period	Start Date	Internal Inspection Date	End Date
1	20/01/15	20/01/15	26/01/15
2	10/02/15	10/02/15	17/02/15
3	17/02/15	None	25/03/15

- 2.26 Two static bat detectors: a single Anabat SD2 and SM2 unit were deployed for each of the hibernation monitoring periods. These detectors were positioned in the north of the basement area, adjacent to, but sheltered from a broken window, providing a likely access/egress point to the basement (**Map 3**).
- 2.27 The SM2 unit was programmed to activate on detection of a potential bat pass over periods of 4 hours surrounding dusk and dawn (the most likely times for bat activity), commencing

approximately half an hour before sunset and finishing 3.5 hours afterwards and recommencing between 3.5 hours before sunrise and a half hour beyond. Due to its limited programming capacity, the Anabat unit was set to trigger for any bat passes over the entire overnight period, from half an hour before sunset until half an hour beyond sunrise.

- 2.28 Static bat detector data was analysed using Analook W 2013 or Batsound 4 software, as appropriate.
- 2.29 A TinyTag data logger was also in place to record ambient temperature and humidity in the basement throughout the monitoring period (from 21/01/15 until 25/03/15).
- 2.30 During each of the internal inspection visits, accessible areas of the basement were thoroughly searched for evidence of hibernating bats, in accordance with the above-describe internal inspection methodology.

Evaluation and Assessment of Bat Survey Results

- 2.31 An initial assessment of onsite bat habitat/roosting potential was made in accordance with methods set out under the BCT Guidelines (2012).
- 2.32 Bat roosts present within the buildings have been assigned a value using a geographical scale of reference (local, district, country, etc) in line with the CIEEM EcIA guidelines (2006) and in accordance with guidance under the Bat Mitigation Guidelines (Mitchell-Jones, 2004).

Impact Assessment and Mitigation Methodology

- 2.33 The below assessments of likely ecological impacts of redevelopment proposals have been reached based on guidance within the CIEEM EcIA Guidelines (2006). Redevelopment proposals have been considered in order to identify any potential significant impacts (positive or negative) on bats and other species and how these relate to applicable legislation and policy, referred to in **Section 1** where the feature is of local value or above.
- 2.34 Where these have been identified, wherever possible, a variety of avoidance, mitigation and compensation measures have been proposed within the below Mitigation Strategy in order to reduce/eliminate potential significant negative impacts upon and provide appropriate enhancement measures for ecological features at the Site.

3. SURVEY RESULTS AND EVALUATION

Ecological Appraisal

3.1 Full details of the Appraisal survey findings are described under the 2014 Ecological Assessment letter report. Findings relevant to bat and reptile considerations at the Site are summarised below.

3.2 Multiple bat and scattered common reptile records were identified during the desktop study (**Map 3**).

Reptile Habitat Inspection

3.3 During the Appraisal survey habitat within former amenity garden areas to the rear of the main house at the Site was found to support sufficient vegetative structure, in the form of developing rough grassland, to provide suitable cover and feeding resources for common species of reptile. The Site also provides scattered rubble piles which offer potential shelter for reptiles as well as possible hibernation sites.

3.4 As the extent and quality of habitat available at the Site is limited and connectivity to the surrounding landscape is poor, such that the likelihood of reptile presence was thought to be low, it was concluded that a reduced number of five survey visits would be sufficient to assess presence/likely absence of reptiles at the Site (in accordance with minimum survey number recommended within best practice guidance).

Bat Building Inspection

3.5 **Tables 3.1** and **3.2** below summarise the results of the Bat Building Inspection.

Table 3.1: Description of Buildings Inspected On Site (See **Map 2** for Building References).

Building Reference	Number of Storeys	Roof Type	Construction Material	Windows	Other
Main House	2	Hipped (multiple sections), slate tiles.	Rendered brick cavity wall.	Wooden framed, glazed – boarded inside and/or out.	Derelict, significant decay and damp. Dark inside due to window boarding. Large main loft space: open, insulated at floor level, lined with wooden sarking. Smaller voids between floors in newer eastern building section. Probable small roof void. Basement space present below western side of building (Map 3). Brick construction. Multiple rooms. Surveyor access restricted beyond 2 main rooms and wine cellar in north.

Building Reference	Number of Storeys	Roof Type	Construction Material	Windows	Other
Coach House	Formerly 2	Pitched, slate tiles.	Rendered brick cavity wall.	Wooden framed, glazed	Severley fire damaged: open and exposed.
Garages	1	Largely missing.	Single skin, brick.	None	Derelict. Roofs removed during asbestos strip. Mostly open/exposed.

Table 3.2: *Bat Building Inspection Results Summary (See **Map 2** for Building References).*

Building Reference	Features with Bat Roosting Potential	Potential Access/Egress Points	Assessment of Bat Roosting Potential	Notes
Main House	Damage to soffit boxes and roof tiles creating gaps. Gaps behind window boarding. <u>Loft</u> Large, open space. <u>Basement</u> Damage to walls/ceiling allowing access to floor cavity. Probable sheltered spaces in isolated rooms on western side of basement. Cracks and gaps in brickwork. Rough masonry and timber surfaces suitable for roosting. Largely dark outside room with window.	Damage to windows/boarding leading to internal spaces / voids behind boarding. Damaged soffits. <u>Loft</u> None obvious internally. Open access from rooms below. <u>Basement</u> Potentially fairly limited, except via damaged subterranean window on northern aspect. Probable free access between separate areas/rooms via gaps in walls/floor cavity.	Medium Potential for hibernation roost.	Unoccupied for significant period: undisturbed. Damp.
Coach House	Damaged masonry and roof providing multiple cavities/gaps.	Extensive fire damage leaving largely open.	Low	Largely exposed – unlikely to support roosting activity.
Garages	None	Open	Negligible	Very exposed – highly unlikely to support roosting activity.

- 3.6 Access to onsite buildings during the Appraisal survey was restricted due to significant damage and decay, rendering surveyor access unsafe. However, due to the presence of debris within the buildings, many bat field signs such as droppings and urine/fur staining are unlikely to have been visible to the surveyor. It is therefore not thought that full access the buildings would have altered the above assessment of roosting potential at the Site, which has been allocated according on a precautionary basis, taking into account areas not accessed by the surveyor.
- 3.7 Following the Bat Building/Tree inspection, the main house on Site was assessed as having **medium potential**, and the fire-damaged former coach house **low potential** to support roosting bats. Single mature Fir and dead Beech trees located along the western Site boundary were assessed as having **low potential** to support roosting bats.

Reptile Survey

- 3.9 **Table 3.3** below summarises weather conditions during reptile survey visits.

Table 3.3 *Weather Conditions During Reptile Survey Visits*

Survey Date	Temperature (°C)	Cloud Cover (%)	Wind (Beaufort Scale)	Rainfall
29/09/14	19.4	90	1	None
02/10/15	18.5	80	1	None
05/10/15	14	75	1	None
10/10/15	14.5	30	1	None
16/10/15	13	60	1	None

- 3.8 No reptiles were recorded on any of the five survey visits.

Bat Surveys

Dusk Emergence and Dawn Re-entry Surveys

- 3.9 **Table 3.4** below summarises weather conditions during bat activity surveys.

Table 3.4: *Summary of Weather Conditions During Bat Activity Surveys.*

	22 nd September 2014 (Dusk)	15 th June 2015 (Dusk)	16 th June 2015 (Dawn)
Start Temp (°C)	16.6	16.9	12.3
End Temp (°C)	13.6	14.8	11.1

	22 nd September 2014 (Dusk)	15 th June 2015 (Dusk)	16 th June 2015 (Dawn)
Cloud cover (%)	0	0	0
Wind (Beaufort Scale)	0-1	1	0
Rainfall	None	None	None

3.10 **Table 3.5** summarises the results of dusk emergence and dawn re-entry surveys undertaken at the Site which are shown on **Maps 5-7**.

Table 3.5: *Summary of Dusk Emergence/ Dawn Re-Entry Survey Results*

Date	Emergence from/Re-entry into Building(s)	Summary of bat activity
29 th September 2014 (Dusk)	1 x Common pipistrelle (18:58) and 2x Soprano pipistrelle (19:20) from south-western upright roof ridge of main house.	- Low level Common (<i>Pipistrellus pipistrellus</i>) and Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>) commuting and foraging activity. - Common Pipistrelle pass with social calling from north-west of Site over building to east at 19:34. - Single Soprano Pipistrelle foraging in south-east corner of Site 19:35-19:45. - Commuting pass by single Soprano Pipistrelle heading south along western Site boundary 19:39. - Single Soprano Pipistrelle bats foraging and social calling around the coach house between 19:34 and 19:51 and 19:57-20:00. Single Common Pipistrelle briefly foraging and social calling in this area at 19:43. - Various Common and Soprano Pipistrelle passes heard not seen by surveyors 19:44-20:24 (Map 5). - Single Common Pipistrelle heard not seen foraging around offsite surveyor in north-east 20:08-20:12.
15 th June 2015 (Dusk)	1 x probable Pipistrelle bat (not echolocating) from damaged soffit box above eastern window of southern main house elevation (21:43). Probable Pipistrelle bat emergence	- Low-level Common Pipistrelle and Soprano Pipistrelle activity, predominantly in former garden. - Soprano Pipistrelle foraging in the back garden at 21:47. - Pipistrelle sp. bat foraging southwards along western Site boundary at 22:02. - Foraging Soprano Pipistrelle bats: from east over southern extent of garages (22:00-22:17) and northwards along western main house aspect (22:18).

Date	Emergence from/Re-entry into Building(s)	Summary of bat activity
	from upright south-western roof ridge of main house (22:04).	- Two foraging loops by Soprano Pipistrelle travelling from west over hardstanding in north-eastern gap between onsite buildings (22:30). - Single Common Pipistrelle pass northwards along western aspect of coach house (22:36). - Various Common and Soprano Pipistrelle passes heard not seen by surveyors 22:04-22:49 (Map 5). - Single Pipistrelle species pass heard not seen by surveyor in north-west of Site (21:57).
16th June 2015 (Dawn)	None.	- Low-level Common and Soprano Pipistrelle activity, predominantly commuting. - Single Soprano Pipistrelle foraging pass southwards alongside surveyor in former garden area (03:30). - Soprano Pipistrelle commuting passes 03:55 eastwards along northern aspect of main house over coach house and 04:11 northwards along western aspect of coach house. - Common Pipistrelle commuting 03:39 west-east over site, x 3 bats between 04:04 and 04:18 east-west over Site, 04:11 from east north-west along western aspect of main house and 04:24 southwards along western boundary. - Single Common Pipistrelle pass heard not seen in former garden area 03:49.

3.11 The former garden to the rear of the main house, mature trees along the western Site boundary and areas surrounding onsite buildings are of some value to foraging and commuting bats.

3.12 Overall bat activity at the Site is considered to be **low**.

Hibernation Survey

3.13 No evidence of bat roosting/hibernation activity was recorded during any of the basement inspection visits.

3.14 **Appendix 4** details metadata on ambient conditions collected by the Tinytag unit throughout the hibernation survey period.

3.15 Static detector monitoring returned a single probable record of bat activity. This was picked up by the Anabat unit on 25th January at 22:31. A copy of the traces recorded, as viewed on Analook, is provided in **Appendix 5**.

- 3.16 It is thought that this record represents a single faint pass by a Common Pipistrelle bat: the shape and frequency of the trace sufficiently resembles the characteristics of echolocation calls by this species (British Bat Calls: A Guide to Species Identification, Russ, J., 2012).
- 3.17 From Tinytag data collected at the approximate time of this bat pass, it is thought the temperature was approximately 3.8°C and humidity 100% in the vicinity of the unit (see **Map 3** for unit location).

Survey Limitations

Reptile Surveys

- 3.18 Initial reptile surveys were completed during a period of unseasonably warm weather, such that they occurred when temperatures exceeded the recommended ambient range of 9-18°C, as detailed within best practice guidelines (Froglife, 1999). At the time of survey, ambient temperatures exceeded the maximum recommended threshold by no more than 1.3°C and onsite refugia were not under direct sunlight (conditions were cloudy) such that it is likely they would still be used by reptiles.
- 3.19 More than 50% of the surveys occurred under ideal weather conditions. All surveys were carried out within the active reptile season at a time considered peak for recording their presence, due to cooler temperatures and commencement of movement towards hibernation. It is therefore thought that survey results represent a reliable assessment of reptile presence/likely absence at the Site.

Bat Activity Surveys

- 3.20 All bat activity surveys were carried out under weather conditions suitable for bat activity (when temperatures exceeded 5°C, wind speeds are low and conditions dry). Weather is therefore not considered to have presented any limitations to the below survey results.
- 3.21 In order that surveyors were positioned sufficiently close to buildings to detect bat emergences/re-entry, central areas of the main house roof were not visible from survey locations. It is thought that the placement of surveyors covering all its elevations and use of radios during surveys will have allowed accurate estimation of bat flight paths over the building, such that any potential emergences from the concealed areas of the roof would have been detected.
- 3.22 As bats are nomadic and often move between roosts, survey data provides a snapshot of bat activity at the Site. It is, however, considered that the spread of surveys across seasons coupled with relatively low levels of bat activity and consistency of results across surveys indicates that data is likely to be representative of onsite bat activity. In addition, the below mitigation measures describe a precautionary approach to removal of potential bat roost features during the construction phase of redevelopment proposals, providing appropriate mitigation for potential transitional roosts.

Hibernation Survey

- 3.23 The main house basement comprises multiple rooms, three of which are accessible for survey. It is thought that at least one further void is present in the west of the basement which is not accessible to the surveyor, but into which free access would be possible for bats. There are also multiple cracks and crevices and openings into floor voids. Full internal inspection of the basement was therefore not possible, such that some evidence of bat activity may have been overlooked during surveys. It was also not possible to identify whether other potential access routes are available into the space, beyond the damaged window in the northern basement wall. It is, however, considered likely that this window represents the best possible access/egress route into the basement, such that data collected by static detectors placed in its vicinity is likely to provide an accurate assessment of hibernation activity in the basement.

Interpretation/Evaluation of Results

Reptiles

- 3.24 As no evidence of reptiles was recorded during the survey, it is considered likely that they are absent from the Site.

Bats

Presence/Absence

- 3.25 Evidence collected during bat activity surveys confirms that the main house at Castle Crescent supports roosts of Common and Soprano pipistrelle bats. Bats were recorded emerging on both of the dusk surveys, on the first occasion a single Common pipistrelle and two Soprano pipistrelle bats from an upright roof ridge on the south-western corner of the building and, on the second, a single Pipistrelle bat from this area and a further from a damaged soffit board above easternmost window of the building. Neither of these bats were heard echolocating, negating the possibility of identification to species level. No bats were seen to re-enter the building during the dawn survey. Considering these results, which were fairly consistent across the surveys and seasons covered, it has been assessed that the main house supports two separate occasional roosts of low numbers of Pipistrelle bats.
- 3.26 A single record of a Common Pipistrelle bat was made within the main house basement during the hibernation period, confirming the presence of a small hibernation roost of this species.
- 3.27 No bat emergences/re-entries were recorded for the former coach house building at the Site such that it is considered that roosting bats are likely to be absent from this structure. This conclusion can be further supported by evidence that the building is now largely exposed and so is likely to be unsuitable to support roosting bats. However, due to the nomadic nature of bats, it is possible that roosts may be present on occasion in the coach house during the active season. The below mitigation section therefore details a suitable precautionary approach to demolition of the building in light of any residual potential for transitory roosting activity.

- 3.28 Results of the survey work suggest that the Site does not support a maternity or other significant bat roost.
- 3.29 It is acknowledged that additional bat roosting evidence may be present in inaccessible areas of the buildings, but it is considered that above bat activity surveys are sufficient to confirm the number and types of bat roosts currently present at the Site.
- 3.30 Survey results identified the presence of foraging and commuting Pipistrelle bats utilising onsite and boundary habitats at the Site. Foraging/commuting bat records were obtained from approximately 20 minutes-half an hour after sunset on dusk surveys, separately from recorded emergences at the Site, such that they may be assumed to be likely to originate from bats travelling from offsite roosts. The location of offsite roosts cannot be determined from static emergence/re-entry survey techniques alone but, due to the limited quantity and quality of habitat available at the Site and its relatively isolated position in the wider landscape, it is considered that bats are unlikely to travel a significant distance to the Site and so are likely to originate from roosts in the local area.

Population Size Class Assessment

- 3.31 A maximum of three individual bats were recorded emerging/re-entering in any one survey indicating that the main house building supports low numbers (maximum 5) of Common and Soprano Pipistrelle bats within features on its southern elevation, during the active summer season. The low level of foraging and commuting activity recorded during surveys and absence of activity by species other than Pipistrelle bats suggest that further roosts and/or species are unlikely to be present.
- 3.32 As static detectors were in place for more than 3 weeks, spanning a two month hibernation period at the Site, positioned alongside the most likely access point, and no further bat recordings were made, it is considered likely that the basement supports a small number of hibernating bats only, probably fewer than five individuals. This assessment is based on the fact that bats require to arouse regularly during hibernation to replenish energy stores and rehydrate, such that a greater number of records could be expected for the monitoring period, where higher numbers of bats were present.
- 3.33 Where present, occasional transitory bat roosts within the coach house building are likely to comprise individual/small numbers of bats only due to the low suitability of roosting opportunities provided by the structure. The building is not considered to offer suitable features to support a maternity or other significant roost.
- 3.34 Due to the small number of bat records at the Site during the course of activity surveys, the onsite and boundary foraging/commuting bat assemblage is considered to consist of low numbers only.

Site Status Assessment

- 3.35 The main house at Castle Crescent is considered to support occasional roosts of low numbers of Common and Soprano Pipistrelle bats. It is not considered to support a maternity colony or other significant roost.
- 3.36 The basement of the main house supports a Common Pipistrelle hibernation roost considered likely to consist of no more than five bats.

- 3.37 Onsite and boundary habitats support a low population of foraging and commuting Pipistrelle bats, originating from offsite roosts.
- 3.38 Common and Soprano Pipistrelle bats are considered both common and widespread (Richardson 2000). With reference to the Bat Mitigation Guidelines (Mitchell-Jones 2004, Fig. 4) and EcIA Guidelines (CIEEM, 2006), a roost with small numbers of common species, that do not belong to a maternity colony, is considered to be of **less than local nature conservation value**. Similarly, any small transitory roost within the onsite coach house would be considered of similar value.
- 3.39 A hibernation roost of Common Pipistrelle might be considered of greater value by these same standards. However, due to the small number of bats present and the likely presence of alternative sites in the area, the hibernation roost should not be considered as any more than of **local value**.
- 3.40 A low population of common and widespread foraging and commuting bats originating from offsite roosts should not be considered of any more than **Zone of Influence value**.
- 3.41 **Overall**, therefore, the **onsite/boundary bat assemblage at the Site** may be considered, at a maximum, to be of **local value**, according to the CIEEM EcIA methodology.
- 3.42 The Soprano Pipistrelle is also a Priority Species listed within the UK BAP with an associated Species Action Plan and all species of bat are prioritised under the Reading BAP.
- 3.43 At present, the conservation status of onsite/boundary bat assemblage at Castle Crescent is considered likely to be **favourable and stable** due to the likely absence of ongoing impacts on the habitats available.

4. POTENTIAL IMPACTS IN THE ABSENCE OF MITIGATION

Introduction

- 4.1 This section assesses the potential ecological impacts, arising from activities associated with the proposed redevelopment scheme, both during the construction and operational phases, in the absence of mitigation. Potential activities are identified with reference to the scheme, as detailed in **Section 1** and **Appendix 2**. The significance of these impacts in relation to features valued above is also assessed.
- 4.2 In many cases, whilst a potential negative impact is identified at this stage, mitigation measures can be undertaken to ensure that no significant negative impacts occur. Recommended mitigation to ensure that the favourable conservation status of the species identified at the Site is maintained is detailed under **Section 5**.

Reptiles

- 4.3 As reptiles are considered to be absent from the Site, it is considered likely that there will be no impacts on this group as a result of redevelopment proposals.
- 4.4 Although it is considered **extremely unlikely**, there is residual potential for onsite rubble piles to support sheltering/hibernating reptiles which may not have been detected by the presence/absence survey. Removal of rubble piles, while not resulting in a significant impact, has low potential to result in harm to sheltering reptiles in contravention of nature conservation planning policy and legislation described under **Section 1** above. Precautionary measures with regards to removal of rubble are therefore described under the mitigation section below.

Bats

Construction Phase Impacts

Roost Loss

- 4.5 Re-roofing works and replacement of soffits and fascias on the main house, planned as part of its conversion, will result in **near certain permanent loss of two occasional non-maternity roosts** supporting low numbers of Common and Soprano Pipistrelle bats. This loss is considered to be permanent as, although the roof features will be replaced, they are likely to lose the characteristics which make them suitable to support bat roosting activity (gapping underneath ridge tiles and holes in soffit boarding).
- 4.6 Redevelopment works will entail the replacement of ground-level floors and conversion of the basement to provide storage space in the main house, causing **near certain permanent destruction of a hibernation roost** supporting low numbers of Common Pipistrelle bats.
- 4.7 Although no bat roosts were recorded within the coach house building during survey work and so are considered likely to be absent from this feature, it is considered possible the occasional transitory roost may be present at some times during the active bat season.

Demolition of the coach house would therefore lead to the **permanent destruction** of features with the potential to support a bat roost.

- 4.8 Where construction works result in the destruction of roosts, the potential killing/injury and disturbance of bats is risked, which would represent an offence under nature conservation planning policy and legislation described under **Section 1** above.
- 4.9 With reference to the *Bat Mitigation Guidelines* (Mitchell-Jones 2004), the unmitigated impacts upon the bat population of the destruction of a small summer roost and small hibernation roost of common species, at the Site level, is high. Due to the likely presence of alternative roost sites in the locality, it is considered that roost destruction at the Site will lead to a **significant impact** on the bat assemblage **at the Zone of Influence level only**.
- 4.10 Mitigation proposals below detail compensatory/enhancement roost provision measures for the redeveloped Site, likely providing sufficient replacement and improved availability of roosting opportunities for bats into the future.

Fragmentation and Isolation

- 4.11 Clearance of the former garden area for landscaping will likely result in temporary impacts on bats currently using this area for foraging and commuting. The majority of mature vegetation will, however, be retained (see the Landscape Strategy at **Appendix 6**) and, as planned additional planting (to include trees, ground flora seed mix and borders), matures (predicted within approximately 5 years), shelter and connectivity along the southern and western Site boundaries is likely to be improved for bats in comparison to the present. No significant impacts on foraging and commuting activity are therefore likely as a result of temporary vegetation clearance.
- 4.12 Construction of the new housing block in the south-east of the Site will introduce a potential barrier to bat movement in, where no previous similar obstacles have existed. The building will be of the same height as and is an extension of the existing former coach house. Evidence collected during activity surveys at the Site suggests that bats use sheltered areas in proximity to the existing building for foraging and commuting. The Site is also located within a developed, urban setting within which a new building will not represent a significant feature. Provided that a sensitive lighting strategy is introduced, it is therefore thought that a new building is unlikely to have a significant effect on bat foraging and commuting bats at the Site.

Operational Phase Impacts

Disturbance

- 4.13 Post-redevelopment impacts could include the presence of new residents regularly using the Site, which has been unoccupied for a significant period, and increased lighting.
- 4.14 Footfall across the Site has been very low since it was abandoned, although regular squatters have been known to be present. The presence of new residents therefore has

the potential to exert impacts on the onsite bat assemblage through increased noise and disturbance. However, due to the Site's urban location, it is likely that current noise levels remain relatively high. Sheltered boundary areas would also remain largely undisturbed during the Site's occupation, providing quiet corridors for bat activity. Planned landscaping is likely to increase the quality and quantity of habitat available at the Site, compensating for any disturbance effects. Significant impacts on the bat assemblage will therefore not result from the presence of new residents.

- 4.15 As it stands, ambient light levels at the Site are relatively high, due to nearby street lighting and neighbouring buildings. Some areas in the southern part of the Site are unlikely to have been directly lit for a significant period of time: since the buildings became vacant. Increased lighting has the potential to reduce the suitability of foraging/commuting corridors the effects such as exposing bats to increased predation risk.
- 4.16 Due to limited quality and quantity of habitat available at the Site and the probable presence of similar resources in the form of nearby gardens, it is considered likely that bats visiting the Site from the local area would have adequate alternative resources to exploit such that significant negative impacts as a result of disturbance would not be exerted at the local level. It is therefore considered that the installation of new external lighting, in the absence of mitigation, would exert a **probable significant negative impact on foraging and commuting bats at the Zone of Influence level, only**, by reducing the suitability of onsite/boundary habitats for bat activity.

Predation

- 4.17 Should residents decide to keep domestic cats as pets, there is potential for increased predation of bats, resulting in their death. It is likely that there is an established cat population in the surrounding residential area and cats were observed during activity surveys. The presence of cats at the Site is unlikely, therefore, to represent a considerable increase in the local population and so it is also considered that it will not exert a significant negative impact on the onsite bat assemblage.

Other Considerations

Bats

- 4.18 Several onsite and boundary trees are scheduled for removal under current landscaping plans (see **Appendix 5**). Of these, only the dead Beech *Fagus sylvatica* tree on the western Site boundary has been assessed as having low bat roosting potential. Although no bats were recorded emerging from it during activity surveys, targeted surveys have not been completed for this feature. There is therefore potential for the tree to support a bat roost which would be destroyed when the tree is removed.

Birds

- 4.19 Buildings and some boundary vegetation (primarily mature and semi-mature trees) at the Site have the potential to support an assemblage of common garden bird species. Bird nests were observed in the main house chimneys during the Ecological Appraisal. The Wildlife and Countryside Act 1981 (as amended) protects all birds, making it an offence, with certain exceptions, to intentionally kill, injure or take any wild bird and to take, damage or destroy their nests or eggs. Should demolition/conversion or vegetation clearance be

required during the bird nesting season (which runs from March to August inclusive) there is potential for the works to result in harm to or disturbance of nesting birds which would be in contravention of this legislation.

Stag Beetle

- 4.20 During the second dusk activity survey a single passing Stag Beetle *Lucanus cervus* was recorded on the wing in the north of the Site (**Map 5**). Stag beetles are listed as protected species under Annex 2 of the Habitats Regulations (2010) and are notable species listed under various legislation and policy, including as Species of Principal Importance under Section 41 of the NERC Act and priority species under the UK and Reading BAPs. They have been granted their own species action plans. Its presence flying over the Site suggests that the Site may provide habitat which supports Stage Beetle. Suitable onsite habitat may include the former garden which provides rough grassland for foraging alongside hard standing for basking. It is possible that the dead Beech tree along the western Site boundary represents suitable standing deadwood breeding habitat. Redevelopment proposals affecting these features therefore have the potential to result in habitat loss and/or disturbance/harm to this species, against legislation and planning policy.

5. MITIGATION, COMPENSATION AND ENHANCEMENTS

Introduction

- 5.1 In order for the redevelopment to proceed in compliance with applicable legislation and planning policy, it is necessary to mitigate and compensate for any significant ecological impacts (as identified in **Section 4**). These include the impacts of roost destruction and light disturbance. Legislation and policy also places an onus on development to provide ecological enhancements. This section therefore recommends appropriate measures to mitigate for significant impacts upon the onsite bat assemblage, ensure compliance with legislation and policy and provide ecological enhancements at the Site.

Bat Mitigation Requirements

- 5.2 Evidence recorded during bat activity surveys confirms that the main house at Castle Crescent is both a summer and hibernation roost for Pipistrelle sp. bats. The coach house has features with residual potential to support occasional bat roosts.
- 5.3 As conversion/demolition proposals for the buildings will result in the certain loss of known bat roosts and destruction of potential roosting features, it will be necessary to provide mitigation and compensation to ensure that no bats are harmed during the works and that the favourable conservation status of bats within the local area is maintained.
- 5.4 The proposed strategy to provide mitigation and compensation for the destruction of onsite roosts/ precautionary mitigation for the coach house is outlined below. This details the specific methodology for destructive works to the buildings, compensation for the loss of known roosts, and mitigation/enhancement measures for foraging/commuting bats.
- 5.5 It will also be necessary to apply for a European Protected Species (EPS) Licence in respect of bats, covering the destruction of known roosts at the Site, in order for the redevelopment to proceed lawfully. A licence application must be made following the granting of planning permission for the Site and the discharge of any planning conditions pertaining to ecology. A licence must be in-hand prior to the commencement of any potentially-disturbing works at the Site. Any licence application for the Site should detail the below-described mitigation measures.

Works to be Undertaken by an Ecologist

New Roost Creation – Compensation and Enhancement

- 5.6 Five bat boxes, including a hibernation unit, will be installed on the retained mature trees within the Site boundary in sufficient time to allow bats to discover them before the buildings are disturbed. Trees will be accessed by ladder, where possible, but may need to be climbed in order to position the bat boxes high up on the trunk. The bat boxes will comprise 2x 2FN, 2x 1FD and 1x 1FW hibernation box (all manufactured by Schwegler) (**Appendix 7**), which, in combination, are suitable for a number of bat species including Pipistrelle sp. and Long-eared bats.
- 5.7 In addition to this a Schwegler type 2FE Wall Mounted Bat Shelter will be mounted onto the exterior of the southern aspect of the new building (see **Appendix 7** for location). This

type of bat box is suitable for a variety of bat species including pipistrelle sp., Natterer's, Daubenton's and long-eared bats.

- 5.8 Where appropriate, several bat access tiles will also be incorporated into the roof of the new structure, at locations also shown in **Appendix 7**, providing access under roof tiles, leading to additional roosting opportunities for crevice-dwelling species including Pipistrelle bats. Inclusion of bat access tiles is only considered appropriate where a felt roof lining is to be used for the building and should not be combined with the use of breathable/Tyvek membranes which may be harmful to bats.

Method Statement Provision and Destructive Search Supervision

- 5.9 Any potentially disturbing works at Site, including structural conversion and demolition, should be timed to begin in April or in September/mid-October when overnight temperatures exceed 5°C. No destructive works on any of the buildings within the Site boundary will be carried out during the hibernation period, which is generally considered to be from 1 November to 1 April (although this is always dictated by weather conditions). Destructive works will also be avoided in the peak summer months from mid-May to August, although, as no buildings within the Site boundary are considered to support a maternity roost, these months are less critical.
- 5.10 A pre-conversion/demolition emergence survey will be carried out on all buildings within the Site boundary 24 hours prior to any works starting.
- 5.11 Repeat internal Bat Building Inspections of the buildings will also be undertaken, firstly within 3 months of any EPSL application (to inform the applications, in accordance with Natural England licensing requirements) and, secondly, immediately prior to works starting at the Site. If any bats are found during this final inspection, a licensed bat worker will catch the bats by hand using a static hand net, where necessary. Bats will then be removed from the loft and either released nearby at dusk or placed inside one of the newly-installed bat boxes.
- 5.12 Prior to the commencement of destructive search works a full Tool-box Talk will be provided to all Site contractors.
- 5.13 Due to the low likelihood of bat presence, it is considered appropriate that demolition of the coach house proceeds under a working method statement which will describe the sensitive removal of potential roosting features such as remaining roof tiles and soffit boards. Working methods will be drawn up by a suitably-qualified ecologist and presented to Site contractors during the Toolbox Talk. Demolition works may proceed unsupervised, in accordance with methods detailed under the method statement which will include the hand removal of potential roosting features such as remaining roof tiles and soffit boarding. Should evidence of roosting bats be discovered any time during demolition, works must be stopped immediately and the advice of a suitably-qualified ecologist sought. In this event, it is likely that amendments would need to be made to the Site EPSL and an appropriate amended mitigation scheme implemented prior to recommencement of demolition works.

- 5.14 The main house will undergo supervised destructive search under instruction from a suitably-qualified ecologist. During the search, all areas of the building with the potential to support roosting bats, such as roof tiles and soffit boarding, will be hand stripped under the supervision of a licensed bat worker, in accordance with conversion plans. Any bats found will be removed and placed into one of the newly-installed bat boxes. The pre-redevelopment emergence survey will aid the identification of parts of the building where bats may be present (if any), and allow particular care to be taken when working in these areas.
- 5.15 Following completion of the destructive search, the buildings will then be left exposed for at least one night before any further work is carried out, allowing the temperature to fall below that required by bats, and allowing all crevices to be exposed to the elements thus making the roost conditions unfavourable to bats. After this period, works may proceed as planned.

Trees

- 5.16 It is recommended that onsite and boundary trees are retained, as far as possible, in accordance with the existing landscape strategy for the Site (**Appendix 6**), especially the dead Beech tree on the western Site boundary, in relation to its potential to support roosting bats (and invertebrates, as described below).
- 5.17 Where its retention is not possible or significant pruning works are required, it will be necessary to fully assess whether bats are using this feature for roosting and implement suitable mitigation measures, prior to its removal, as appropriate.
- 5.18 As an initial approach to this, it is recommended that a climb and inspect survey is completed by a suitably-qualified ecologist, to inspect suitable roosting features for the presence of bats, as far as possible. Further emergence survey work may be required during the active bat season (May-September inclusive) to fully assess the potential presence of bats roosts. Where bats are recorded roosting in the tree, it will be necessary for its removal to be included in the EPSL application for the Site and for appropriate mitigation to be provided.

Works to be Undertaken by the Developer/Landowner

Lighting

- 5.19 There will be no direct illumination of bat mitigation features (boxes and access tiles) and no lighting around the nearby vegetation, including the mature trees and boundary vegetation. Any external lighting at the redeveloped Site will be kept as low as Health and Safety regulations permit, and be limited to low-lux, UV filtered, directional bollard lighting. It would be an advantage to introduce motion-sensor operated lighting, to minimise lit periods at the Site. It is recommended that a full sensitive lighting strategy be produced as part of any EPSL application for the Site.

Vegetation – Retention and Enhancement

- 5.20 The tree lines and vegetation surrounding the Site will be retained, where possible, and enhanced by new planting as detailed in the Landscape Strategy (see **Appendix 5**).

- 5.21 Proposed landscaping at the Site should, as far as possible, incorporate suitable native species of local provenance with a variety of fruiting bodies and floral structure, to encourage an abundant and diverse invertebrate assemblage for the benefit of roosting bats, but also to the benefit of various other notable wildlife including birds and terrestrial mammals such as hedgehogs. Suitable species for incorporation might include Bramble *Rubus fruticosus* agg., Hazel *Corylus avellana*, Hawthorn *Crataegus monogyna*, Holly *Ilex aquifolium*, Honeysuckle *Lonicera periclymenum*, Guelder Rose *Viburnum opulus* and fruit trees such as Crab Apple *Malus* sp. and small Cherry *Prunus* sp. varieties.

Summary of Mitigation For Bats

- 5.22 The above-proposed bat mitigation infrastructure will represent suitable mitigation and compensation for the loss of known roosts at the Site by providing alternative roosting opportunities for bats during the works and will also be left up after the construction work is complete to provide additional roosting opportunities for bats, thus enhancing the Site for bats.
- 5.23 The proposed lighting strategy and landscaping measures will provide suitable mitigation and compensation for habitat fragmentation and disturbance at the Site, maintaining habitat for foraging and commuting bats.
- 5.24 Should the above suite of mitigation and enhancements be implemented at the Site, it is likely that negative impacts on the onsite bat assemblage will be avoided.

Proposed Timetable of Works

- 5.25 A summary of recommended works, in order to mitigate negative impacts on roosting bats at the Site, for inclusion in any forthcoming EPSL application, including associated timings, is provided **Table 5.1**.

Table 5.1: *Development Activities in Relation To Roosting Bats and Associated Timings*

Recommendation	Timing
Produce, in consultation with a suitably-qualified ecologist, a suitable sensitive lighting strategy for the redeveloped site.	For inclusion with any European Protected Species Mitigation Licence (EPSL) application for the Site.
Complete update internal Bat Building Inspection.	Within 3 months of EPSL application.
Completion Climb and Inspect/Emergence surveys for dead beech tree if removal/significant pruning to be completed.	During active bat season (May-September).
Obtain EPSL to cover the redevelopment proposals.	Following the granting of planning permission and prior to commencement of redevelopment works.

Recommendation	Timing
Erect 2x 2FN, 2x 1FD and 1x 1FW Schwegler bat boxes and 5x Schwegler 1B bird boxes on suitable boundary trees at the Site.	Prior to commencement of conversion works.
Pre-demolition emergence survey and internal inspection on current buildings.	On day of commencement of works, prior to works commencing.
Tool-box talk to all contractors.	Prior to works commencing.
Demolition of coach house under Working Method Statement produced by suitably-qualified ecologist, involving sensitive removal of potential roosting features by hand.	April or September/early October, when overnight temperatures exceed 5°C.
Supervised Destructive Search of main house building, involving removal of potential roosting features by hand and cavity wall check.	
Redevelopment work.	Following Destructive Search.
Erect bat access tiles and Schwegler 2FE Wall Mounted Bat Shelter on the new onsite building in accordance with plans at Appendix 7.	During new building construction.
Suitably-qualified ecologist to complete compliance check.	On completion of redevelopment.

Summary of Mitigation/Enhancements for Reptiles

- 5.26 It is recommended that removal of rubble piles occurs within the active reptile season when conditions are suitable for reptiles activity (between March and October, when overnight temperatures exceed 5°C), to avoid any potential harm to sheltering/hibernating animals.
- 5.27 Please note that, should reptiles be discovered at any time during Site clearance, works should be stopped immediately and the advice of suitably-qualified ecologist sought. It is likely, in this case, that suitable mitigation strategy would need to be devised to protect reptiles during clearance of onsite habitat.
- 5.28 The above-mentioned enhancements to onsite vegetation are likely to improve the Site for reptiles, allowing potential colonisation in the future.
- 5.29 Of particular potential benefit is proposed wildflower seeding at the Site. To maximise the benefits of these areas, a suitable varied seed mix such as Emorsgate Ew1F should be used and management should be sensitive and allow the development of good floral diversity and vegetation structure. An appropriate management regime would entail an annual cut of seeded areas during August/early September, following seed-setting, after which all arisings should be removed. Supplementary seeding should be carried out to provide in-fill for failed areas and boost species diversity as necessary.

- 5.30 Sensitive management should be extended to other vegetated areas at the Site, to include rotational cutting of mature vegetation, by hand, to encourage healthy vegetation structure for the potential benefit of herptiles as well as other wildlife. Where possible. Any remaining areas of grass/marginal vegetation should be cut minimally and allowed to develop a rough structure with potential benefits for sheltering herptiles and other wildlife.

Summary of Mitigation and Enhancements for Nesting Birds

- 5.31 Mature vegetation and trees will be retained as far as possible in line with existing landscaping plans (Appendix 5).
- 5.32 No vegetation or trees will be cleared/felled, and no buildings will be demolished within the bird nesting season which extends from March to August inclusive. Should demolition or clearance works be required within this period, a check of the area to be cleared must be made by a suitably qualified ecologist within 24 hours of the commencement of works. Should active bird nests be identified, a suitable buffer zone will be introduced, within which no disturbing works may proceed until a return visit by a suitably-qualified ecologist has confirmed that the nest has been vacated.
- 5.33 By way of Site enhancement, five Schwegler 1B bird boxes will be erected on suitable boundary trees as part of the redevelopment.

Summary of Mitigation and Enhancements for Invertebrates, Including Stag Beetle

- 5.34 As far as possible, the dead boundary Beech tree at the Site should be retained as suitable standing deadwood habitat for Stag Beetle and other invertebrate species.
- 5.35 Where it cannot be preserved in its current state, it is recommended that its wood be retained onsite in the form of log/brush piles at the Site, providing invertebrate habitat as well as opportunities for Hedgehog nesting and potential shelter for amphibians and reptiles. Ideally, in this situation, a suitable piece of dead wood should be erected above-ground, for example attached to another boundary tree, to mimic standing deadwood habitat.
- 5.36 Aforementioned enhancements to and sensitive management of onsite and boundary vegetation are also likely to be of benefit to Stag Beetle and other invertebrates by retaining suitable foraging habitat for this group.

Summary of Enhancements for Hedgehog

- 5.37 Mature boundary vegetation at the Site is suitable for supporting Hedgehogs (a Reading BAP and S.41 species), hence provision of a Hedgehog box (Refer to **Appendix 7** for additional details) should be considered as a Site enhancement. A suitable position for a Hedgehog box would be in ground cover under boundary vegetation.

Compliance Monitoring

- 5.38 Compliance checks will be made by a suitably-qualified ecologist throughout and close to completion of the redevelopment to check the installation of the mitigation and provide guidance as required.
- 5.39 Should redevelopment works not have commenced at the Site within 1 year following the date of this report, it will be necessary for the advice of suitably-qualified ecologist to be sought as to whether updates to the survey work detailed herein are required prior to submission of an EPSL application or commencement of works.

Residual Impacts

- 5.40 Provided the mitigation recommended above is implemented in full, there should be no residual significant negative impacts on bats or other Protected Species as a result of this scheme and the favourable conservation status of bats and other Protected Species will be maintained and enhanced at this Site. Therefore, the proposals will comply with relevant legislation and planning policy.

6. CONCLUSIONS AND RECOMMENDATIONS

- 6.1 Analysis of the results of detailed bat and reptile surveys has allowed for a confident assessment of the current onsite Protected Species assemblage at Castle Crescent, which comprises low numbers of roosting, foraging and commuting Pipistrelle bats. Data has allowed the location, type and value of bat roosts present at the Site to be described and has also enabled the development of an appropriate and robust mitigation strategy, designed to ensure that a favourable conservation status of bats and other Protected Species is maintained and improved at the Site into the future.

Compliance with Policy and Legislation

- 6.2 The existing main house building supports small summer roosts of Common and Soprano Pipistrelle bats and a small winter hibernation roost of Common Pipistrelle bats. Summer roosts are not considered to be a maternity roost and have been assessed as being of Zone of Influence value. The hibernation roost is of no more than local value. As detailed above, in order to fully comply with planning policy and legislation, an application to Natural England for an EPSL in relation to bats is required.
- 6.3 In order for such a licence to be issued, Natural England needs to be satisfied that the proposed works meet the three derogation tests. **Table 6.1** below lists these three derogation tests and comments on how the scheme meets them:

Table 6.1: *Comments on Compliance with the Three Natural England EPSL Derogation Tests*

Derogation Test:	Comments on Compliance
That the activity is ' <i>in the interests of public health and safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment</i> '	This development is in the interest of overriding public interest as it will provide valuable and necessary residential accommodation in the busy Reading town centre. Without its redevelopment, the Site will continue to deteriorate from its current derelict state, representing an increased eye-sore and hazard in the community as well as providing opportunities for undesirable activities such as squatting, which have already been experienced at the Site to date.

Derogation Test:	Comments on Compliance
That there is ' <i>no satisfactory alternative</i> ' to the activity;	The current condition of the main house building is such that it is not safe for habitation without conversion works. Those works proposed are also required to provide a layout suitable to maximise the accommodation provided by the redeveloped Site and supply necessary storage space for the properties. Satisfactory alternatives capable of accommodating the proposed scheme are not present in the locality.
That the activity is ' <i>not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their range</i> '.	The detailed mitigation strategy contained within this report is considered to ensure the maintenance of the bat assemblage currently present within the Castle Crescent Site at a favourable conservation status in their home range and improve its conservation status into the future.

Summary of Recommendations

- 6.4 Recommended mitigation and suggested enhancement measures, including their associated timescales, are detailed in **Table 6.2** below which provides an overall summary of required actions in lieu of redevelopment proposal at the Site.

Table 6.2: *Summary of Recommended Mitigation and Suggested Enhancement Measures*

Ecological Receptor	Recommended Action	Timings
Bats	Implement mitigation measures in relation to roosting bats detailed under Table 5.1. Retain, as far as possible, all mature trees and vegetation at the Site in accordance with the current Site Landscaping Strategy (see Appendix 5). Where possible, retain the dead beech tree along the western Site boundary. Where this will not be possible, further bat surveys to be discussed and agreed with suitably-qualified ecologist prior to its removal. As far as possible, incorporate suitable native species of local provenance into landscaping proposals.	See Table 5.1. In redevelopment design. In redevelopment design/ May-September prior to tree removal. In redevelopment design.

Ecological Receptor	Recommended Action	Timings
Reptiles	Incorporate suitable varied wildflower seed mix such as Emorsgate Ew1F into landscaping plans in accordance with existing detailed proposals (Barton Willmore RG-L-01-01). Instigate sensitive vegetation management regime including annual cut of wildflower areas and infrequent rotational hand cutting of mature and marginal vegetation. Remove onsite rubble piles in the active reptile season when conditions are suitable for reptile activity.	In redevelopment design. August/early September wildflower cut. Between March and October, when overnight temperatures exceed 5°C.
Nesting Birds	Retain and protect existing mature vegetation, where possible. Erect five Schwegler 1B bird boxes on suitable boundary trees. Complete vegetation removal and building demolition outside of the breeding bird season. Nesting bird check to be completed by a suitably-qualified ecologist a maximum of 24 hours before commencement of any potentially disturbing works within the breeding season.	Within redevelopment design. Prior to commencement of redevelopment. November-February inclusive. March-October inclusive.
Invertebrates and Stag Beetle	Retain dead Beech tree on western Site boundary as suitable standing deadwood habitat for Stag Beetle and other invertebrate species. Where it cannot be preserved, preserve deadwood onsite by erecting suitable piece on retained tree and/or in the form of log/brush piles. Introduce aforementioned enhancements to and sensitive management of onsite and boundary vegetation.	Within redevelopment design.

Ecological Receptor	Recommended Action	Timings
Hedgehog	Provide Hedgehog box (Refer to Appendix 7 for designs) in ground cover under boundary vegetation.	Within redevelopment design.
Ecological data	Consider, in consultation with a suitably-qualified ecologist, the need for updates/amendments to the survey data/recommendations detailed within this report if redevelopment has not commenced at the Site after 1 year following its date.	From 1 year following the date of this report.

Conclusion

- 6.5 Following the successful implementation of the above mitigation measures at the Castle Crescent Site, along with suggested enhancement measures for biodiversity, existing proposals will accord with the requirements of relevant wildlife and planning policy and legislation. It is therefore not considered that ecological interests should present any significant barrier to redevelopment of the Site.

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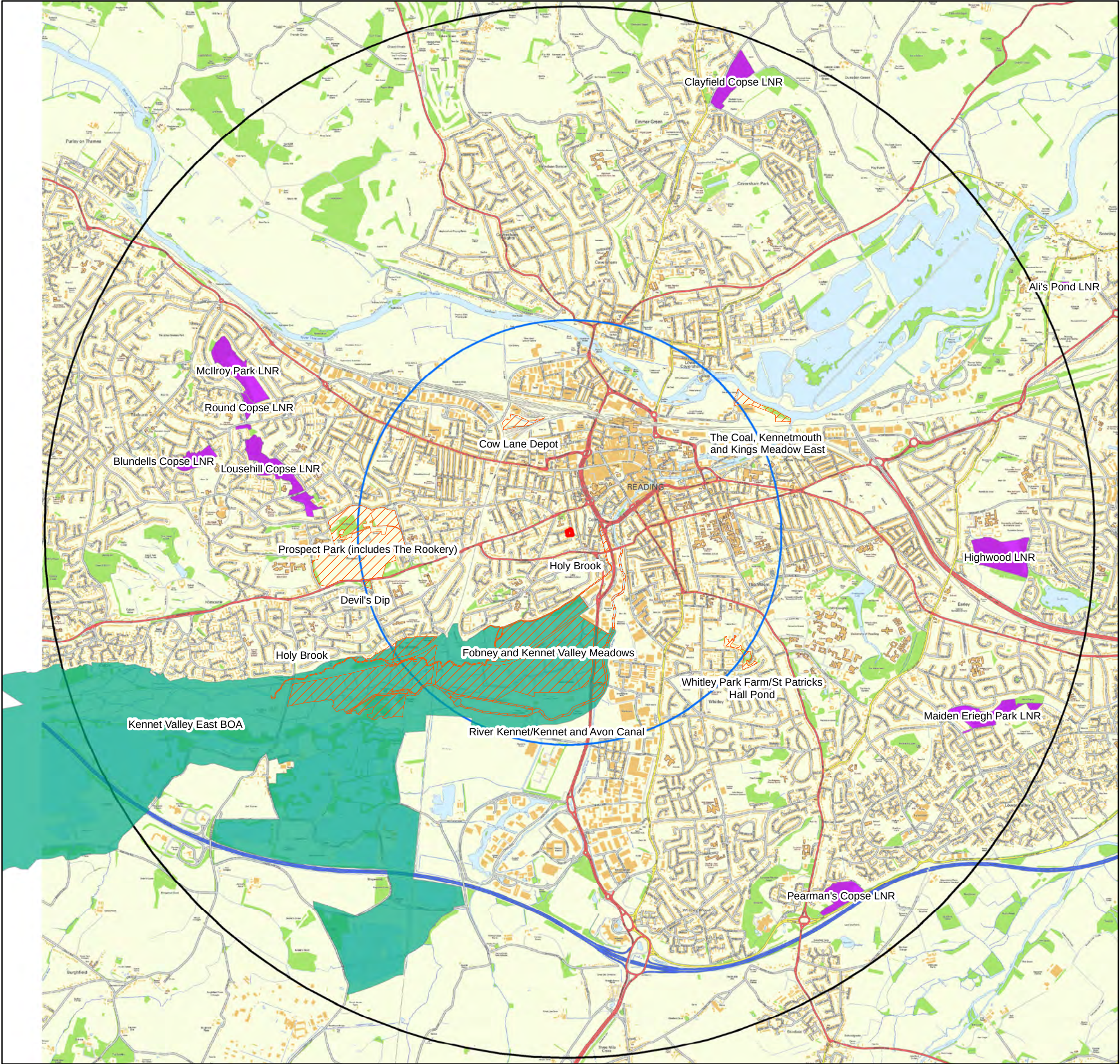
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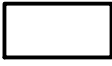
Maps

- Map 1** Site Location and Nature Conservation Designations
- Map 2** Site Habitats and Features
- Map 3** Habitats and Features with the Potential to Support Bats and Reptiles
- Map 4** Relevant Protected Species Records
- Map 5** Dusk Bat Activity Survey Results 22/09/2014
- Map 6** Dusk Bat Activity Survey Results 15/06/2015
- Map 7** Dawn Bat Activity Survey Results 16/06/2015



MAP 1 Site Location & Nature Conservation Designations

KEY

-  Site boundary
-  2km linear distance from site boundary
-  5km linear distance from site boundary
-  Local Nature Reserve (LNR)
-  Local Wildlife Site
-  Biodiversity Opportunity

SCALE: 1:36,000 at A3

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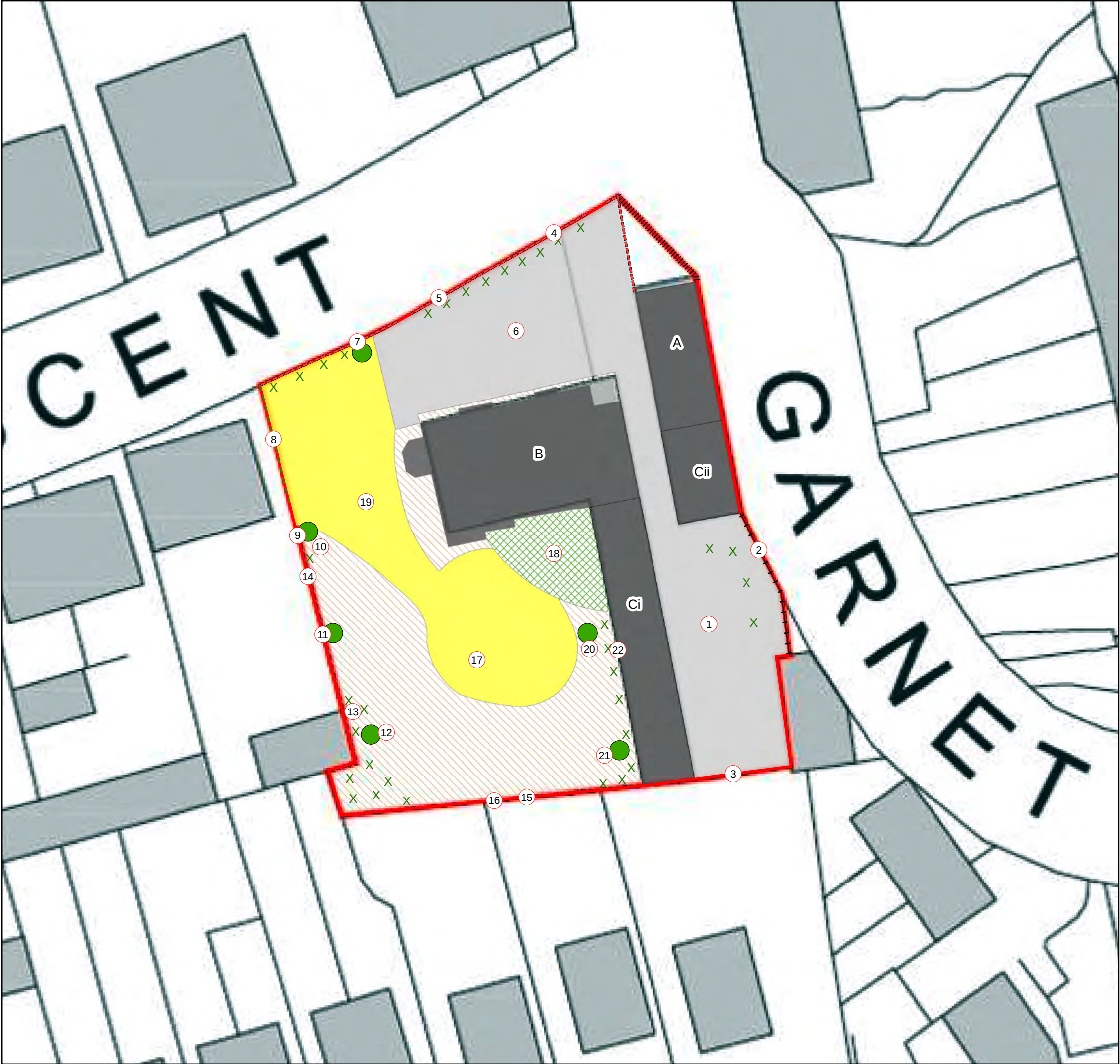
PROJECT: Castle Crescent

DATE: August 2015

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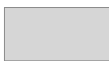
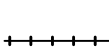
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MAP 2 Habitats and Features

KEY

-  Site boundary
-  Amenity grassland (unmanaged)
-  Tall ruderal
-  Dense scrub
-  Hardstanding
-  Building (with ID)
-  Boundary removed
-  Fence
-  Species-poor hedge
-  Wall
-  Scattered scrub
-  Trees
-  Target notes

SCALE: 1:400 at A3

0 5 10 15 20 25 Metres



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PROJECT: Castle Crescent

DATE: August 2015

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P14/41

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MAP 3 Habitats and Features with the Potential to Support Bats and Reptiles

- KEY
- Site boundary
 - Building with negligible potential for bats
 - Building with low potential for bats
 - Building with moderate potential for bats
 - Flat roof
 - Loft space- low potential for bats (fire damaged)
 - Loft space- moderate potential for bats
 - Approximate layout of cellar below main house- moderate potential for hibernating and roosting bats [INSET]
 - Habitat with potential to support reptiles
 - Habitat with low-moderate potential to support foraging/commuting bats
 - Tree with low potential to support roosting bats
 - Location of Automated Bat Detectors

SCALE: 1:400 at A3 [MAIN FRAME]

0 5 10 15 20 25 Metres

N



CLIENT: R W Brown

PROJECT: Castle Crescent

DATE: August 2015



MAP 4 Relevant Protected Species Records

- KEY
-  Site boundary
 -  2km linear distance from site boundary
 -  Common Lizard
 -  Grass Snake
 -  Slow-worm
 -  Common Pipistrelle
 -  Soprano Pipistrelle
 -  Pipistrelle Bat species
 -  Daubenton's Bat
 -  Noctule Bat
 -  Serotine
 -  Unidentified Bat

SCALE: 1:15,000 at A3

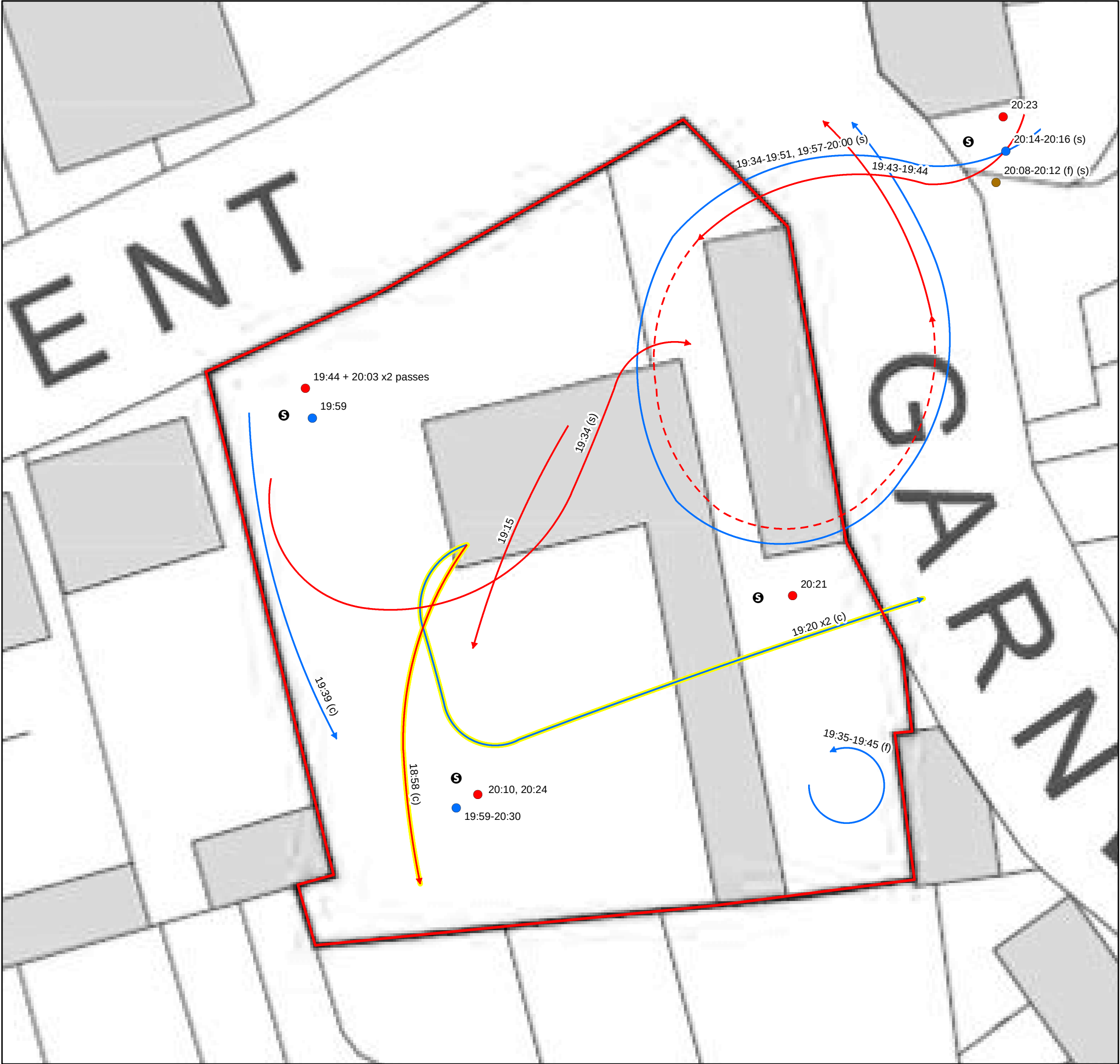
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PROJECT: Castle Crescent

DATE: August 2015



MAP 5 Dusk Bat Activity Survey Results
22/09/2014

- KEY
- Site boundary
 - Common pipistrelle
 - Common pipistrelle presumed flight
 - Soprano pipistrelle
 - Bat emergence
 - Common pipistrelle heard not seen
 - Soprano pipistrelle heard not seen
 - Long-eared heard not seen
 - Surveyor position
 - (c) Commuting
 - (f) Foraging
 - (s) Social calling

SCALE: 1:300 at A3

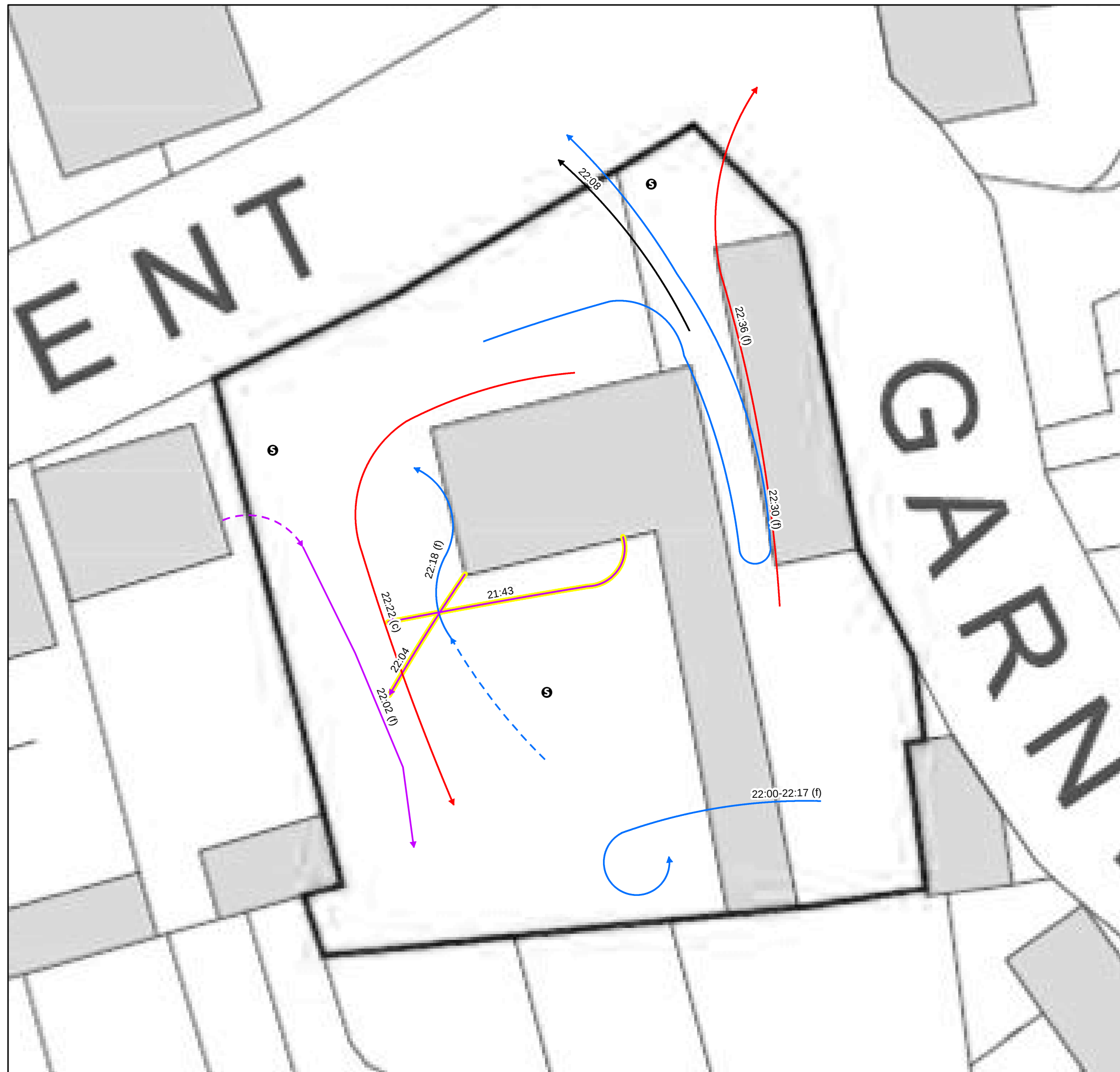
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CLIENT: R W Brown

PROJECT: Castle Crescent

DATE: August 2015



MAP 6 Dusk Bat Activity Survey Results 15/06/2015

KEY

- Common pipistrelle
- Soprano pipistrelle
- - - → Soprano pipistrelle presumed flight
- Pipistrelle species
- - - → Pipistrelle species presumed flight
- Stag beetle
- Bat emergence
- S Surveyor position
- (c) Commuting
- (f) Foraging

SCALE: 1:300 at A3

0 5 10 15 20 Metres



Ecological Planning & Research

CLIENT: R W Brown

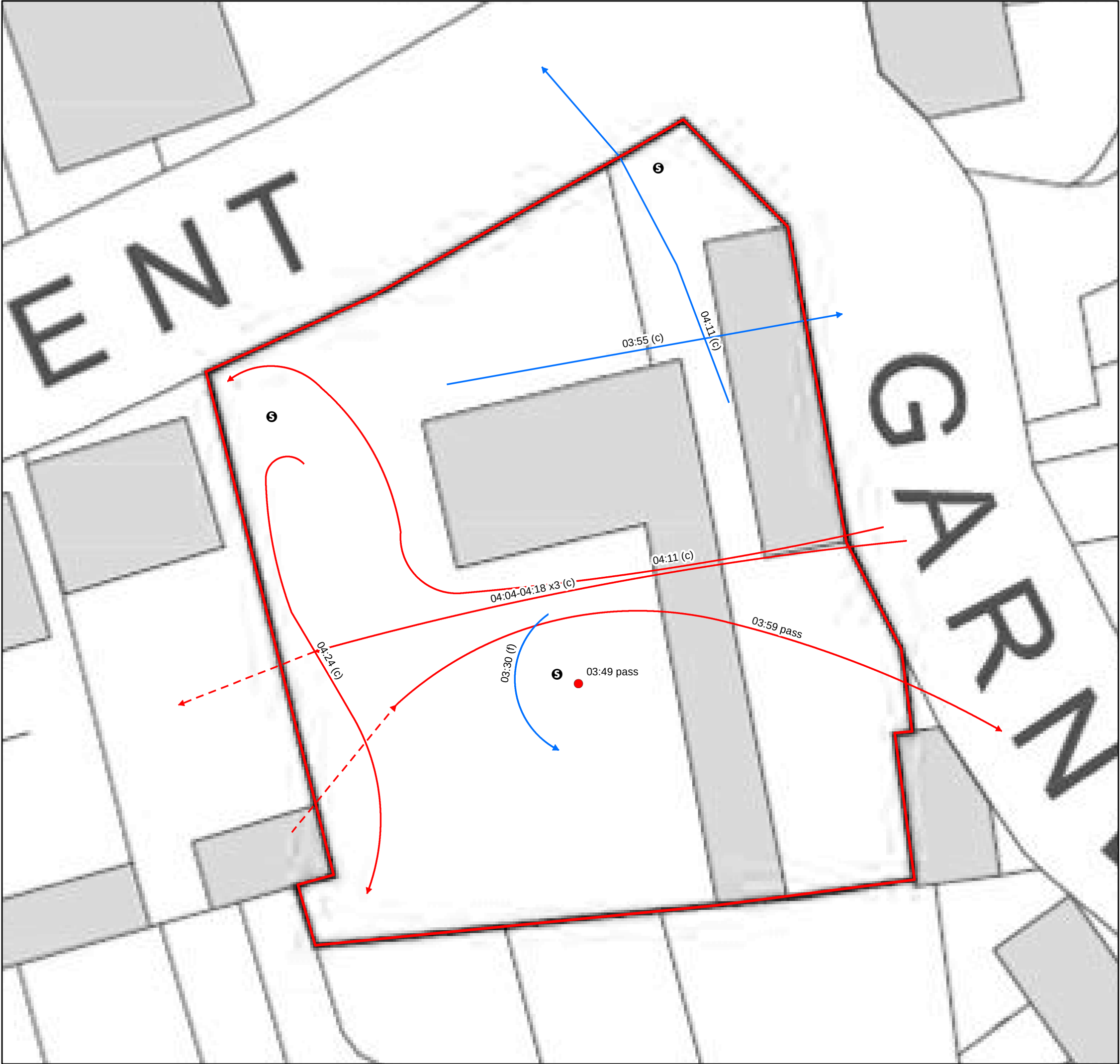
PROJECT: Castle Crescent

DATE: August 2015

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MAP 7 Dawn Bat Activity Survey Results
16/06/2015

KEY

- Site boundary
- Common pipistrelle
- Common pipistrelle presumed flight
- Soprano pipistrelle
- Common pipistrelle heard not seen
- Surveyor position
- (c) Commuting
- (f) Foraging

SCALE: 1:300 at A3

0 5 10 15 20 Metres



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CLIENT: R W Brown

PROJECT: Castle Crescent

DATE: August 2015

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Appendix 1

Target Notes – Site Habitats and Features (Map 2)

Target Notes

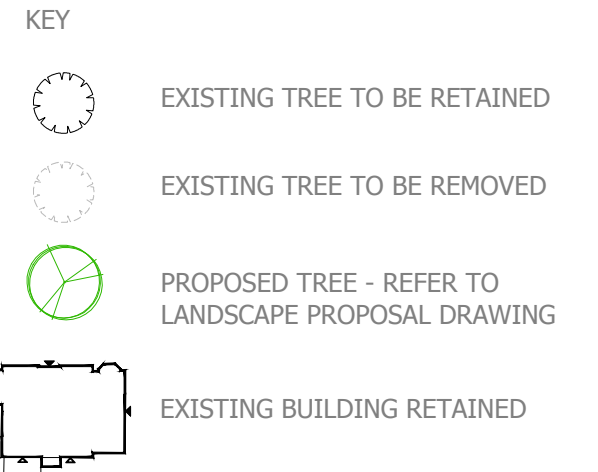
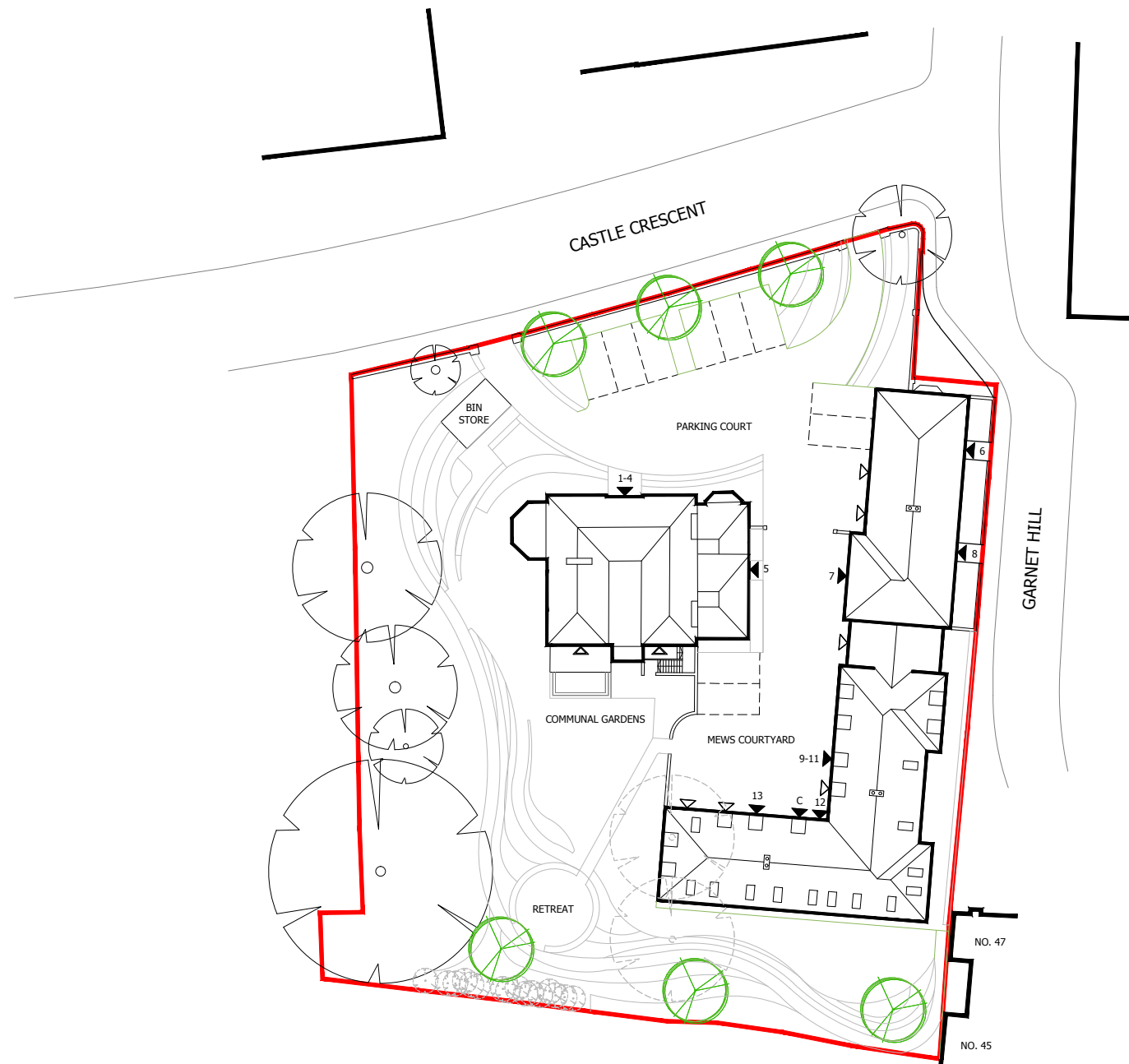
Target Note No.	Description
1	Hardstanding area with abundant Buddleia, Hops, St John's Wort, Fat Hen, Field Bindweed.
2	Wire fence.
3	Concrete wall, 6ft.
4	Brick wall (new).
5	Scattered immature Sycamore, Ash, Holly, Dogrose, Ivy, Red Valerian, Golden Rod.
6	As 1 but herbs and shrubs confined to edges mainly, plus Red Valerian, Bramble, Rosebay Willowherb.
7	Small Yew tree – 4m high.
8	Mature Bay hedge – 6m high.
9	Mature Fir tree – 20m H x 0.7m W, many broken limbs on east aspect, low potential for roosting bats.
10	Log pile (limbs overhanging neighbouring property cut from west aspect of tree)
11	Dead Beech tree with Holly and Ivy covering lower section of trunk – 15m H x 0.5m wide.
12	Mature Copper Beech tree 17m H x 0.55m W in good condition. Negligible roost potential but has foraging potential and links to further trees to the west for commuting bats.
13	Rubble/wood pile on boundary.
14	Intact brick wall.
15	Brick wall with inbuilt wood panels.
16	Line of immature Pine trees.
17	Garden area – overgrown grass with encroaching vegetation to 1.5m high in patches – species include Yorkshire Fog, Ribwort Plantain, Common Bent, Fat Hen. Potential for foraging bats and common reptiles but isolated.
18	Bramble stand next to house with Ash, Sycamore, Buddleia, Ivy. Reptile potential.
19	Remaining garden area being encroached by ruderal vegetation 1.5-2m high, species include Fat Hen, Creeping Thistle, Creeping Buttercup, Bramble, Common Nettle, Rosebay Willowherb
20	Mature Cherry tree with thin Ivy covering trunk – negligible potential for roosting bats
21	Mature Cherry tree, more sheltered – negligible potential for roosting bats
22	Ivy on garage walls – breeding bird potential

Building Descriptions (Full details under Section 3)

Building No.	Description
A	Coach house (fire damaged) – low potential for use by bats
B	Main house – moderate potential for use by roosting/foraging bats
Ci	Garages – negligible potential for use by bats
Cii	Garages – negligible potential for use by bats

Appendix 2

Overview of Site Proposals.



Project
**1-3 CASTLE CRESCENT
READING**

Drawing Title
SITE LAYOUT

Date	Scale	Drawn by	Check by
JUNE 2015	1:500@A3	JT	SP
Project No	Drawing No	Revision	
23264	SL-02	-	

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Appendix 3

Relevant Nature Conservation Legislation and Planning Policy

KEY WILDLIFE LEGISLATION

Conservation of Habitats and Species Regulations 2010 (as amended)

The Conservation of Habitats and Species Regulations 2010¹ (known as the “Habitats Regulations”) transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the European “Habitats Directive”) into UK legislation. These regulations consolidate all the various amendments made to the preceding “Conservation Regulations” 1994 for England and Wales.

The Habitats Regulations were amended by the Conservation of Habitats and Species (Amendment) Regulations 2012.²

The Habitats Regulations provide for the designation of both Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the UK, which form part of the Natura 2000 network of protected areas across Europe. The Regulations also prohibit the deliberate capture, killing or disturbance of European Protected Species (EPS), which include *inter alia* Dormouse *Muscardinus avellanarius*, Great Crested Newt *Triturus cristatus*, Otter *Lutra lutra* and all native species of bat, and make it an offence to destroy or damage either the nesting or breeding sites of these species. The above actions can be made lawful through the granting of licenses after Natural England (the licensing authority in England) is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the EPS.

Further information on SPAs, SACs and European Protected Species (Licensing and Protected Species) is provided in the relevant sub-sections of this Appendix.

Wildlife & Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981³ is the principal mechanism for the legislative protection of wildlife in Great Britain. Various amendments have occurred since the original enactment. Certain species of bird, animal and plant (including all of the European Protected Species listed above) are afforded protection under Schedules 1, 5 and 8 of the Act. Reference is made to the various Schedules and Parts of this Act (**Table A1.1**) in the section of this Appendix dealing with Legally Protected Species. The Act also contains measures for the protection of the countryside, National Parks, Sites of Special Scientific Interest (SSSIs) and public rights of way as well as

¹ The Conservation of Habitats and Species Regulations 2010. Available from:

<http://www.legislation.gov.uk/ukSI/2010/490/contents/made>

² The Conservation of Habitats and Species (Amendment) Regulations 2012. Available from:

<http://www.legislation.gov.uk/ukSI/2012/1927/contents/made>

³ The Wildlife and Countryside Act 1981. Available from:

<http://www.legislation.gov.uk/ukpga/1981/69/contents>

preventing the establishment of invasive non-native species that may be detrimental to native wildlife.

Table A1.1: Key Schedules of the Wildlife & Countryside Act 1981 (as amended)

Schedule	Protected Species
Schedule 1 Part 1	Protects listed birds through special penalties at all times
Schedule 1 Part 2	Protects listed birds through special penalties during the close season
Schedule 5 Section 9.1 (killing/injuring)	Protects listed animals from intentional killing or injuring
Schedule 5 Section 9.1 (taking)	Protects listed animals from taking
Schedule 5 Section 9.2	Protects listed animals from being possessed or controlled (live or dead)
Schedule 5 Section 9.4a	Protects listed animals from intentional damage or destruction to any structure or place used for shelter or protection
Schedule 5 Section 9.4b	Protects listed animals from intentional disturbance while occupying a structure or place used for shelter or protection
Schedule 5 Section 9.5a	Protects listed animals from being sold, offered for sale or being held or transported for sale either live or dead, whole or part
Schedule 5 Section 9.5b	Protects listed animals from being published or advertised as being for sale
Schedule 8	Protects listed plants from: intentional picking, uprooting or destruction (Section 13 1a); selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a); advertising (any of these) for buying or selling (Section 13 2b).
Schedule 9	Prohibits the release of species listed in the Schedule into the wild.

Further information on legally protected species, designated wildlife sites and invasive non-native species is provided in the relevant sub-sections of this Appendix.

Countryside & Rights of Way Act 2000

Many of the provisions of the Countryside and Rights of Way (CRoW) Act 2000⁴ have been incorporated as amendments into the Wildlife and Countryside Act (1981) and some provisions have now been superseded by later legislation such as The Natural Environment and Rural Communities Act (2006).

The most relevant changes provided by the CRoW Act include the added protection given to SSSIs and other important sites for nature conservation. Importantly, under the Act it became a

⁴ The Countryside and Rights of Way (CRoW) Act 2000. Available from: <http://www.legislation.gov.uk/ukpga/2000/37/contents>

criminal offence to "recklessly disturb" Schedule 1 nesting birds and species protected under Schedule 5 of the Wildlife and Countryside Act. It also enabled heavier penalties on conviction of wildlife offences.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities (NERC) Act 2006⁵ was intended to raise the profile of biodiversity amongst all public authorities (including local authorities, and statutory undertakers) and to make biodiversity an integral part of policy and decision-making processes. The NERC Act also improved wildlife protection by amending the Wildlife and Countryside Act 1981.

Section 40 (S40) of the Act places a 'Biodiversity Duty' on all public bodies to have regard to the conservation of biodiversity when carrying out their normal functions. This includes giving consideration to the restoration and enhancement of species and habitats.

Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of Principal Importance for the conservation of biodiversity in England⁶. Public authorities have a responsibility to give specific consideration to the S41 list when exercising their normal functions. For planning authorities, consideration for Species and Habitats of Principal Importance will be exercised through the planning and development control processes. Further information on species and habitats of Principal Importance is provided in the relevant sub-section of this Appendix.

PLANNING POLICY & GUIDANCE

Listed below is the main planning policy and government guidance that relates to the conservation of nature and development at all levels of government.

National Level

National Planning Policy Framework (NPPF)

The National Planning Policy Framework⁷ sets out the Government's planning policies for England and how these should be applied in local-level policy and decision making. The NPPF has a clear "presumption in favour of sustainable development" (paragraph 14), with a requirement to consider its economic, social and environmental dimensions. This does not apply

⁵ The Natural Environment and Rural Communities Act 2006. Available from: www.legislation.gov.uk/ukpga/2006/16/contents

⁶ The S40 list replaces the previously prepared list of habitats and species of Principal Importance for the conservation of biological diversity in England that was published under Section 74 (2) of the Countryside and Rights of Way Act 2000.

⁷ DCLG (2012). *National Planning Policy Framework*. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

where development requiring Appropriate Assessment under the Habitats Directive is being considered, planned or determined (paragraph 119).

Section 11 of the NPPF provides guidance on conserving and enhancing the natural environment through the planning system and replaces the preceding *Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation*. It specifies that when determining planning applications, local planning authorities should aim to **conserve and enhance** biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided, adequately mitigated or (as a last resort) compensated for, then planning permission should be refused;
- proposed development that is likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should normally be refused;
- planning permission should normally be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland;
- development proposals where the primary objective is to conserve and enhance biodiversity should be permitted;
- opportunities to incorporate biodiversity in and around developments should be encouraged.

In the case of SSSIs and irreplaceable habitats, exceptions *may* be made if it can be clearly demonstrated that the benefits of the development, at this particular site, outweigh the costs in terms of loss or adverse impacts.

Section 11 also specifies that listed or proposed Ramsar sites, potential European sites, and sites identified or required as compensatory measures for adverse effects on designated/listed or potential/proposed European and Ramsar sites should be given the same protection as designated European sites.

Government Circular 06/05: Biodiversity and Geological Conservation

The Government produced Circular 06/05⁸ to provide guidance on the application of the law to the conservation of nature. Although the document is in the process of being updated, Paragraphs 98 and 99 remain relevant as they and set out the following principles and obligations:

- The presence of protected species is a material consideration when determining a development proposal;

⁸ ODPM (2005). *Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System*. Available from: <http://www.communities.gov.uk/publications/planningandbuilding/circularbiodiversity>

- Local authorities should consult with Natural England before granting permission, and consider imposing planning conditions or obligations to secure the long-term protection of the species;
- The presence or otherwise of protected species, and the extent to which they may be affected by the proposed development, must be established before permission is granted;
- Given the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development.

Good Practice & Standards

Various forms of guidance are available to manage biodiversity through the development process. Of particular note is *Planning to Halt the Loss of Biodiversity (PAS 2010): Biodiversity conservation standards for planning in the United Kingdom*⁹. This document was principally designed to help local planning authorities deliver the national policies in the former PPS9 (now replaced by the NPPF) and comply with legislation. It is also useful to developers and their agents as it outlines the expectations of the local authority for the conservation of nature in the development control process.

Regional Level

South East Plan - revoked March 2013 but with one retained policy NRM6, Thames Basin Heaths Special Protection Area (2009-2026) which is not relevant to the proposals.

Local Level

Reading Borough Council Local Development Scheme, July 2013 (amended November 2013)

- Core Strategy (Jan 2008) Chapter 11 Built and Natural Environment
 - Policy CS34: Pollution and Water Resources

Development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution; where it would preserve or ideally enhance ground and surface water quality; and where existing water resources, sewerage and wastewater treatment infrastructure are adequate to support the proposed development. Proposals for development that are sensitive to the effects of air, noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation

⁹British Standards Institution (2006). *Planning to Halt the Loss of Biodiversity (PAS 2010): Biodiversity conservation standards for planning in the United Kingdom*. Publically available at: <http://www3.hants.gov.uk/pas-2010.pdf>

measures are provided to minimise the impact of such pollution. Development will be permitted on land affected by contamination where it can be demonstrated, to the satisfaction of the LPA, that the contamination can be satisfactorily remediated so that it is suitable for the proposed end use.

- Policy CS36: Biodiversity and Geology
 - a) Development should retain, protect and incorporate features of biodiversity or geological interest (including protected species and their habitats) found within the application site into their schemes. On sites with recognised biodiversity or geological value, development will not be permitted where there would be a direct or indirect adverse impact on the site, unless it can be clearly demonstrated that: i. the need for development clearly outweighs the need to protect the value of the site; and ii. appropriate compensation, impact minimisation, mitigation and compensation are provided.
 - b) Local Nature Reserves and Wildlife Heritage Sites will be safeguarded and where possible, enhanced. Permission will not be granted for any development that would adversely affect a designated nature reserve or Wildlife Heritage Site.
 - c) Any development that would sever or threaten the integrity of an established wildlife link, as indicated on an adopted proposals map, will not be permitted. Where applicable, developments should be designed to protect, consolidate, extend and enhance the network of wildlife links and corridors in and adjoining the Borough, working with neighbouring authorities where appropriate.
- Policy CS38: Trees, Hedges and Woodlands

Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal, and the Borough's vegetation cover will be extended.

Reading Borough Council Local Plan, currently in consultation and expected to be adopted Nov 2016

- In line with national planning policy, this document will replace all Development Plan documents including the Core Strategy, Reading Central Area Action Plan, Sites and Detailed Policies Document, Proposals Map, Replacement Minerals and Waste Local Plans.

BIODIVERSITY PLANS AND STRATEGIES

The NERC Act 2006 places a duty on local authorities to have due regard to biodiversity when exercising their normal functions, and the NPPF requires planning policies to “promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets” (paragraph 117). These targets are set out in a range of biodiversity plans and strategies from the international through to the district level. An overview of the key biodiversity plans and strategies in the UK, and their implications for development, are set out below.

National level

The UK Biodiversity Action Plan 2007 (UK BAP) has been superseded by the *UK Post-2010 Biodiversity Framework*¹⁰ and individual national biodiversity strategies. The UK framework sets out the overarching vision, strategic goals and priority activities for the UK’s work towards international biodiversity targets (known as the ‘Aichi Targets’), as agreed by 192 parties at the UN Convention on Biological Diversity in 2010. The Framework’s overall vision is that “by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”

In England, *Biodiversity 2020: A strategy for England’s wildlife and ecosystem services*¹¹ is the national biodiversity strategy, which has the stated mission “(...)to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.” In order to focus activity and assess performance in achieving this mission, Biodiversity 2020 sets objectives relating to terrestrial and marine habitats and ecosystems, species and people. These include:

- Establishing coherent and resilient ecological networks, described as “a network of high quality sites, protected by buffer zones, and connected by wildlife corridors and smaller, but still wildlife-rich, ‘stepping-stone’ sites”;
- Taking targeted action for the recovery of priority species whose conservation is not delivered through wider habitat-based and ecosystem measures ;
- Establishing Nature Improvement Areas and Marine Protected Areas;
- Bringing more SSSIs into favourable condition;
- Reducing environmental pressures by working with sectors such as agriculture, forestry, planning and development.

¹⁰ JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012). *The UK Post-2010 Biodiversity Framework*. Available from: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf

¹¹ DEFRA (2011). *Biodiversity 2020: A strategy for England’s wildlife and ecosystem services*. Available from: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>

A network of 48 Local Nature Partnerships have been set up across England to help deliver these objectives.

Note that as these changes are still relatively new, some local plans and government guidance documents/circulars still refer to the UK BAP and 'UK BAP priority habitats and species'. These habitats and species are listed under Section 41 of the NERC Act, and **remain a material consideration in the planning process**. They are now described as 'Species/Habitats of Principal Importance', though they are also commonly referred to as 'Section 41 Species/Habitats' or simply 'Priority Species/Habitats'. Further guidance is given in the relevant sections below.

Local level

Despite the changes to national level biodiversity policy described above, county and district level BAPs still apply. The following BAPs are relevant to this development:

Berkshire Biodiversity Action Plan (BAP)

- Focusses on habitats and landscape-scale projects rather than species specific targets. It is run by the Berkshire Local Nature Partnership and aims to deliver the Berkshire BAP by focussing on the Biodiversity Opportunity Areas approach. This aims to reconnect fragmented habitats within the county (including West Reading Woodlands and Local Nature Reserves).

Reading Biodiversity Action Plan (2006)

- Contributes to the aims of the Berkshire BAP
- Contains Habitat Action Plans (HAPs) for the following habitats:
 - Urban;
 - Semi-natural grassland
 - Parkland and veteran trees
 - Broad-leaved woodland
 - Ancient and/or species-rich woodlands
 - Ponds and Reedbeds
 - Rivers and other waterways
- Contains Species Action Plans for the following Priority Species:
 - *Plants*: Loddon lily, Black poplar
 - *Invertebrates*: Glow worm, Stag beetle
 - *Mammals*: Bats (all species found in Reading), Water vole

- *Birds: Black redstart, House martin, Sand martin*
- *Reptiles and Amphibians: Great-crested newt, Slow worm*
- Other species included on the long list include:
 - *Plants: Ragged robin, Snake's head fritillary, Bluebell, Cowslip, Moschatel, Wild service tree;*
 - *Invertebrates: Striped Lychnis, Buttoned snout (a moth), Heart moth, Marbled white;*
 - *Birds: Kingfisher, Nightingale, Skylark, Barn Owl, Bittern, Bullfinch, Hobby, Kestrel, Lapwing, Little ringed plover, Linnet, Reed bunting, Song thrush, Snipe, Swift*
 - *Mammals: Otter*
 - *Reptiles and Amphibians: Grass snake*

Delivering Biodiversity Opportunities

Where practicable, opportunities should also be sought to achieve a **net gain** (i.e. enhancement) of biodiversity. Support for biodiversity enhancement is provided in the Public Authority 'Biodiversity Duty' under the NERC Act 2006 and in the key principles of the NPPF, as described above.

Enhancement projects may not just benefit biodiversity. There are many functional benefits to be won from strategically planned green infrastructure projects such as semi-natural urban green spaces, sustainable urban drainage schemes (SUDS) and green roofs. Planning conditions and obligations are increasingly being used to mandate biodiversity enhancement on or off a development site, either through design or through financial support.

Many ideas for incorporating ecological enhancement into planning and development can be found in the biodiversity action plans and/or strategies relevant to the policy or development area, or through initiatives led by the Local Nature Partnership. At the national level, twelve Nature Improvement Areas were set up in 2012 in order to deliver landscape-scale conservation objectives, and many regions and counties have also identified and mapped 'Biodiversity Opportunity Areas', 'Nature Maps' or 'Strategic Nature Areas' where conservation action such as habitat creation and restoration will deliver the greatest benefits for biodiversity.

Other sources of ideas and opportunities include schemes led by conservation NGOs, such as the Wildlife Trusts' 'Living Landscapes' and the RSPB's 'Futurescapes', which are working in partnership with landowners and local communities across the country to restore ecosystems and ecological networks.

The proposals do not fall within a local Biodiversity Opportunity Area (BOA), although the Kennet Valley East BOA is just over 500m to the south of the site.

SITES DESIGNATED FOR THE CONSERVATION OF NATURE

There is a hierarchy of nature conservation sites which is based on the level of statutory protection and the administrative level of importance. Other features of nature conservation interest outside designated sites may also be a material consideration in the determination of planning applications.

Statutory Sites

Internationally Important Sites

Ramsar Sites, Special Areas of Conservation (SAC) and Special Protection Areas (SPA)

The Conservation of Habitats and Species Regulations 2010 (as amended) provide the primary legal basis for the protection of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in Great Britain. Ramsar sites are, as a matter of national planning policy, subject to the same strict protection. Any plan or project considered likely to affect a SAC, SPA or Ramsar site must be subject to an assessment, as set out under Regulation 61, and Regulation 102 in respect of Land Use Plans.

Ramsar sites are wetlands of international importance. The majority of terrestrial Ramsar sites in England are also notified as SPAs and/or Sites of Special Scientific Interest (SSSIs).

SACs are sites which support internationally important habitats and/or species listed as being of Community Importance in the Annexes of the EU Habitats Directive 1992. SPAs are sites which support internationally important numbers of bird species listed as being of Community Importance in the Annexes of the EU Birds Directive 1979. Together, SACs and SPAs make up the Natura 2000 network of Sites of Community Importance throughout Europe.

Development Control

Development proposals or damaging activities which may affect a European or international site will be subject to rigorous examination by local planning authorities (or other 'competent authority'), through a process commonly referred to as 'Habitats Regulations Assessment'. The onus is on the developer to provide the necessary information to inform this process.

Under the Conservation of Habitats and Species Regulations 2010 (as amended), the competent authority must determine in the first instance whether a proposed development is likely to have a significant effect on the European or Ramsar site, either alone or in combination with other plans and projects.

If a likely significant effect cannot be precluded on the basis of objective information, the competent authority must undertake an 'Appropriate Assessment' to fully assess these implications against the site's conservation objectives. A precautionary approach must be taken with respect to determining whether or not there would be an impact, and the appropriate nature conservation body (in most cases Natural England) should be consulted. Except in certain exceptional circumstances prescribed by the Regulations where there are imperative reasons of

overriding public interest for allowing a development to proceed, the competent authority may not undertake or authorise the plan or project until they have established (based on the conclusions of the Appropriate Assessment) that the activity will not adversely affect the integrity of the European or Ramsar site. This should be the case where no reasonable scientific doubt remains as to the absence of such effects.

Nationally Important Sites

Sites of Special Scientific Interest (SSSI)

The Wildlife and Countryside Act 1981 (as amended) and the CROW Act 2000 provide the primary legal basis for the protection of Sites of Special Scientific Interest (SSSI). These sites have been designated to capture the best examples of England's flora, fauna, geological or physiographical diversity.

National Nature Reserve (NNR)

NNRs are declared under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981, as amended by Environmental Protection Act 1990. They are managed to conserve their habitats or to provide special opportunities for scientific study of the habitats communities and species represented within them. NNRs represent the very best parts of England's SSSIs. The majority of NNRs also have European nature conservation designations.

Development Control

A development proposal that is likely to affect nationally important sites will be subject to special scrutiny by the local authority and Natural England. Certain operations may be permitted. Any potentially damaging operations that could have an adverse effect directly or indirectly on the special interest of the site will not be permitted unless the reasons for the development clearly outweigh the nature conservation and/or geological value of the site itself and the national policy to safeguard such sites.

Regionally & Locally Important Sites

Local Nature Reserves

Local Nature Reserves are declared by local authorities under the National Parks and Access to the Countryside Act 1949 as living green spaces in towns, cities, villages and countryside. They provide opportunities for research and education, or for simply enjoying and having contact with nature. LNRs are usually protected from development through local planning documents which may be supplemented by local by-laws.

Non-Statutory Sites

Local Wildlife Sites

Local authorities may designate non-statutory sites for their nature conservation value based on important, distinctive and threatened habitats and species within a national, regional and local context. These sites are not legally protected but are given some protection through the planning system. These sites may be declared as 'County Wildlife Sites', 'Sites of Importance for Nature Conservation' (SINCs), or 'Sites of Nature Conservation Importance' (SNCIs) in local and structure plans. Non-statutory sites are a material consideration when planning applications are being determined. The precise amount of weight to be attached, however, will take into account the position of the site in the hierarchy of sites as set out above. Further information is typically provided in local level planning policy.

Nature Conservation in Areas Outside Designated Sites

Various other features exist outside designated sites that are important for the conservation of nature and which are a material consideration in the planning system.

Habitats of Principal Importance in England

Fifty-six habitat types have been identified as Habitats of Principal Importance in England for the conservation of biodiversity under Section 41 of the NERC Act 2006¹². The NPPF, Government Circular 06/05, good practice guidance and the NERC Act place a clear responsibility on planning authorities to further the conservation of these habitats. They can be a material consideration in planning decisions, and so developers are advised to take reasonable measures to avoid or mitigate impacts to prevent their net loss and to enhance them where possible. Additional guidance to developers is typically provided in local level planning policy.

Networks of Natural Habitats

Networks of natural habitats link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. Examples include rivers with their banks, traditional field boundary systems (such as hedgerows), ponds and small woods. Local planning authorities are encouraged through the NPPF to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through planning, policies and development control.

Hedgerows

Hedgerows can act as wildlife corridors that are essential for migration, dispersal and genetic exchange of wild species. Hedgerows that qualify as a Habitat of Principal importance under S41 of the NERC Act 2006 are a material consideration in the planning system.

¹² The S41 List of Species & Habitats of Principal Importance in England is available from: <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspecies/importance.aspx>

Under the Hedgerow Regulations 1997, it is an offence to remove a hedgerow without submitting a notice to the Local Planning Authority and waiting for their decision. The Regulations are aimed at countryside hedges and do not apply to hedges around private dwellings or where planning permission has been granted for a project that includes hedge removal. Hedgerows that satisfy wildlife, archaeological, historical or landscape criteria qualify as 'important' under the Regulations. If a hedgerow is not important, the Local Planning Authority may not prevent its removal; however, Local Planning Authorities are required under the Regulations to protect and retain Important hedgerows unless satisfied that the circumstances justify its removal.

Trees & Woodlands

Tree Preservation Orders

Tree Preservation Orders (TPOs) may be declared under the Town and Country Planning Act 1990 and the Town and Country Planning (Trees) Regulations 1999 to protect individual trees and woodlands from development and cutting. TPOs are designed to preserve amenity or landscape conservation. The importance of trees as wildlife habitat may be taken into account, but alone is not sufficient to warrant a TPO. For this reason, TPOs do not fit comfortably under the remit of nature conservation. Further guidance on TPOs in relation to development is available from the Department for Communities and Local Government¹³.

Ancient Woodland & Veteran Trees

Ancient woods are areas continuously wooded for at least 400 years. Even an ancient wood which has been replanted may still have remnants of ancient woodland wildlife and historical features and has potential to be restored. Ancient woodland is not a statutory designation and does not provide legal protection, but local authorities are advised under the NPPF and NPPG not to grant planning permission for any development that would result in the loss or deterioration of ancient woodland or veteran trees unless the need for, and benefits of, the development outweigh the loss. Local Planning Authorities must take into account Natural England and the Forestry Commission's *Standing Advice for Ancient Woodland and Veteran Trees*.¹⁴

SPECIES PROTECTION

Legally Protected Species

The species of potential relevance to the proposals listed in the following subsections are protected by law in England. It is essential to determine the presence or likely absence of legally protected species and the extent to which they may be affected by proposed development. This can best be achieved by undertaking surveys early in the planning process. Mitigation measures

¹³ Office of the Deputy Prime Minister (2000). Tree Preservation Orders: A Guide to the Law and Good Practice. Available from: <http://www.communities.gov.uk/publications/planningandbuilding/tposguide>

¹⁴ Natural England and the Forestry Commission (2014). Standing Advice for Ancient Woodland and Veteran Trees. Available from: http://www.naturalengland.org.uk/Images/ancient-woodland-standing-advice_tcm6-37627.pdf

are required to minimise disturbance to protected species and may necessitate a licence. Natural England offers further detailed advice which can be applied to planning applications that affect protected species¹⁵.

Mammals

All wild mammals are protected against cruelty under the Wild Mammals (Protection) Act 1996, which makes it an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

Bats

There are 18 species of bat in the UK, seven of which are Species of Principal Importance in England. All bats and bat roosts are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are also a European Protected Species protected under the Habitat Regulations 2010 (as amended). It is an offence to:

- Intentionally or deliberately kill, injure or capture bats;
- Intentionally, deliberately or recklessly disturb bats in such a way as to be likely to significantly affect the ability of any significant group of bats to survive, breed, or rear or nurture their young or the local distribution of or abundance of a species of bat;
- Intentionally, or recklessly damage, destroy or obstruct any place used for shelter or protection (i.e. bat roosts) or intentionally or recklessly disturb a bat whilst it is occupying such a place;
- Damage or destroy a breeding site or resting place of a bat; and
- Possess, sell or transport a bat, or anything derived from it.

Development proposals affecting bats or their roosts require a European Protected Species licence from Natural England.

Birds

49 species of bird are listed as Species of Principal Importance in England. All birds are protected under the Wildlife and Countryside Act 1981 (as amended), making it an offence, with certain exceptions (e.g. game birds), to intentionally kill, injure or take any wild bird and to take, damage or destroy their nests or eggs.

¹⁵ Natural England. 2011. *Standing Advice for Protected Species*. Available from: <http://www.naturalengland.org.uk/ourwork/planningtransportlocalgov/spatialplanning/standingadvice/default.aspx>

Schedule 1 of the Wildlife and Countryside Act 1981 affords extra protection for a number of species and applies harsher penalties for offences. Any intentional or reckless disturbance of a Schedule 1 bird, whilst it is nesting or rearing dependant young, constitutes an offence.

Reptiles

All four of the widespread British species of reptile, including the Common Lizard *Lacerta vivipara*, Slow-Worm *Anguis fragilis*, Grass Snake *Natrix natrix* and Adder *Vipera berus*, are Species of Principal Importance in England. They are protected under Schedule 5 (Sections 9.1, 9.5a, 9.5b) of the Wildlife & Countryside Act 1981 (as amended) from intentional killing, injury and trade. The habitat of the four widespread reptiles is not legally protected; however the replacement of habitat lost through development may be required through the planning system. Mitigation for these species is not subject to licensing by Natural England but should nonetheless be planned to minimise disturbance.

The Smooth Snake *Coronella austriaca* and the Sand Lizard *Lacerta agilis* are the rarest reptile species in Britain. In addition to the protection that is afforded to the widespread species of reptile listed above, these species are protected further under Schedule 5 (Sections 9.4b and 9.4c) of the Wildlife and Countryside Act 1981 (as amended). They are also European Protected Species protected under the Habitat Regulations 2010 (as amended). This legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture Sand Lizards or Smooth Snakes;
- Intentionally, deliberately or recklessly disturb Sand Lizards or Smooth Snakes in such a way as to be likely to significantly affect the ability of any significant group of Sand Lizards or Smooth Snakes to survive, breed, or rear or nurture their young or the local distribution or abundance of either species;
- Intentionally or recklessly damage, destroy or obstruct any place used by Sand Lizards or Smooth Snakes for shelter or protection, or intentionally or recklessly disturb a Sand Lizard or Smooth Snake whilst it is occupying such a place;
- Damage or destroy a breeding site or resting place of a Sand Lizard or Smooth Snake;
- Keep, sell, or exchange Sand Lizards or Smooth Snakes or their eggs; and
- Deliberately take or destroy their eggs

Development proposals affecting Smooth Snake or Sand Lizard require a European Protected Species licence from Natural England.

Licences for Development

Licences are required to permit activities prohibited under wildlife legislation, namely the disturbance or capture of protected species or damage to their habitats. Natural England is the licensing authority in England. Licences are only issued for certain purposes, which are set out in

the law, and only where there is a valid justification. The licences most relevant to development scenarios are discussed below.

Conservation Licences

In the context of development, conservation licences are normally only relevant to mitigation involving the capture of Water Voles or White-Clawed Crayfish. Conservation licences are granted to permit the trapping and translocation of these species on the condition that the development activity is properly planned and executed and thereby contributes to the conservation of the population of the species.

European Protected Species Licences

A European Protected Species Licence is required from Natural England to undertake any development that is reasonably likely to result in an offence in respect of a European Protected Species protected under Schedule 2 of the Habitat Regulations 2010 (as amended); including *inter alia* all species of bats, Dormouse, Great Crested Newt and Otter. Natural England must be satisfied that the following three tests are satisfied before it will issue a licence covering a European Protected Species:

1. The proposal is necessary to preserve public health or public safety, or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
2. There is no satisfactory alternative; and
3. The proposal will have no detrimental effect to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Species of Principal Importance in England

943 species have been identified as being of Principal Importance in England for the conservation of biodiversity under Section 41 (S41) of the NERC Act 2006. This list of species includes species found in England which have been identified as requiring action under the now superseded UK Biodiversity Action Plan 2007 (plus the Hen Harrier¹⁶). While these species may not be legally protected, there is a clear responsibility on planning authorities to further their conservation. These species can be a material consideration in development control decisions and so developers are advised to take reasonable measures to avoid or mitigate impacts to prevent the net loss of these species and habitats and to enhance them where possible. Additional guidance to developers is typically provided in level planning policies.

¹⁶ The Hen Harrier has also been included on the List because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

Appendix 4

Hibernation Survey Metadata

Raw Data

	Time	1	2
S/N		735983	735983
Type		TGU-4500	TGU-4500
Description		Castle Crescent	Castle Crescent
Property		Temperature	Humidity
1	20/01/2015	9.985 °C	78.147
2	20/01/2015	4.857 °C	97.225
3	21/01/2015	4.551 °C	98.627
4	21/01/2015	4.631 °C	99.188
5	21/01/2015	4.791 °C	99.469
6	21/01/2015	4.969 °C	100
7	22/01/2015	4.857 °C	100
8	22/01/2015	3.584 °C	98.066
9	22/01/2015	3.482 °C	97.786
10	22/01/2015	3.689 °C	94.42
11	23/01/2015	2.214 °C	94.981
12	23/01/2015	0.746 °C	93.859
13	23/01/2015	1.458 °C	97.225
14	23/01/2015	3.364 °C	100
15	24/01/2015	3.760 °C	100
16	24/01/2015	4.166 °C	100
17	24/01/2015	4.125 °C	100
18	24/01/2015	4.368 °C	100
19	25/01/2015	3.528 °C	98.347
20	25/01/2015	2.518 °C	97.786
21	25/01/2015	3.795 °C	100
22	25/01/2015	4.209 °C	100
23	26/01/2015	4.420 °C	100
24	26/01/2015	4.628 °C	100
25	26/01/2015	4.999 °C	100
26	26/01/2015	5.111 °C	100
27	27/01/2015	5.092 °C	100
28	27/01/2015	4.544 °C	100
29	27/01/2015	5.083 °C	100
30	27/01/2015	5.238 °C	100
31	28/01/2015	5.332 °C	100
32	28/01/2015	5.420 °C	100
33	28/01/2015	5.542 °C	100
34	28/01/2015	5.182 °C	96.103

35	29/01/2015	5.192 °C	100
36	29/01/2015	5.080 °C	100
37	29/01/2015	5.159 °C	100
38	29/01/2015	4.204 °C	99.469
39	30/01/2015	3.676 °C	98.908
40	30/01/2015	4.511 °C	100
41	30/01/2015	3.945 °C	97.506
42	30/01/2015	4.677 °C	100
43	31/01/2015	3.272 °C	97.786
44	31/01/2015	3.221 °C	100
45	31/01/2015	3.673 °C	100
46	31/01/2015	4.302 °C	98.908
47	01/02/2015	3.613 °C	94.14
48	01/02/2015	3.517 °C	95.823
49	01/02/2015	3.766 °C	99.188
50	01/02/2015	3.904 °C	95.542
51	02/02/2015	2.471 °C	92.457
52	02/02/2015	1.288 °C	92.737
53	02/02/2015	2.013 °C	95.823
54	02/02/2015	2.608 °C	95.262
55	03/02/2015	1.964 °C	94.701
56	03/02/2015	1.998 °C	98.347
57	03/02/2015	2.253 °C	98.908
58	03/02/2015	3.194 °C	100
59	04/02/2015	2.761 °C	96.945
60	04/02/2015	1.924 °C	98.908
61	04/02/2015	2.729 °C	99.188
62	04/02/2015	3.344 °C	100
63	05/02/2015	2.719 °C	98.066
64	05/02/2015	2.637 °C	98.066
65	05/02/2015	2.875 °C	100
66	05/02/2015	3.282 °C	100
67	06/02/2015	2.486 °C	93.579
68	06/02/2015	1.946 °C	95.823
69	06/02/2015	2.576 °C	98.908
70	06/02/2015	3.141 °C	100
71	07/02/2015	2.589 °C	97.225
72	07/02/2015	1.643 °C	98.347
73	07/02/2015	2.965 °C	100
74	07/02/2015	3.479 °C	100
75	08/02/2015	3.638 °C	100
76	08/02/2015	2.936 °C	100
77	08/02/2015	3.231 °C	100
78	08/02/2015	3.757 °C	100
79	09/02/2015	3.278 °C	100

80	09/02/2015	3.506 °C	100
81	09/02/2015	3.852 °C	100
82	09/02/2015	4.091 °C	100
83	10/02/2015	3.964 °C	100
84	10/02/2015	3.021 °C	100
85	10/02/2015	3.663 °C	100
86	10/02/2015	4.042 °C	100
87	11/02/2015	4.138 °C	100
88	11/02/2015	4.220 °C	100
89	11/02/2015	4.305 °C	100
90	11/02/2015	4.387 °C	100
91	12/02/2015	4.437 °C	100
92	12/02/2015	4.404 °C	100
93	12/02/2015	4.467 °C	100
94	12/02/2015	4.518 °C	100
95	13/02/2015	4.539 °C	100
96	13/02/2015	4.507 °C	100
97	13/02/2015	4.653 °C	100
98	13/02/2015	4.947 °C	100
99	14/02/2015	4.917 °C	100
100	14/02/2015	4.958 °C	100
101	14/02/2015	5.041 °C	100
102	14/02/2015	5.145 °C	100
103	15/02/2015	5.237 °C	100
104	15/02/2015	5.291 °C	100
105	15/02/2015	5.338 °C	100
106	15/02/2015	5.391 °C	100
107	16/02/2015	4.176 °C	100
108	16/02/2015	4.888 °C	100
109	16/02/2015	5.181 °C	100
110	16/02/2015	5.302 °C	100
111	17/02/2015	4.799 °C	100
112	17/02/2015	3.914 °C	100
113	17/02/2015	4.332 °C	100
114	17/02/2015	4.796 °C	100
115	18/02/2015	3.635 °C	98.627
116	18/02/2015	2.599 °C	98.908
117	18/02/2015	3.915 °C	100
118	18/02/2015	4.360 °C	100
119	19/02/2015	4.536 °C	100
120	19/02/2015	4.645 °C	100
121	19/02/2015	4.766 °C	100
122	19/02/2015	4.916 °C	100
123	20/02/2015	5.050 °C	100
124	20/02/2015	5.129 °C	100

125	20/02/2015	5.076 °C	100
126	20/02/2015	5.142 °C	100
127	21/02/2015	4.292 °C	100
128	21/02/2015	4.068 °C	100
129	21/02/2015	4.352 °C	100
130	21/02/2015	4.714 °C	100
131	22/02/2015	3.438 °C	99.469
132	22/02/2015	2.174 °C	98.347
133	22/02/2015	3.595 °C	100
134	22/02/2015	4.247 °C	100
135	23/02/2015	4.506 °C	100
136	23/02/2015	4.664 °C	100
137	23/02/2015	4.728 °C	100
138	23/02/2015	4.789 °C	100
139	24/02/2015	4.833 °C	100
140	24/02/2015	4.850 °C	100
141	24/02/2015	4.882 °C	100
142	24/02/2015	4.906 °C	100
143	25/02/2015	4.953 °C	100
144	25/02/2015	4.989 °C	100
145	25/02/2015	5.050 °C	100
146	25/02/2015	5.198 °C	100
147	26/02/2015	5.319 °C	100
148	26/02/2015	5.453 °C	100
149	26/02/2015	5.598 °C	100
150	26/02/2015	5.740 °C	100
151	27/02/2015	4.761 °C	96.945
152	27/02/2015	3.730 °C	97.225
153	27/02/2015	4.459 °C	100
154	27/02/2015	4.997 °C	100
155	28/02/2015	5.137 °C	100
156	28/02/2015	5.226 °C	100
157	28/02/2015	5.344 °C	100
158	28/02/2015	5.498 °C	100
159	01/03/2015	5.665 °C	100
160	01/03/2015	5.751 °C	100
161	01/03/2015	5.785 °C	100
162	01/03/2015	5.827 °C	100
163	02/03/2015	5.471 °C	100
164	02/03/2015	4.667 °C	100
165	02/03/2015	5.237 °C	100
166	02/03/2015	5.370 °C	100
167	03/03/2015	5.356 °C	100
168	03/03/2015	4.462 °C	100
169	03/03/2015	5.162 °C	100

170	03/03/2015	5.248 °C	100
171	04/03/2015	5.302 °C	100
172	04/03/2015	5.274 °C	100
173	04/03/2015	5.196 °C	100
174	04/03/2015	5.223 °C	100
175	05/03/2015	5.255 °C	100
176	05/03/2015	5.047 °C	100
177	05/03/2015	5.073 °C	100
178	05/03/2015	5.151 °C	100
179	06/03/2015	5.251 °C	100
180	06/03/2015	5.336 °C	100
181	06/03/2015	5.386 °C	100
182	06/03/2015	5.453 °C	100
183	07/03/2015	5.515 °C	100
184	07/03/2015	5.542 °C	100
185	07/03/2015	5.570 °C	100
186	07/03/2015	5.648 °C	100
187	08/03/2015	5.734 °C	100
188	08/03/2015	5.776 °C	100
189	08/03/2015	5.821 °C	100
190	08/03/2015	5.896 °C	100
191	09/03/2015	5.977 °C	100
192	09/03/2015	5.972 °C	100
193	09/03/2015	5.970 °C	100
194	09/03/2015	6.018 °C	100
195	10/03/2015	6.080 °C	100
196	10/03/2015	6.111 °C	100
197	10/03/2015	6.075 °C	100
198	10/03/2015	6.086 °C	100
199	11/03/2015	6.078 °C	100
200	11/03/2015	6.044 °C	100
201	11/03/2015	5.990 °C	100
202	11/03/2015	6.029 °C	100
203	12/03/2015	6.111 °C	100
204	12/03/2015	6.177 °C	100
205	12/03/2015	6.237 °C	100
206	12/03/2015	6.267 °C	100
207	13/03/2015	6.312 °C	100
208	13/03/2015	6.353 °C	100
209	13/03/2015	6.378 °C	100
210	13/03/2015	6.416 °C	100
211	14/03/2015	6.413 °C	100
212	14/03/2015	5.756 °C	100
213	14/03/2015	6.038 °C	100
214	14/03/2015	6.151 °C	100

215	15/03/2015	6.044 °C	100
216	15/03/2015	6.121 °C	100
217	15/03/2015	6.146 °C	100
218	15/03/2015	6.152 °C	100
219	16/03/2015	6.180 °C	100
220	16/03/2015	6.186 °C	100
221	16/03/2015	6.195 °C	100
222	16/03/2015	6.224 °C	100
223	17/03/2015	6.257 °C	100
224	17/03/2015	6.241 °C	100
225	17/03/2015	6.247 °C	100
226	17/03/2015	6.313 °C	100
227	18/03/2015	6.395 °C	100
228	18/03/2015	6.152 °C	100
229	18/03/2015	6.229 °C	100
230	18/03/2015	6.293 °C	100
231	19/03/2015	6.292 °C	100
232	19/03/2015	6.304 °C	100
233	19/03/2015	6.293 °C	100
234	19/03/2015	6.309 °C	100
235	20/03/2015	6.332 °C	100
236	20/03/2015	6.246 °C	100
237	20/03/2015	6.280 °C	100
238	20/03/2015	6.330 °C	100
239	21/03/2015	6.369 °C	100
240	21/03/2015	6.369 °C	100
241	21/03/2015	6.350 °C	100
242	21/03/2015	6.307 °C	100
243	22/03/2015	6.344 °C	100
244	22/03/2015	6.220 °C	100
245	22/03/2015	6.304 °C	100
246	22/03/2015	6.313 °C	100
247	23/03/2015	6.309 °C	100
248	23/03/2015	6.263 °C	100
249	23/03/2015	6.220 °C	100
250	23/03/2015	6.274 °C	100
251	24/03/2015	6.355 °C	100
252	24/03/2015	6.410 °C	100
253	24/03/2015	6.340 °C	100
254	24/03/2015	6.356 °C	100
255	25/03/2015	6.244 °C	100
256	25/03/2015	5.849 °C	100
257	25/03/2015	5.957 °C	100
258	25/03/2015	6.071 °C	100
259	26/03/2015	6.129 °C	100

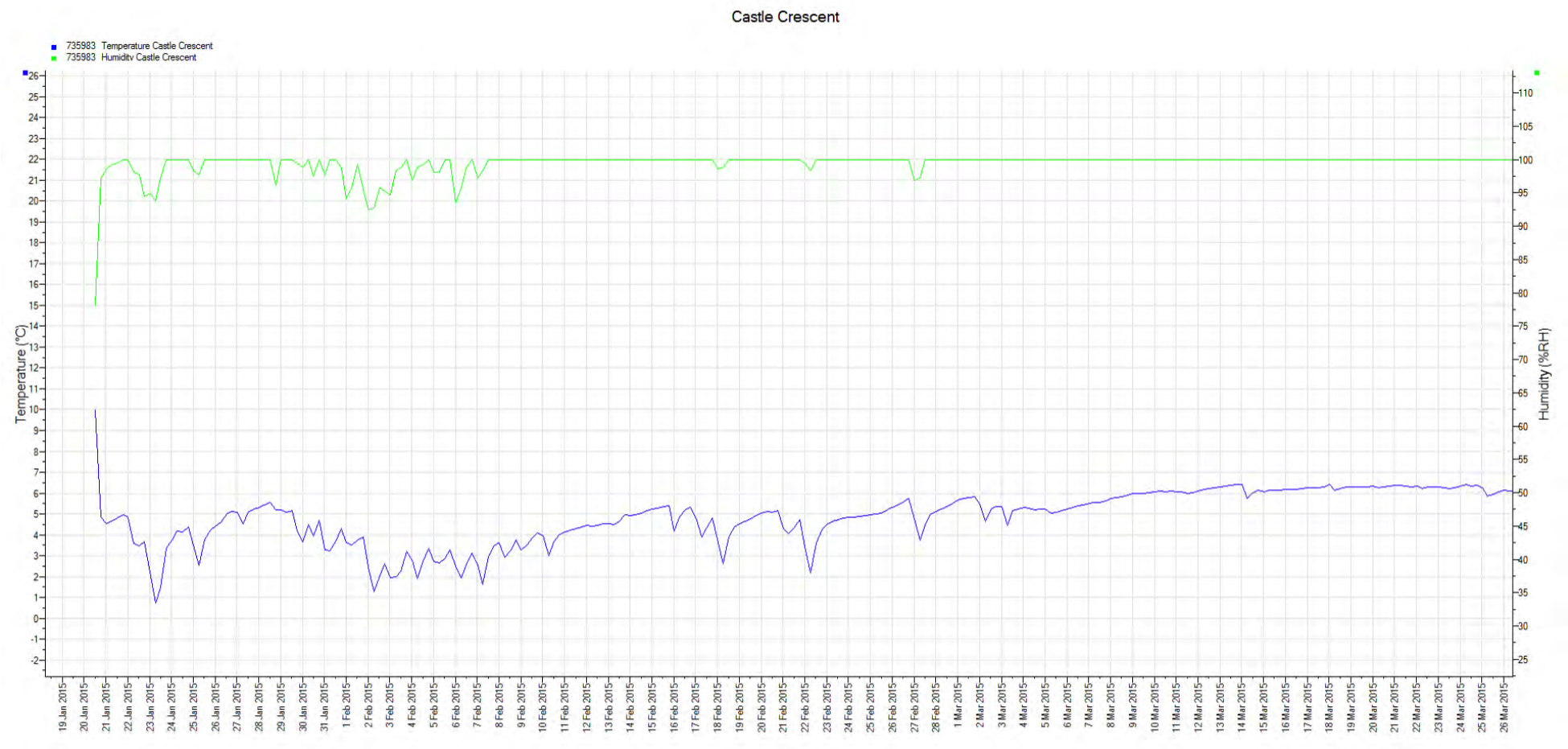
260	26/03/2015	6.106 °C	100
261	26/03/2015	6.143 °C	100

Daily Max/Min

	Min	Max	Min	Max
20/01/2015	4.6 °C	10.0 °C	78.147	98.627
21/01/2015	4.6 °C	5.0 °C	98.627	100
22/01/2015	2.2 °C	4.9 °C	94.42	100
23/01/2015	0.7 °C	3.8 °C	93.859	100
24/01/2015	3.5 °C	4.4 °C	98.347	100
25/01/2015	2.5 °C	4.4 °C	97.786	100
26/01/2015	4.4 °C	5.1 °C	100	100
27/01/2015	4.5 °C	5.3 °C	100	100
28/01/2015	5.2 °C	5.5 °C	96.103	100
29/01/2015	3.7 °C	5.2 °C	98.908	100
30/01/2015	3.3 °C	4.7 °C	97.506	100
31/01/2015	3.2 °C	4.3 °C	94.14	100
01/02/2015	2.5 °C	3.9 °C	92.457	99.188
02/02/2015	1.3 °C	2.6 °C	92.457	95.823
03/02/2015	2.0 °C	3.2 °C	94.701	100
04/02/2015	1.9 °C	3.3 °C	96.945	100
05/02/2015	2.5 °C	3.3 °C	93.579	100
06/02/2015	1.9 °C	3.1 °C	93.579	100
07/02/2015	1.6 °C	3.6 °C	97.225	100
08/02/2015	2.9 °C	3.8 °C	100	100
09/02/2015	3.3 °C	4.1 °C	100	100
10/02/2015	3.0 °C	4.1 °C	100	100
11/02/2015	4.1 °C	4.4 °C	100	100
12/02/2015	4.4 °C	4.5 °C	100	100
13/02/2015	4.5 °C	4.9 °C	100	100
14/02/2015	4.9 °C	5.2 °C	100	100
15/02/2015	4.2 °C	5.4 °C	100	100
16/02/2015	4.2 °C	5.3 °C	100	100
17/02/2015	3.6 °C	4.8 °C	98.627	100
18/02/2015	2.6 °C	4.5 °C	98.627	100
19/02/2015	4.5 °C	5.1 °C	100	100
20/02/2015	4.3 °C	5.1 °C	100	100
21/02/2015	3.4 °C	4.7 °C	99.469	100
22/02/2015	2.2 °C	4.5 °C	98.347	100
23/02/2015	4.5 °C	4.8 °C	100	100
24/02/2015	4.8 °C	5.0 °C	100	100
25/02/2015	5.0 °C	5.3 °C	100	100
26/02/2015	4.8 °C	5.7 °C	96.945	100
27/02/2015	3.7 °C	5.1 °C	96.945	100
28/02/2015	5.1 °C	5.7 °C	100	100
01/03/2015	5.5 °C	5.8 °C	100	100

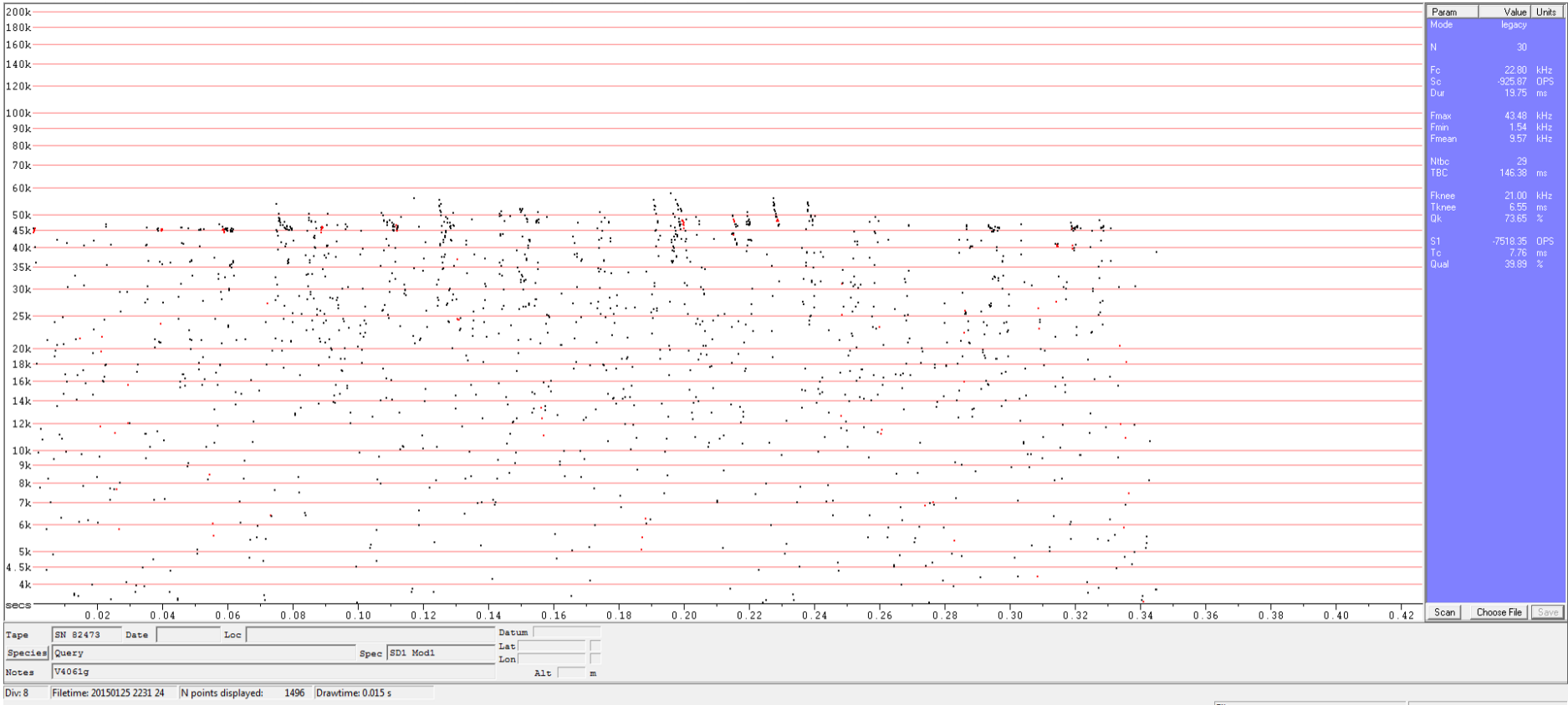
02/03/2015	4.7 °C	5.5 °C	100	100
03/03/2015	4.5 °C	5.4 °C	100	100
04/03/2015	5.2 °C	5.3 °C	100	100
05/03/2015	5.0 °C	5.3 °C	100	100
06/03/2015	5.3 °C	5.5 °C	100	100
07/03/2015	5.5 °C	5.7 °C	100	100
08/03/2015	5.7 °C	6.0 °C	100	100
09/03/2015	6.0 °C	6.1 °C	100	100
10/03/2015	6.1 °C	6.1 °C	100	100
11/03/2015	6.0 °C	6.1 °C	100	100
12/03/2015	6.1 °C	6.3 °C	100	100
13/03/2015	6.3 °C	6.4 °C	100	100
14/03/2015	5.8 °C	6.4 °C	100	100
15/03/2015	6.0 °C	6.2 °C	100	100
16/03/2015	6.2 °C	6.3 °C	100	100
17/03/2015	6.2 °C	6.4 °C	100	100
18/03/2015	6.2 °C	6.4 °C	100	100
19/03/2015	6.3 °C	6.3 °C	100	100
20/03/2015	6.2 °C	6.4 °C	100	100
21/03/2015	6.3 °C	6.4 °C	100	100
22/03/2015	6.2 °C	6.3 °C	100	100
23/03/2015	6.2 °C	6.4 °C	100	100
24/03/2015	6.2 °C	6.4 °C	100	100
25/03/2015	5.8 °C	6.2 °C	100	100
26/03/2015	6.1 °C	19.1 °C	44.958	100

Summary Graph

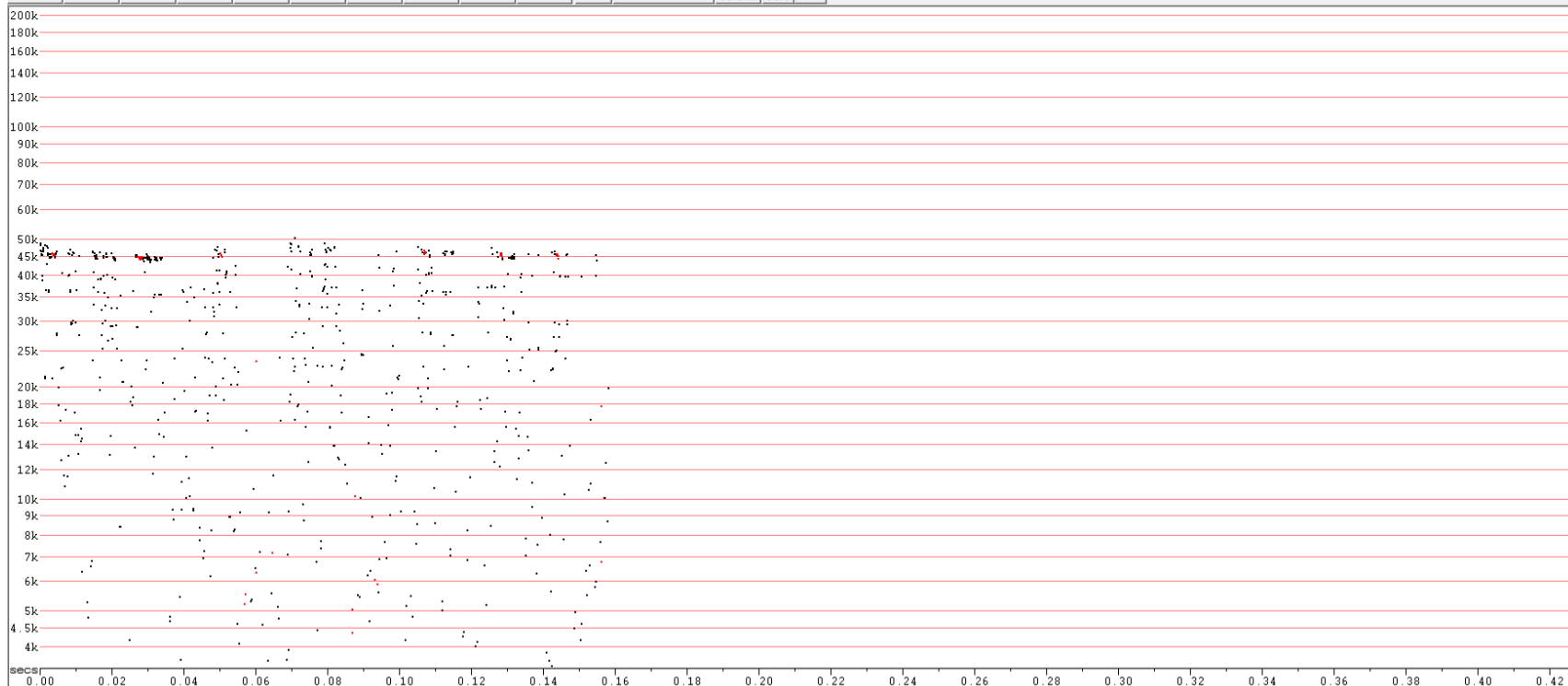


Appendix 5

Anabat Bat Record Trace – January 2015



R_fer	R_hip	N_noc	N_lei	E_ser	B_bar	P_pip	P_pyg	P_nat	PL_aur	Undo	British bat species list	Replace	Save	Buf1+
PL_aus	M_dau	M_nat	M_mys	M_bra	M_bec	M_myo	Query	N_sp	P_sp			Edit	Save	Buf2+
PL_sp	M_sp	Big_Bat	Undet							Clear		Load	Save	Buf3-
												Save As	Save	Buf4-



Param	Value	Units
Mode	legacy	
N	13	
Fc	24.73	kHz
Sc	-1000.44	OPS
Dur	21.37	ms
Fmax	39.17	kHz
Fmin	1.82	kHz
Fmean	9.25	kHz
Ntbc	12	
TBC	206.55	ms
Fknee	23.64	kHz
Tknee	7.39	ms
Qk	86.36	%
S1	7208.89	OPS
Tc	9.61	ms
Qual	41.50	%

Tape

SN 82473

Date

Loc

Datum

Lat

Lon

Alt

m

Species

Query

Spec

SD1 Mod1

Notes

V4061g

Div: 8

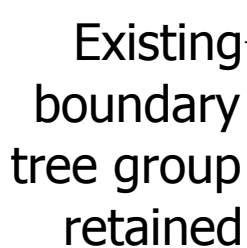
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N points displayed: 729

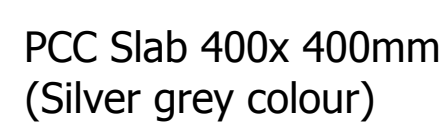
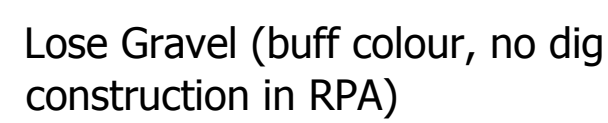
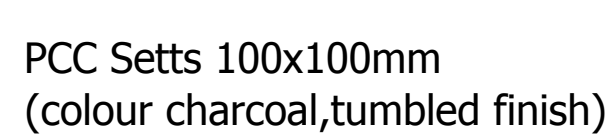
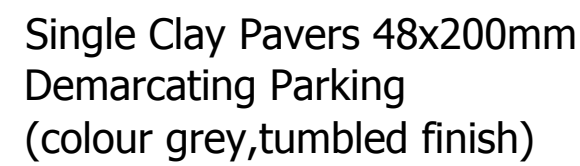
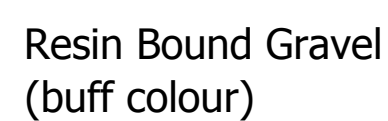
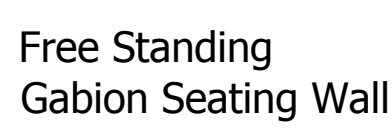
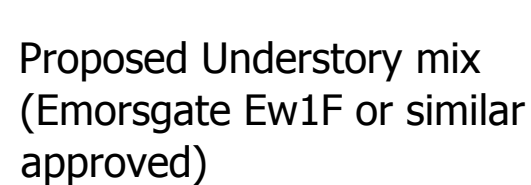
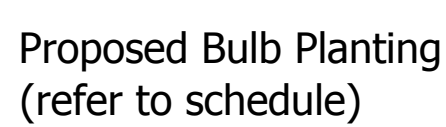
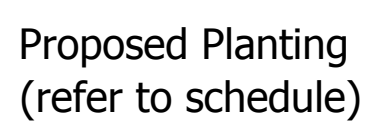
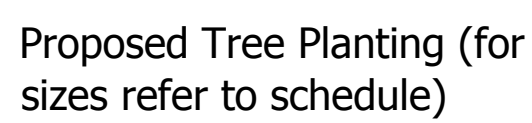
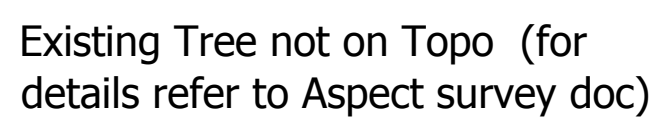
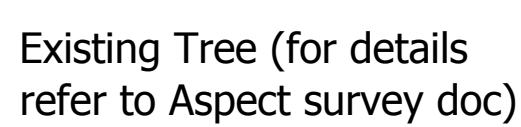
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Appendix 6

Detailed Site Landscaping Strategy - August 2015



LEGEND



NOTES:

Borderline BG30G Kinley edging system
(or similar approved) to borders and
garden footpaths.
For Schedule refer to BW RG-L-02-02.
For materials refer to DAS or similar
approved.

DRAFT

Project
Castle Crescent

Drawing Title

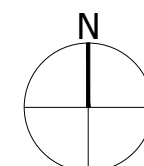
Hard and Soft
Landscape Proposals Plan 01 of 02

Date
15.06.15

Project No
23264

Scale
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Drawing No
RG-L-01-01



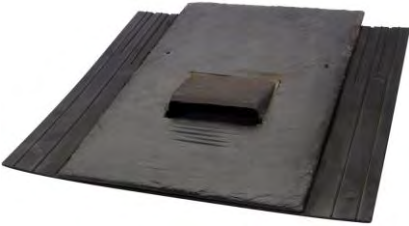
**BARTON
WILLMORE**

bartonwillmore.co.uk

Appendix 7

Details of Proposed Mitigation Infrastructure

Bat, Bird and Hedgehog Boxes

Bat	
Schwegler 2FN Bat Box  A dark brown, rectangular bat box with a curved top and a metal hanging loop at the top. It has a small, rectangular entrance hole near the bottom.	Schwegler 1FD Bat Box  A dark brown, rectangular bat box with a curved top and a metal hanging loop at the top. It has a small, rectangular entrance hole near the bottom. A wooden board with yellow paint is shown next to it.
Schwegler 1FW Hibernation Box  A dark brown, rectangular bat box with a curved top and a metal hanging loop at the top. It has a small, circular entrance hole near the bottom.	Schwegler 2FE Wall Mounted Bat Shelter  A light-colored, rectangular bat shelter with a bat silhouette cutout in the center. It has a small, circular entrance hole near the bottom.
Example Bat Access Tiles 	

Bird

Schwegler 1B Bird Box



Hedgehog

Hedgehog Nest Box



Schwegler Hedgehog Dome



Proposed On-Building Bat Mitigation

