

ST PATRICK'S HALL

Ecological Impact Assessment

for

University Partnership Programme

November 2017

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

© The Landmark Practice 2017

All rights reserved. No part of this document may be produced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopy, recording or otherwise without the prior permission of The Landmark Practice. The Landmark Practice is a division of Landmark Environmental Consultants Ltd (Limited Company No 1939302).

Landmark Ref: 2806

Client: University Partnership Programme

This document was produced under Landmark contract for University Partnership Programme.

Version	Prepared by	Checked by	Approved by	Issued
D01	Alison Pike/MCIEEM 02/11/2015	P. Etheridge/C. Chipperfield/MCIEEM 02/11/2015	Tim Pearce/MRTPI 04/12/2015	Alison Pike/MCIEEM 04/12/2015
02	Alison Pike/MCIEEM 07/03/2016	Bernice Roberts/MCIEEM 08/03/2016	Bernice Roberts/MCIEEM 08/03/2016	Alison Pike/MCIEEM 14/03/2016
03	Alison Pike/MCIEEM 27/05/2016			Alison Pike/MCIEEM 27/05/2016
04	Alison Pike/MCIEEM 02/11/2017	Jennie Hatts/MCIEEM 03/11/2017		Alison Pike/MCIEEM 03/11/2017
05	Alison Pike/MCIEEM 09/11/2017			Alison Pike/MCIEEM 09/11/2017

**D denotes a Draft version*

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Institute of Environmental Management and Assessment's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Tel: 0117 923 0455

EXECUTIVE SUMMARY

This Ecological Impact Assessment (EclA) has been prepared to assess the potential impacts of redevelopment at St Patrick's Hall, University of Reading, and to inform suitable mitigation and/or compensation measures required to address these impacts.

The site is located in the city of Reading, approximately 140 m east of the main university campus (central grid reference SU726717, Figure 1 refers). The site currently includes halls of residence comprising several individual buildings, surrounded by lawns, mature trees and areas of shrub planting. Further halls are located to the south and west, with private residential housing to the north and east.

A suite of ecological surveys has been undertaken to inform this assessment, starting with an Extended Phase 1 Habitat survey and data search, followed by dedicated surveys for bats (both roosting and activity) and great crested newts. Monitoring of an identified badger sett was also undertaken.

The majority of works associated with the proposed redevelopment of the site will focus on habitats of low ecological value, although a number of trees will be lost to the redevelopment. No roosts were found in any trees or buildings on site. No great crested newts were found using any of the waterbodies in proximity to the site.

Given the delay in submission of the planning application, an update walkover survey and single emergence/activity survey was undertaken in May 2017 to determine whether conditions on site had changed. The update walkover survey found no developments in the wider area that would change the way in which bats in the local area would utilise the site. The 2017 update bat survey recorded very low levels of bat activity on the site, no emerging bats were recorded and no activity suggesting that any of the buildings on site were being used by roosting bats. Results of the 2017 survey were consistent with those previously undertaken in 2015, with no indication of any material change to baseline conditions.

The development proposals include the creation of a new Northern Green Access Corridor to the north of the site, designed to increase habitat connectivity in the local area and to provide new habitat for notable and protected species. The results of the species-specific surveys have informed a range of ecological mitigation measures which are summarised in **Section 7.0** of this report. These measures are designed to ensure that the redevelopment can be constructed without causing significant negative impacts on site biodiversity.

Provided that the recommendations made within this report are implemented, the ecological enhancements that are proposed should increase the biodiversity value of the site. Overall, therefore, the proposed development offers an opportunity to deliver dedicated and beneficial management for biodiversity enhancement alongside the primary purpose of development.

CONTENTS

	Page
1.0 INTRODUCTION	1
Scope of Report	1
Site Location and Description	1
Development Proposals.....	1
Nomenclature.....	1
2.0 PLANNING POLICY & LEGISLATION	1
Planning Policy.....	1
Legislation.....	5
3.0 METHODS.....	5
Scope of Assessment	5
Desk Study	6
Consultation with LPA.....	6
Field Survey.....	6
Assessment.....	9
4.0 BASELINE ECOLOGICAL CONDITIONS	9
Designated Sites	9
Habitats.....	10
Valuation.....	12
Species	13
Summary.....	19
5.0 DETAILS OF PROPOSED DEVELOPMENT	19
6.0 ASSESSMENT OF EFFECTS & MITIGATION MEASURES	20
Habitats.....	20
Species	22
7.0 SUMMARY OF MITIGATION/COMPENSATION REQUIREMENTS	25
8.0 ENHANCEMENT	27
9.0 MONITORING	27
10.0 CONCLUSIONS	27

FIGURES

FIGURE 1	SITE LOCATION PLAN
FIGURE 2	LOCATION OF STATUTORY DESIGNATED SITES WITHIN 5KM
FIGURE 3	EXTENDED PHASE I HABITAT MAP
FIGURE 4	BUILDING/TREE REFERENCE NUMBERS
FIGURE 5	BAT TRANSECT SURVEY RESULTS
FIGURE 6	LOCATION OF POTENTIAL BAT ROOST

APPENDIX**APPENDIX A: LEGAL FRAMEWORK****APPENDIX B: ECOLOGICAL EVALUATION TECHNIQUES**

APPENDIX C: SITE PHOTOGRAPHS

APPENDIX D: TVERC SPECIES RECORDS

APPENDIX E: BBSBG SPECIES RECORDS

APPENDIX F: PRELIMINARY BAT ROOST ASSESSMENT- BUILDINGS

APPENDIX G: BUILDING PHOTOGRAPHS

APPENDIX H: PRELIMINARY BAT ROOST ASSESSMENT- TREES

APPENDIX I: TREE PHOTOGRAPHS

APPENDIX J: WEATHER CONDITIONS AND SURVEY TIMINGS

APPENDIX K: STATIC RECORDER RESULTS

APPENDIX L: GENERAL ARRANGEMENT PLAN

APPENDIX M: TREE RETENTION AND REMOVAL PLAN

APPENDIX N: LOCATION OF NON-STATUTORY DESIGNATED SITES

1.0 INTRODUCTION

Scope of Report

- 1.1 The Landmark Practice (TLP) was commissioned by University Partnerships Programme (UPP) in June 2015 to assess the potential ecological impacts associated with the redevelopment of St Patrick's Hall at the University of Reading.
- 1.2 This report has been prepared by an experienced ecologist¹ from Landmark Practice. The purpose of the report is firstly, to ensure that masterplanning wherever possible avoids or minimises significant ecological effects, and secondly to inform the planning application.

Site Location and Description

- 1.3 The site is located in the city of Reading, approximately 140 m east of the main university campus, (central grid reference SU726717, **Figure 1** refers). The site currently comprises halls of residence, made up of several individual buildings, surrounded by lawns, mature trees and areas of shrub planting. Further halls are located to the south and west, with private residential housing to the north and east.

Development Proposals

- 1.4 The developer is seeking to increase the density of accommodation available at the site by demolishing the 298 existing bed spaces and 5 additional houses for families; and constructing 884 new bed spaces. The development will include a central social space to provide a destination for study and relaxation at the heart of the site, with reception, catering and bar facilities.
- 1.5 Further detailed information regarding the proposed development is provided in **Section 5.0** of this report.

Nomenclature

- 1.6 Plant species nomenclature follows Stace (2010) and bird species nomenclature follows the British Ornithologists' Union (BOU) English vernacular names in The British List: A Checklist of Birds of Britain (8th edition, 2013). Mammal nomenclature follows Harris and Yalden (2008).

2.0 PLANNING POLICY & LEGISLATION

Planning Policy

National Planning Policy Framework (NPPF)

- 2.1 The NPPF advises 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 (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
 - proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be

¹ In compliance with CIEEM guidance 2015, surveyor names are available on request.

permitted unless the benefits of the development clearly outweigh both the impacts that it is likely to have on the features of the site and any broader impacts on the national network of Sites of Special Scientific Interest;

- development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;
- opportunities to incorporate biodiversity in and around developments should be encouraged; and
- planning permission should 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, unless the need for, and benefits of, the development in that location clearly outweigh the loss."

National Planning Practice Guidance (NPPG)

- 2.2 The NPPG (DCLG, 2014) advises (section Natural Environment refers), that information on biodiversity impacts and opportunities should inform all stages of development, from site selection and design, to include any pre-application consultation, as well as the application itself. The guidance notes that:

"An ecological survey will be necessary in advance of a planning application if the type and location of development are such that the impact on biodiversity may be significant and existing information is lacking or inadequate. Pre-application discussion can help scope whether this is the case and, if so, the survey work required." (Paragraph 016)

- 2.3 The guidance also notes that:

"Local planning authorities should only require ecological surveys where clearly justified, for example if they consider there is a reasonable likelihood of a protected species being present and affected by development. Assessments should be proportionate to the nature and scale of development proposed and the likely impact on biodiversity." (Paragraph 016)

Local Planning Policy

Reading Core Strategy

- 2.4 The Reading Borough Core Strategy was adopted in 2008 (Reading Borough Council, 2015). Policy CS36 relates to Biodiversity & Geology and states:

- 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; and*

- 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”.*

Reading Borough Local Development Framework

- 2.5 The Reading Borough Local Development Framework was adopted in 2012 (Reading Borough Council, 2012). Several policies of relevance are included within the Sites and Detailed Policies Document, details are provided below:

- Policy DM1: relates to climate change.

–“Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs; and

-Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets, designed with plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions”.

- Policy DM4: seeks to safeguard amenity. “Development will not cause a significant detrimental impact to the living environment of existing or new residential properties, in terms of... artificial lighting”.
- Policy DM16: relates to the provision of open space. “New open space should... provide some informal landscaping for aesthetic, wildlife and recreational purposes.”
- Policy DM17: relates to green networks. “New development shall demonstrate how the location and type of open space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation”.

Reading Borough Local Plan

- 2.6 The draft Reading Borough Local Plan was produced by Reading Borough Council in 2017. Between January and March 2016, the Council undertook a consultation on Issues and Options which is the first stage of the plan. Although only draft in nature, the document is still a material consideration.

- Policy EN12: relates to biodiversity and green networks.

“a) The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that affects the sites with identified interest or fragments the overall network. The Green Network comprises:

- Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and its tributaries (including the River Kennet and the Kennet and Avon Canal); and

- Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open spaces, and existing and potential Green Links.

New development shall demonstrate how the location and type of open space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map.

b) On all sites, development should not result in a net loss of biodiversity and geodiversity, and should provide a net gain for biodiversity wherever possible. Development should:

- Protect and where possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals where practicable; and

- Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) where practicable.

In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated or; 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is “no net loss” of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics.”

- Policy EN14: relates to trees, hedges and woodland.

“Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal where they are of importance, and Reading’s vegetation cover will be extended. The quality of waterside vegetation will be maintained or enhanced.

-New development shall make provision for tree planting within the application site, particularly on the street frontage, or off-site in appropriate situations, to improve the level of tree coverage within the Borough, to maintain and enhance the character and appearance of the area in which a site is located, to provide for biodiversity and to contribute to measures to reduce carbon and adapt to climate change.”

Planning Guidance

Reading Borough Council Tree Strategy

- 2.7 This document (Adopted in June 2010) sets out a shared vision and strategy for trees in Reading, for both the private and public sectors. It considers various issues and options in relation to trees and sets out a strategic approach towards future management. The Government encourages local authorities to produce tree strategies to promote the

management and enhancement of the tree population in their areas, including street trees, and to use current 'Best Practice'.

Making Space for Nature

- 2.8 The UK Government published a White Paper 'Making Space for Nature: securing the value of nature' in June 2011. This document sets out a series of commitments relating, in particular, to the protection and improvement of the natural environment, the development of a green economy and strengthening the connection between people and nature. Many of the commitments and principles identified in the White Paper are of particular relevance to this proposed development:

- The establishment of coherent ecological networks;
- The creation / use of urban green infrastructure to complete the links in the ecological networks, with green spaces managed to provide a diverse range of functions, benefitting people and wildlife, by delivering ecosystem services; and
- Re-connecting people to nature through education, by providing neighbourhood access to nature and the countryside, and encouraging voluntary participation in nature conservation activities.

Legislation

- 2.9 A range of habitats and species that may actually or potentially be relevant to the site are afforded legal protection under national and international legislation (**Appendix A** refers).

3.0 METHODS

Scope of Assessment

- 3.1 EclA requires the establishment of a 'Zone of Influence' (Zoi), which is the area in which potential impacts on ecological receptors may occur. It is considered likely that the proposed development at St Patrick's Hall will, for the most part, only affect the species and habitats within or immediately adjacent to the site.
- 3.2 In determining the Zone of Influence, consideration was given to the potential for other off-site features to be affected. Two ponds are located within close proximity to the site, as well as an area of woodland located to the south-west of the site. The scheme includes measures to avoid pollution associated with either the construction or operational phases, which would have the potential to affect the ponds and surrounding woodland. Given the inclusion of these measures, it is determined that the off-site habitats (mentioned above) will not be affected and are therefore not included within the Zoi.
- 3.3 The proposed development includes the provision of a shared social space in the centre of the site, and the scheme includes new landscaping (which includes areas of lawn and shrub planting) around each accommodation block. There are no designated sites of nature conservation value located sufficiently close to the proposed development which would be expected to experience a significant change in status such as an increase in visitor pressure.
- 3.4 This EclA assesses the value of, and predicts potential impacts on:
- Designated sites;
 - Habitats and species of 'Principal Importance'²;

² As listed in Section 41 of the Natural Environment and Rural Communities Act 2006

- Habitats and species listed on regional or local Biodiversity Action Plans; and
- Habitats and species afforded legal protection.

Desk Study

- 3.5 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was accessed in October 2015 for records of statutory designated sites of biological interest within 5 km of the site.
- 3.6 Details of non-statutory designated sites and legally protected and notable species records within 2 km of the site (4 km with respect to bats) were sought from the Thames Valley Environmental Records Centre (TVERC).
- 3.7 The Berks and South Bucks Bat Group (BSBBG) and the Binfield Badger Group were contacted in July 2015 for any recent records of relevance to the site.
- 3.8 This report makes reference to an Amphibian Survey Report produced for the redevelopment of Whiteknights Campus (RPS, 2007).

Consultation with LPA

- 3.9 The Reading Borough Council ecologist (Giles Sutton) has been consulted on the scope of the 2015 protected species surveys and the need for great crested newt surveys.
- 3.10 Given the age of the bat survey data, a further consultation with the Council Ecologist was undertaken. On 12.05.17 Giles confirmed that no further bat surveys would be required at the site, providing the application is submitted by the end of 2017 (pers. comm. 12.05.17).

Field Survey

Extended Phase 1 Habitat Survey

- 3.11 An Extended Phase 1 Habitat survey (IEA, 1995) was conducted at the site and adjacent boundary habitat on 17 and 23 June 2015 by ecologists³ from The Landmark Practice.
- 3.12 The Phase 1 Habitat survey method (JNCC, 2010) classifies and maps habitats using standard colour codes, with further information provided by means of dominant species codes and descriptive target notes. The potential of the habitats within the survey area to support protected/notable species is also assessed in accordance with the *Guidelines for Baseline Ecological Assessment* (IEA, 1995).
- 3.13 The survey was undertaken within the recognised survey season, therefore there were no constraints associated with this element of the survey work.
- 3.14 Following assessment of the habitats present, a range of species-specific surveys were subsequently undertaken during the course of 2015.

Bat Roost Surveys

Buildings

- 3.15 The building assessment for bats comprised an internal and external inspection of all structures for evidence of bats and to identify potential roosting sites. The buildings were

³ In compliance with CIEEM guidance 2015, surveyor names are available on request.

categorised according to their potential to support roosting bats and this informed the need and scope of further surveys.

- 3.16 To comply with current guidance, buildings/trees were surveyed according to their roost potential. This is as follows (Hundt, 2012):
- High roost potential: 3 dusk emergence and/or pre-dawn re-entry surveys during May to September (optimum period May to August);
 - Moderate roost potential: 2 dusk emergence and/or pre-dawn re-entry surveys during May to September (optimum period May to August);
 - Low roost potential: 1 dusk emergence and/or pre-dawn re-entry surveys during May to September (optimum period May to August); and
 - No roost potential: buildings without features that could support roosting bats, were not subject to any further survey work.
- 3.17 Dusk surveys began fifteen minutes before local sunset and continued for up to two hours. Dawn surveys commenced 1.5 hours before sunrise and finished at sunrise.
- 3.18 Surveyors were equipped with ultrasonic bat detectors and closely observed the buildings for any emerging/re-entering bats. The bat detectors were used to transpose, listen to and record any bat echolocation calls. Species (or in some cases genus) of bat were subsequently identified from the recorded calls using appropriate sound analysis software.
- 3.19 Not all buildings could be inspected internally (because access was not available, no loft hatches were present). This was not, however, considered a significant constraint as any buildings with bat roost potential (high, moderate or low) were subject to a least one emergence/re-entry survey. So if any bats were roosting within these buildings, they would have been recorded.
- 3.20 A number of surveys were undertaken during inclement weather conditions i.e. during showers, high winds or low sunset temperatures. During the majority of these surveys bats were recorded so this was not considered a significant constraint. During one of the surveys (15.09.15) undertaken during inclement weather, no bats were recorded. This result was, however, consistent with other surveys undertaken during optimal conditions and the data collected is therefore considered to be valid.
- 3.21 Given the delay in submission of the planning application, an update walkover survey and single emergence/activity survey was undertaken in 2017 to determine whether conditions on site had changed.

Trees

- 3.22 The initial bat tree assessment comprised a ground based visual assessment of the potential for site trees to support roosting bats. Each tree with bat potential was categorised according to BCT guidelines. The categories are:
- Category 1* - trees capable of supporting larger bat roosts;
 - Category 1 - trees with bat potential suitable to support single roosting bats;
 - Category 2 - trees with no obvious potential from ground level; or
 - Category 3 - trees with no potential to support roosting bats.

- 3.23 Each category has an equivalent roost potential, as described in paragraph 3.14 above. Category 1* is equivalent to a high roost potential tree, Category 1 is equivalent to a moderate roost potential tree, Category 2 is equivalent to a low roost potential tree and Category 3 is equivalent to a tree with no roost potential.

Bat Activity Surveys

- 3.24 Surveys were conducted in accordance with recognised industry guidance produced by the Bat Conservation Trust (Hundt, 2012). The habitat was considered to be of medium quality and it is medium in area (3.8 ha). Therefore one walked bat activity survey was undertaken per month between the months of June – September.
- 3.25 The walked transect was supplemented by 3 nights of static bat detector recording per month over the same time period. The surveys covered the entirety of the site over the course of the survey season, with particular attention paid to areas of increased quality bat habitat and where this is likely to be impacted by development.
- 3.26 Activity surveys were not undertaken in April or May 2015. This does not affect the validity of this EclA because the optimum survey period from June to August 2015 was covered. The low number of bats recorded during the surveys (detailed below) does not justify undertaking further activity surveys in April and May 2016. An update emergence/activity bat survey was, however, undertaken in May 2017.

Badgers

- 3.27 A badger (*Meles meles*) sett was identified during the Extended Phase 1 Habitat Survey, off-site to the west of Sherfield Hall (approximately 30m east of the site). As the loss of foraging habitat can have a detrimental impact on badgers (beyond 30m), further investigation were therefore undertaken to determine the sett's usage and extent. The sett entrances were monitored periodically using a remote camera trap.

Amphibians

- 3.28 An additional desk study was undertaken using Ordnance Survey (OS) maps and aerial photographs to highlight any ponds within 500 m of the site that could potentially support great crested newts (*Triturus cristatus*). This distance is based on the Great Crested Newt (GCN) Mitigation Guidelines (English Nature, 2001), which advise that ponds up to 500 m away from a development site should be surveyed if it is thought likely that great crested newt populations centred on those ponds would be affected by changes to the development site.
- 3.29 Two ponds and a ditch were identified within proximity of the site. The ditch was not holding water at either the time of the Phase 1 survey in 2015 or at the time of the GCN surveys in 2016, but the two ponds were assessed using Habitat Suitability Index (HSI) assessment (Oldham *et al*, 2000). In summary, HSI is a numerical index between 0 and 1 (0 indicates unsuitable habitat, 1 represents optimal habitat) and incorporates ten suitability indices, which are factors thought to affect great crested newts such as the size of pond, presence of fish and quality of surrounding terrestrial habitat.
- 3.30 The Council Ecologist has requested that GCN presence/likely absence surveys be undertaken of all waterbodies within 500m of the site. These surveys will be undertaken between mid-March and mid-June and must include three survey methods (preferably torchlight surveying, bottle-trapping and egg searching). Four separate survey visits are

required to determine presence/likely absence and at least two of these visits should be in the peak season (usually mid-April to mid-May).

Assessment

- 3.31 This assessment identifies and assesses ecological receptors which have the potential to be affected by the proposed development. For each receptor, a level of value is assigned based on guidance provided by the Institute of Ecology & Environmental Management (IEEM, 2006). Based on the general arrangement plan (**Appendix L**), impacts on valued ecological receptors are predicted and the significance of these impacts is assessed. Where necessary, measures to avoid, mitigate or compensate for impacts are presented alongside options for ecological enhancement.

4.0 BASELINE ECOLOGICAL CONDITIONS

- 4.1 **Appendix B** provides details of the evaluation techniques and criteria that have been used to value the habitats and species identified in this report.

Designated Sites

- 4.2 There are seven statutory designated sites within 5 km of St Patrick's Hall (**Figure 2** refers), details are provided in **Table 1** below:

Table 1: Statutory Designated Sites

Designation	Name	Reason for Designation	Distance from Site
Local Nature Reserve (LNR)	Maiden Erlegh Park	Supports a range of habitats including lowland mixed deciduous woodland, ancient semi-natural woodland and eutrophic open water.	1.8 km to the south east
LNR	Highwood	Supports mixed lowland woodland with pockets of heathland.	2.2 km to the east
LNR	Pearman's Copse	Supports a small area of ancient woodland.	2.3 km to the south
LNR	Lousehill Copse	Supports semi-ancient wet woodland.	4.2 km to the north-west
LNR	Ali's Ponds	Supports a diverse wetland flora and many dragonfly species. In addition, the site supports great crested newts.	4.4 km to the north-east
LNR	Alder Moors	Supports ancient wet woodland with a rich ground flora.	5 km to the north-east
LNR	Clayfield Copse	Supports ancient woodland with a rich ground flora.	5 km due north

- 4.3 There are ten non-statutory sites known as Local Wildlife Sites within 2 km of St Patrick's Hall (**Appendix N** refers), details are provided in **Table 2** below.

Table 2: Non-Statutory Designated Sites

Name	Reason for Designation	Distance from Site
Whiteknights Park	Whiteknights Park consists of a mosaic of landscaped trees with mown grassland, a eutrophic lake, mixed secondary woodland and two areas managed as meadowland.	1 km to the east

Name	Reason for Designation	Distance from Site
The Cowsey, South of Blagdon Road	Mature scrub and broadleaved woodland surrounding grassy enclaves, the grassland along the north-western boundary.	1.26 km to the south
Kennet and Avon Canal and River Kennet	The River Kennet is one of the best examples of a chalk river nationally. Water vole and freshwater crayfish have been recorded here.	1.37 km to the west
Reading Cemetery	A large, old cemetery supporting semi-improved grassland, which also functions as a wildlife corridor.	1.57 km to the north-east
Redhatch Copse	The site is a small area of ancient woodland, part of the site support wet flushes.	1.84 km to the south-east
Fobney and Kennet Valley Meadows	A large area of permanent pasture with some wet grassland and patches of swamp vegetation.	2 km to the west
Holy Brook	A chalk stream lined by alder and willows and a variety of wetland species are found along the banks. A number of notable invertebrates have been recorded, as well as water vole.	2 km to the west
The Coal, Kennetmouth and Kings Meadow East	The Coal is also an old colliery spoil site. The site comprises a central and riverside woodland area and an open wayleave at the foot of a steep railway embankment. Kennetmouth is a short length of towpath. This site is important for the presence of the nationally scarce vascular plant, Loddon lily (<i>Leucojum aestivum</i>). Kings Meadow East supports a mosaic of habitats including mixed broadleaved woodland, scrub and tall herb and rough grassland.	2 km to the north
Old Pond Copse and Moor Copse	The site consists of ancient and semi-natural woodland, with a stream and a couple of associated marshy areas.	2 km to the south-east
Shinfield Park, Nores Hill	A mixture of woodland including areas of semi-natural ancient woodland.	2 km to the south

- 4.4 Given the distances involved (the nearest designated site, Whiteknights Park LWS, is 1km from the site) and that there are no hydrological links, no adverse impacts on any designated sites are anticipated. Therefore they have *not* been taken forward for assessment.

Habitats

- 4.5 The distribution of habitats located within the site are shown on **Figure 3** and is referred to throughout this section of the report, photographs of the habitats present can be seen in **Appendix C**.
- 4.6 The main habitats identified were buildings, hardstanding, amenity grassland, trees, introduced shrub, hedgerows and a single woodland block.

Buildings

- 4.7 Sixteen⁴ buildings/structures were present on site, ranging in scale from individual detached houses to halls of residence with hundreds of bedrooms. The buildings vary in both style and age.

Trees and Introduced Shrub

- 4.8 The buildings are surrounded by landscape planting which comprises both broadleaved and coniferous trees, as well as native and ornamental species. Species recorded include pedunculate oak (*Quercus robur*), horse chestnut (*Aesculus hippocastanum*) and yew

⁴ This figure has been reduced to reflect the amended redline boundary

(*Taxus baccata*). The trees vary in age, some are young, recently planted specimens whereas others are mature standards that are likely to be a remnant feature from when the site was farmland (before the university complex was built). A notable row of mature lime trees is present adjacent to Northcourt Avenue (**Photograph 2** and **Target Note 1** refer). In addition a small number of fruit trees are present to the north of the Warden's Lodge (**Photograph 3** and **Target Note 2** refer), which may be a remnant orchard.

- 4.9 Some areas of tree planting have been supplemented with shrub planting beneath, including species such as bay laurel (*Laurus nobilis*), dogwood (*Cornus sanguinea*), yew and hazel (*Corylus avellana*). Many of the buildings have ornamental borders planted with non-native species (**Photograph 1** refers), including cherry laurel (*Prunus laurocerasus*), yew, lavender (*Lavandula* sp.) and Spanish bluebell (*Hyacinthoides hispanica*).

Hedgerows

- 4.10 Species-poor hedgerows were present along Sherfield Drive and Northcourt Avenue (**Photograph 3** refers). Each section of hedgerow was dominated by a single species either beech (*Fagus sylvatica*), yew or spotted laurel (*Aucuba japonica*). None of these hedgerows are classified as ecologically 'important' under the Hedgerow Regulations 1997.

Woodland

- 4.11 A small patch of mixed woodland extends into the south-west corner of the site, although the majority of the woodland lies outside the site (**Photograph 4** refers). The canopy is dominated by pedunculate oak, with other species including hornbeam (*Carpinus betulus*), lime, horse chestnut and sycamore (*Acer pseudoplatanus*). A well-established understorey is present, including hawthorn (*Crataegus monogyna*), bramble (*Rubus fruticosus*), holly (*Ilex aquifolium*), yew, hazel and cherry laurel. The ground flora is not diverse and includes wood avens (*Geum urbanum*), herb Robert (*Geranium robertianum*), wood speedwell (*Veronica montana*), yellow iris (*Iris pseudacorus*), hedge woundwort (*Stachys sylvatica*), upright hedge-parsley (*Torilis japonica*), ivy (*Hedera helix*), stinging nettle (*Urtica dioica*), creeping soft-grass (*Holcus mollis*), creeping bent (*Agrostis stolonifera*), creeping buttercup (*Ranunculus repens*) and hogweed (*Heracleum sphondylium*).

Amenity Grassland

- 4.12 The buildings are surrounded by tightly mown amenity grassland (**Photograph 2** refers). The grassland is classified as poor semi-improved, as a number of forbe species as well as grasses are present. Species recorded include bird's-foot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*), yarrow (*Achillea millefolium*), self-heal (*Prunella vulgaris*), white clover (*Trifolium repens*), daisy (*Bellis perennis*), dandelion (*Taraxacum officinale* agg.), greater plantain (*Plantago major*), cock's-foot (*Dactylis glomerata*), common bent (*Agrostis capillaris*) and Yorkshire fog (*Holcus lanatus*).

Hardstanding

- 4.13 All of the buildings at St Patrick's Hall are linked by a network of pathways and roads, with areas of parking (**Photograph 2** refers).

Surrounding Habitats:

- 4.14 The site is bounded by residential areas to the east and south, further woodland to the west and Cintra Park, a flat, open parkland with a variety of recreational facilities, to the north.

Standing Water

- 4.15 Desktop studies indicated the presence of two ponds and three ditches within 500m of the site. Ground-truthing of these waterbodies revealed that although present on OS mapping, two of the ditches were no longer present on the ground. The third ditch (known as Ditch 1) was not holding water when visited in June.
- 4.16 Pond 1 is located c. 25m to the south-west of the site (**Photograph 5** and **Target Note 3** refer); pond 2 is located c. 60m due west of the site (**Photograph 6** and **Target Note 4** refer) and ditch 1 is located c. 80m to the south of the site.
- 4.17 Pond 1 is located in woodland and surrounded by willow (*Salix fragilis*) and oak trees so was heavily shaded. A good diversity of emergent plants were, however, present including water dropwort (*Oenanthe crocata*), gypsywort (*Lycopus europaeus*), water figwort (*Scrophularia auriculata*), water-cress (*Rorippa nasturtium-aquaticum*), bulrush (*Typha latifolia*) and yellow iris. Moorhen (*Gallinula chloropus*) footprints were present, which would indicate they are regularly using the pond.
- 4.18 Pond 2 forms part of the landscape associated with Benyon Hall and was created as a SUDs water body. It has little shade, as only a small number of immature willow shrubs were present. Species recorded include bulrush, yellow water-lily (*Nuphar lutea*), white water-lily (*Nymphaea alba*), branched bur-reed (*Sparganium erectum*) and broad-leaved willowherb (*Epilobium montanum*).

Valuation

Woodland

- 4.19 Whilst few of the habitats present within the site are listed on Section 41 of the NERC Act as being 'habitats of principal importance for nature conservation', the small area of woodland in the south-west corner of the site is considered to be of **district value** for biodiversity. The woodland did not support a diverse ground flora and is unlikely to be ancient in origin. The woodland does, however, provide connectivity to the wider landscape and is likely to be used as a wildlife corridor. It offers structural and habitat diversity within the site and is likely to provide nesting habitat for common and widespread bird species and foraging opportunities for birds, bats and other fauna.

Mature Trees

- 4.20 The range of large mature trees scattered around the site increases the structural diversity of the habitats available within the site and offer good foraging and sheltering opportunities to a range of species, particularly invertebrates. The mature trees are considered to be of **district value** for biodiversity. The remaining trees are immature or ornamental varieties so considered to be of lower ecological value.
- 4.21 Although the remnant orchard is only small in area, it is nonetheless a Section 41 habitat. Orchards are often hotspots for biodiversity as they support a range of mosses, liverworts, lichens, fungi and invertebrates. The remnant orchard is considered to be of **district value** for biodiversity.

Hedgerows

- 4.22 Although the hedgerows are species-poor, they still function as green corridors, allowing species to move both around the site and through the wider landscape. The hedgerows are considered to be of **local/parish value** for biodiversity.

Other Habitats

- 4.23 The habitats which comprise the remainder of the site are considered to be of lower ecological value. The grassland does not support a diversity of species which are either rare or notable and the shrub planting is mostly non-native so supports little wildlife. These habitats have *not* been taken forward for assessment, because their loss will not have a significant impact on the ecology of the site.

Surrounding Habitat

- 4.24 Ponds are a Section 41 habitat type. The ponds increase the structural diversity of the habitats available within the site and offer good foraging and sheltering opportunities to a range of species, particularly invertebrates and amphibians. The ponds have *not* however, been taken forward for assessment because their protection and retention is inherent within the scheme design.
- 4.25 The buildings, trees and ponds are discussed in more detail below (in paragraphs 4.30, 4.41 & 4.42), with respect to great crested newts and bats.

Species

- 4.26 Records obtained from the TVERC since 1995 and within 2 km of the site are provided at **Appendix D**. The Extended Phase 1 Habitat Survey identified the following species interest within the site:

Plants

- 4.27 No plant species of conservation concern (or invasive plant species) were recorded during the Extended Phase 1 Habitat survey. Whilst this does not constitute a detailed botanical survey, given the highly managed nature of many of the habitats present on site, it is considered unlikely that it supports botanical species of conservation concern. Therefore this group has *not* been taken forward for assessment.

Invertebrates

- 4.28 The data search returned several stag beetle (*Lucanus cervus*) records, a species which is listed on the EU Habitats Directive. The larvae develop in decaying tree stumps and fallen timber so this species tends to be associated with areas of woodland. Stag beetles favour broadleaved trees particularly apple (*Malus* spp).
- 4.29 No habitats of particular importance for invertebrates were identified during the survey. The amenity grassland offers very limited habitat potential to invertebrates due to the lack of flowering plants (as the grassland was very tightly mown). The woodland offers more potential for breeding, foraging and sheltering invertebrates. Habitat with the greatest potential to support more notable invertebrate species will be retained and protected through scheme design, therefore invertebrates have *not* been taken forward for assessment.

Amphibians

4.30 HSI assessment results for the two ponds are given in **Table 3** below⁵:

Table 3: HSI Results

Assessment Criteria	Waterbody	
	Pond 1	Pond 2
Pond location	1.00	1.00
Surface area	1.00	0.66
Desiccation rate	0.90	0.90
Water quality	1.00	0.67
Shade	0.20	1.00
Waterfowl	0.67	0.67
Fish population	0.67	0.01
Pond density	0.69	0.69
Terrestrial habitat	1.00	0.67
Macrophyte cover	0.51	0.36
Score & result:	0.70 Good	0.46 Poor

- 4.31 Although pond 1 supported a diversity of emergent plants, most of them were out of the water, so there would be few opportunities available for great crested newts (if present) to lay their eggs. Although no evidence of fish was seen during the Phase 1 survey, the pond has an inflow so may have been colonised by fish. The pond was heavily infested with common duckweed (*Lemna minor*). Male great crested newts undertake an elaborate courtship display which requires areas of open water. The presence of the duckweed would make it difficult for any great crested newts (if present) to undertake this courtship display. In addition, the water body functions as a storm water outfall, any associated runoff from the site is likely to reduce the pond's water quality.
- 4.32 Pond 2 was heavily infested with nuttall's waterweed (*Elodea nuttallii*), this would limit the amount of open water available and make displaying difficult for any newts present. Several mallards (*Anas platyrhynchos*) were recorded and the pond was also stocked with numerous koi carp (*Cyprinus carpio*). Both ducks and fish are known to predate on newt larvae (if present), making successful breeding unlikely.
- 4.33 The data search with Thames Valley Environmental Records Centre did not return any records for great crested newts within 2km of the site. There are, furthermore, no records of Natural England GCN mitigation licences being held within 1km of the site and an amphibian survey at Whiteknights Campus (located adjacent to the site) completed in 2007, did not record the presence of great crested newts.
- 4.34 The likelihood of GCN presence is therefore considered low. This conclusion is supported by the relatively isolated urban setting of the site and by the sub-optimal conditions and

⁵ HSI was not appropriate for the ditch as it was not holding water.

habitats for GCN (in their terrestrial phase) offered by the site, which is dominated by short amenity grassland and buildings/hardstanding.

- 4.35 The site is therefore considered to be of **negligible value** in terms of amphibian species (including great crested newts).
- 4.36 Notwithstanding the above conclusions, the Council Ecologist has sought a precautionary approach to informing the application scheme in respect of the status of GCN. Presence/likely absence surveys were therefore undertaken between mid-March and mid-June 2016 to establish whether GCN are present in any of the waterbodies surrounding St Patrick's Hall. Three survey methods (torchlight surveying, bottle-trapping and egg searching) were used, over four separate survey visits, at least two of which were in the peak season (usually mid-April to mid-May). The information gathered will be submitted to the Council as a supplementary report prior to determination of the planning application.
- 4.37 On completion of the presence/likely absence surveys a full report will be produced. Four survey visits were undertaken and no GCN were recorded in either pond.

Reptiles

- 4.38 The desk study revealed records of slow worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*) from within 2km of the site. The hedgerows, woodland and scrub edge all provide suitable habitat for reptile species and are liable to act as dispersal routes throughout the site. Given that the site is highly managed, it is considered unlikely to support a significant reptile population. It is, however, likely to support a low population of common reptile species and the site is therefore considered to be of **site value** for these species.

Birds

- 4.39 The desk study returned records for a number common and widespread bird species from within the 2km search radius. Incidental bird species recorded during the Extended Phase 1 Habitat Survey include greater spotted woodpecker (*Dendrocopos major*), green woodpecker (*Picus viridis*), wood pigeon (*Columba palumbus*), herring gull (*Larus argentatus*), carrion crow (*Corvus corone*), magpie (*Pica pica*), moorhen (*Gallinula chloropus*), mallard and swift (*Apus apus*). In addition, house sparrows (*Passer domesticus*) were noted nesting under the eaves of Edwardian villas during the further bat surveys.
- 4.40 The trees, shrubs and amenity grassland provide foraging opportunities for common bird species, whilst the trees, shrubs and buildings offer nesting opportunities. The site is considered to be of **site value** for birds.

Bats

- 4.41 Records for seven species of bat were returned in the data search, including serotine (*Eptesicus serotinus*), Daubenton's (*Myotis daubentonii*), noctule (*Nyctalus noctula*), nathusius pipistrelle (*Pipistrellus nathusii*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared (*Plecotus auritus*). The majority of these were field records (i.e. bats in flight) but a small number were of roosts. The nearest roost record is for a noctule tree roost, recorded 760 m south-east of the site, whilst the nearest field record to the site is for a common pipistrelle, recorded 280 m north-west in Cintra Park. A summary of the bat records returned by BSBBG can be found at **Appendix E**.

Preliminary Roost Assessment

- 4.42 The detailed results of the building inspections can be seen at **Appendix F** and photographs can be seen in **Appendix G**. The results of the building inspection are summarised in **Table 4** below and the building reference numbers can be seen on **Figure 4**. The roost potential was assessed according to whether evidence was found and the number of features present that could potentially be exploited by roosting bats.

Table 4: Preliminary Building Inspection

Building Number	Roost Potential	Further Surveys Recommended?
16a,16b, 19	High	Yes - 3 visits
2, 20 ⁶	Moderate	Yes - 2 visits
3, 9, 10, 11, 12, 13, 14, 15, 17, 21, 22, 23	Low	Yes - 1 visit
18	Negligible	No

The redline boundary has recently changed, so buildings 1, 4, 5, 6, 7 & 8 now fall outside of the site (so have been excluded from the table)

- 4.43 The detailed results of the tree inspections can be seen at **Appendix H** and photographs can be seen in **Appendix I**. The results of the tree inspection are summarised in **Table 5** below.

Table 5: Bat Roost Potential of Trees

Tree Number	Roost Potential	Further Surveys?
1, 4, 8	High	Yes - 3 visits
5, 7	Moderate	Yes - 2 visits
1	Negligible	No

The redline boundary has reduced in area since the bat surveys were undertaken. Trees 2 and 3 are now outside the site so have been excluded from the table.

Emergence/Re-Entry Surveys

- 4.44 All trees/buildings with low, moderate and high bat potential were subject to further surveys, as per best practice guidance. A table detailing the weather conditions and survey timings can be seen at **Appendix J**. A total of 25⁷ emergence/re-entry surveys were undertaken between July and September 2015. Repeat emergence/re-entry surveys of the Current Café at the Northcourt group site (Building 20) were undertaken in 2016 to establish the status of the possible roost. In addition, an update emergence/activity survey, utilising multiple surveyors positioned around the site, was undertaken in May 2017. Surveyors closely observed the buildings for any emerging/re-entering bats, and monitored bat activity levels in their survey location.

⁶ The building was classified as offering moderate roost potential in 2015. Given that a possible roost was identified in this building in 2015, therefore in 2016 the building was reclassified as having high roost potential.

⁷ The red line site boundary has been reduced in area since the bat surveys were undertaken. Several buildings and trees have now been excluded from the site and the table adjusted accordingly.

- 4.45 Following the initial baseline surveys undertaken in 2015 the redline boundary was extended to include Benyon Hall JCR (Building 23), therefore it was subject to a building inspection and an emergence survey in July 2017.
- 4.46 No bats were confirmed to be roosting in any of the trees on site and a single possible building roost was identified. The results of the 2015 surveys can be seen at in **Table 6** below, negative results have been excluded.

Table 6: Emergence/Re-Entry Results 2015

Date	Sunset	Time	Building/Tree Reference	Bat Species	Details
07.09.15	19.37	20:02	17 (Pearson's Court Store)	Common pipistrelle	✓ Appeared to emerge from behind surveyor i.e. from the Current Café at the Northcourt group site

- 4.47 During 2015 a single *possible* roost was identified in the Current Café at the Northcourt group site (**Figure 6** refers). Despite being covered on four occasions with no bats recorded, on a separate survey visit to cover the Pearson's Court Store (Building 17) on 07.09.15, a single common pipistrelle bat was considered 'likely' to have emerged from this building. The feature identified was an area where two hanging tiles were missing on the southern face of the building (**Photograph 23** at **Appendix G** refers). It was subsequently inspected with an endoscope and, although no bats were found inside, bat droppings were present. If indeed present, this roost is likely to be transitory and used sporadically by a single male (or non-breeding female) bat.
- 4.48 During 2016 three emergence/re-entry surveys were undertaken of the Current Café at the Northcourt group site (Building 20). No bats were found to emerge from or re-enter the potential roost in 2016. In addition, when the features was endoscoped no bats or droppings were present, these results would indicate that the roost is no longer in use. Given that the roost was no longer active, the feature was blocked up on the day of the last dawn re-entry survey. To prevent future colonisation of this feature by a roosting bat.
- 4.49 During the building inspection and subsequent emergence survey of Benyon Hall JCR in 2017, no evidence of bat presence was found.
- 4.50 The update walkover survey found no developments in the wider area that would change the way in which bats in the local area would utilise the site. The 2017 update bat survey recorded very low levels of bat activity on the site, no emerging bats were recorded and no activity suggesting that any of the buildings on site were being used by roosting bats. Results of the 2017 survey were consistent with those previously undertaken in 2015, with no indication of any material change to baseline conditions.

Activity Surveys

- 4.51 Four activity surveys were undertaken in 2015, including dusk surveys on 23 June, 15 July & 10 August and a combined dusk/dawn survey on 7/8 September. A map showing the locations of bat registrations recorded during the transect surveys and throughout the survey season is provided at **Figure 5**.

- 4.52 Bat activity levels across the site remained very low throughout the entire survey season, probably due to high levels of artificial light from street lighting and lack of semi-natural habitats and vegetation.
- 4.53 During the transect surveys bat activity within the site comprised the following species/species groups (listed in order of decreasing abundance):
- Common pipistrelle;
 - Soprano pipistrelle; and
 - Noctule.
- 4.54 The majority of bat activity was focused along the western boundary in the woodland belt behind Sherfield Hall which lies just outside the redline boundary. This is probably due to the reduced levels of street lighting in this area. Pond 1 is present within this woodland and waterbodies are known to be highly attractive to invertebrates which, in turn, provide a good foraging resource for bats. Observations of bat behaviour in this area certainly suggested that bats were congregating to forage, rather than commuting through.
- 4.55 The majority of noctule activity comprised early commuting passes (noctule bats were seen flying over the site on almost every emergence survey). A small number of noctules (2 passes in June and 1 pass in July), however, were recorded later in the night which would indicate this species is periodically using the site for foraging purposes.
- 4.56 Records of soprano pipistrelle within the site itself were very few, appeared to be sporadic and did not conform to any repeatable pattern of behaviour.
- 4.57 These results were also confirmed by data gathered by the static detectors in July, August and September (summarised at **Appendix K**). An additional species was recorded by the static detectors, two *Myotis* bat passes were recorded during the July deployment.
- 4.58 Identification of individual species within the *Myotis* genus of bats is widely recognised as being difficult by call identification alone. From a review of the calls characteristics, the sites semi-urban nature supporting high levels of artificial light, and taking into account the results of the data search, it is concluded that the majority of the *Myotis* calls recorded are likely to be either Daubenton's or Natterer's bat.

Evaluation

- 4.59 Bat activity across the site has been low throughout the survey season and incidental notes from the dusk/dawn roost surveys have also indicated low usage of the site by foraging and/or commuting bats. The majority of bat activity has been restricted to common pipistrelle bats and this is probably a result of significant levels of artificial lighting already present across the site. The low levels of bat activity also support the conclusion that the site is not supporting any significant bat roosts.
- 4.60 The low levels of bat activity provide the opportunity to make the site more permeable and useful to foraging/commuting bats.
- 4.61 No bat roosts were present on site and bat activity was low. The site is therefore considered to be of **site value** for bats.

Badgers

- 4.62 Several badger records were returned in the data search. Badger foraging signs including snuffle holes and droppings were scattered around the site and it is likely that badgers periodically use the site for foraging purposes.
- 4.63 The badger sett is not a large sett (categorised as an outlier) and is sheltered from the development by an existing building which is being retained. Monitoring has revealed no recent badger activity at the sett (although this may change over the course of a full 12 months).
- 4.64 The site is considered to be of **site value** for badger.

Other Mammals

- 4.65 The desk study revealed records for hedgehog (*Erinaceus europaeus*) and water vole (*Arvicola amphibius*) within proximity of the application site.
- 4.66 Water vole are not considered to be present on site, although the ponds may provide suitable habitat (no evidence of water vole activity was recorded). There are no hydrological links between the application site and the River Kennet or Foudry Brook.
- 4.67 It is likely that hedgehog periodically use the site for foraging purposes and the site is therefore considered to be of **site value** for hedgehog.

Summary

- 4.68 **Table 7** below summarises the levels of value assigned to each ecological receptor.

Table 7: Levels of Value

Ecological Receptor	Level of Value
Woodland	District
Mature Trees	District
Hedgerow	Local/Parish
Reptiles	Site
Birds	Site
Bats	Site
Badger	Site
Hedgehog	Site

5.0 DETAILS OF PROPOSED DEVELOPMENT

- 5.1 The general arrangement plan is provided at **Appendix L**.
- 5.2 Redevelopment of St Patrick's Hall is proposed to:
- Increase the provision of modern high quality and affordable accommodation;
 - Make best use of a site close to the University to provide additional accommodation. This will enable the University of Reading (UoR) to guarantee accommodation to more students and enable growth in student numbers without impacting on the local housing market; and
 - Enhance the catering and social facilities for the Northcourt Group.

- 5.3 The redevelopment will provide more affordable rents through units with more shared bathrooms. In addition, some of the accommodation will be provided on a self-catered basis. A new catering and social club is proposed known as The Hub, which will be centrally located within the crescent of Sherfield Hall. The ground floor of Block A will accommodate a cafe for residents. In addition, a management building will be provided close to The Hub. Whilst, Pearson's Court, the bungalows and the three Edwardian houses will be retained.
- 5.4 The layout follows the principles of the feasibility report, with the creation of two courtyard arrangements either side of a new central pedestrian spine route. The central spine route leads to a new social and dining hub.
- 5.5 The north courtyard is proposed to be predominantly four storeys rising to five and six storeys close to The Hub building. The six storey elements would sit in the heart of the site.
- 5.6 Along Sherfield Drive the existing bungalows will be retained, Block's H and I will be three storeys, whilst Block SETS will be four storeys.
- 5.7 The current central access would be downgraded to provide a pedestrian/cycle friendly route, with the main vehicular access to the redeveloped site adjacent to 22 Northcourt Avenue. In order to improve vehicular access to Benyon Hall and the north west of the Northcourt complex, which currently involves a circuitous route around St Patrick's hall, it is proposed to provide a link to the vehicular access adjacent to 12 Northcourt Avenue.
- 5.8 With the noticeable exceptions of Pearson's Court (16a) and the bungalows on Sherfield Drive (Buildings 9, 11 & 12), all remaining buildings within the redline boundary will be demolished. The Edwardian detached houses and associated outbuildings/garages along Northcourt Avenue have now been excluded from the redline boundary. The majority of trees will be retained, however 68 trees will be removed as a result of the development or due to poor condition (some trees are categorised as U in the arboricultural report, meaning they are unsafe) including 3 memorial trees which will be replaced, several fruit trees and two mature horse chestnuts (the Tree Survey Plan can be seen at **Appendix M**). To mitigate for this, a new Northern Green Access Corridor will be created along the north-western boundary.

6.0 ASSESSMENT OF EFFECTS & MITIGATION MEASURES

Habitats

- 6.1 Development will largely be limited to habitats of lower ecological value (buildings, amenity grassland, and ornamental shrubs/borders). Whilst the development will ultimately result in a net loss of semi-natural habitats, those considered to be of the most importance to wildlife (woodland and mature trees) will, wherever possible, be retained.
- 6.2 The development will result in the loss of a small area of species-poor hedgerow, although this will be replaced as part of the application scheme. Whilst this hedgerow may currently provide some connectivity through the site, its function as a green corridor is constrained by the presence of Sherfield Hall to the west. In addition, three new hedgerows will be planted.

- 6.3 As embedded mitigation, a dedicated Northern Green Access Corridor with sensitive lighting will be created to enhance the habitats present in the north-west of the site. It will be planted with predominantly shrub and tree species that are nut and seed bearing and resilient to the effects of climate change (i.e. drought and heat resistant species) with the express purpose of providing enhanced habitat for a range of wildlife including: bats, badger, birds, small mammals and invertebrates. Additional landscape planting in this area will also enhance the features suitability as a wildlife corridor, in compliance with Policy DM17. A wildlife friendly landscape scheme is also required to meet Reading Borough Council's validation checklist. In addition, the development aims to achieve an 'Excellent' BREEAM status and, as such, the landscape planting plans incorporate a diverse range of wildlife friendly floral species. This should provide enhanced foraging for pollinating insects and, subsequently, foraging birds/bats.
- 6.4 An area of robust species-diverse grassland (a Section 41 habitat) will be created to mitigate for the small loss of semi-improved amenity grassland.
- 6.5 A small number of trees (5) considered to be of ecological value will be lost due to the development. Of particular note are the native fruit trees in the front garden of the Warden's Lodge. Since fruit trees support a high diversity of pollinators, their loss should be mitigated on a one for two basis (two new fruit trees planted for every one lost). Two horse chestnut trees will also be removed to enable development. Since they are mature specimens and almost certainly support a range of invertebrate and bird species, they too should be replaced on a two for one basis. Any other trees lost to development will be replaced on a one to one basis, to comply with RBC's Tree Strategy. Whilst a total of 68 trees will be removed (many of these were immature or ornamental varieties), 95 new trees will be planted to replace them.
- 6.6 A sensory garden, planted with a range of pollen and nectar bearing species, will enhance the foraging opportunities available for invertebrates and consequently birds present on site. In addition, several areas of species-rich grassland are included within the landscape proposals.
- 6.7 Other beneficial landscape planting includes areas of shade tolerant shrub planting and bulb planting.
- 6.8 The following measures should be implemented, and can be secured by planning condition, to ensure that adequate protection and management of habitats is implemented during both construction and operation of the site.

Construction Environmental Management Plan

- 6.9 A range of ecological mitigation measures (summarised in **Section 7** below) are required to ensure that the development does not result in significant negative impacts on biodiversity. Many of these measures need to be implemented prior to, or during, the site clearance/construction phase of development. A CEMP should therefore be prepared and implemented. It should detail these mitigation requirements and provide a working site manual that can be referred to by site contractors and personnel.

Landscape and Ecological Management Plan (LEMP)

- 6.10 To ensure that maximum benefit of the new landscape planting to both wildlife and site users, a LEMP should be produced to detail the ongoing annual management requirements.

6.11 The LEMP should include specifications for:

- The ongoing management of existing habitats;
- The management of newly created habitat features;
- Maintenance of footpaths; and
- Ongoing ecological monitoring.

Pollution Prevention Guidelines 5: Works and Maintenance In or Near Water

- 6.12 Given that one of the four storm water outfalls flows into Pond 1 and that the land slopes westwards, site operations should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines (PPG5) to avoid pollution risk.

Work in Proximity to Trees

- 6.13 Any tree works will be carried out according to the Arboricultural Method Statement.

Species

Reptiles

- 6.14 Although a reptile presence/absence survey was not undertaken as the site supported minimal suitable habitat, it is considered likely that the site supports a low number of common reptile species i.e. grass snake and slow worm. All UK reptile species are protected by law, so suitable mitigation needs to be implemented to avoid significant impacts and adhere to wildlife legislation.
- 6.15 The gardens of the Edwardian houses, bungalows, Warden's Lodge and Pearson's Court provide suitable habitat for reptiles. In addition, reptiles are known to hibernate in burrows, compost heaps, under logs or inside tree/shrub roots. Since the site is surrounded by residential gardens and woodland, it is considered there is ample habitat to displace any reptiles into.
- 6.16 To ensure that reptiles are not injured or killed during development works, the following principles should be followed during site clearance:
- Any vegetation to be cleared should be cut during the winter months (September - February) to a height of circa 100mm. This will make it unsuitable for nesting birds (paragraph 6.17).
 - Once the reptile hibernation period is complete (to be advised by an appropriately qualified ecologist, taking into account local climatic conditions), the remaining vegetation can be cut to ground level, and scraped back to bare earth to make it unsuitable for reptiles.
 - Provision should be made to include suitable reptile hibernacula, five artificial hibernacula/refuge areas have been included within the landscape softworks. These can be constructed using arisings resulting from shrub/tree felling on the development site.

Birds

- 6.17 All nesting birds are afforded legal protection and it is therefore important that any site/vegetation clearance work is undertaken in such a way as to avoid the reckless destruction/damage of bird nests. The methods for habitat clearance detailed in **paragraph 6.16** should allow this element of the work to proceed in compliance with the relevant wildlife legislation.

- 6.18 Given that nesting birds were only identified in the detached Edwardian houses, which are being retained, this will not pose a constraint to development providing the planned refurbishment works do not impact the roofs.
- 6.19 Although the majority of vegetation that will be removed to enable development was considered to be of low ecological value, some potential bird nesting sites will inevitably be lost due to the development. A proportional approach is recommended to mitigate for this vegetation loss, by installation on trees of ten 1B Schwegler nest boxes (or equivalent). This type of box will attract a wide range of species and is available with different entrance hole sizes to prevent birds from competing with each other for the boxes. To attract tit species boxes should be placed at 1.5m above ground level. Nest boxes should be angled so that they face away from the prevailing wind, which is usually south-westerly in the UK. The chances of occupation are higher if there is good tree (particularly oak) or hedge cover nearby as these will provide a good source of insect food for the nestlings when they hatch.

Bats

- 6.20 It is not feasible to retain the identified possible roost in situ, as the building within which it sits is proposed for demolition. Given the uncertainty regarding this roost (a bat was only recorded possibly once out of the 5 times it was surveyed) and, its low conservation value (a single non-breeding common pipistrelle), the following course of action is recommended:
- 6.21 Proposals for integrated bat roosts within new buildings will provide sufficient and adequate compensation for the loss of features which could be used by roosting bats. As eleven buildings, each with features which could be used by roosting bats are due for demolition it is recommended that a proportional approach is adopted, especially as, they do not appear to be being presently used. As such at least five integrated bat roost boxes should be installed to represent 1/2 of the suitable buildings to be lost. These need not be spread evenly across the development, but should be concentrated in areas where properties back on to green and unlit spaces. Five 'Habitat 001' boxes (or acceptable equivalent) should be incorporated into the design of the new halls to provide continued, long term, bat roosting habitat; and
- 6.22 To mitigate for the loss of the potential roost feature, three 2F Schwegler bat boxes (or acceptable equivalent), should be installed on a suitable tree, to provide continued long-term bat roosting habitat.
- 6.23 All other areas of buildings that provide potential for roosting bats (i.e. slates/tiles on pitched roofs) should be 'soft stripped' under the supervision of an ecologist during demolition or alternatively, update emergence/re-entry surveys should be undertaken on every building due for demolition immediately prior to demolition works commencing.
- 6.24 The existing low levels of bat activity and high levels of artificial lighting mean there is scope for enhancing the site's permeability to foraging/commuting bats. A sensitive lighting strategy should be devised to minimise the levels of lighting required for security/Health & Safety purposes and the Northern Green Access Corridor is designed to use only low lux column mounted luminaires (to minimise light spill on adjacent habitats). In addition, the UV output will be reduced in certain areas (two areas) of the Northern Green Access Corridor (to prevent insects from being attracted and consequently a loss of foraging opportunities available for bats, as the majority of bat species will avoid lit areas).

-
- 6.25 Given that the development is to be phased over two years, update bat surveys should be undertaken on an annual basis to confirm the absence of roosts.

Badger

- 6.26 Given the nature of badgers to excavate new setts within short timescales, an update badger survey should be undertaken prior to each phase of development to inform the requirement for additional badger mitigation/compensation.

Hedgehog

- 6.27 Any newly created boundaries will preferably be formed from hedgerow planting to allow permeability of the site for hedgehogs. If this is not feasible any new fence panels will be raised by 5 inches to enable hedgehogs to move around the site. The new fruit tree planting should also provide enhanced foraging opportunities for hedgehogs.

7.0 SUMMARY OF MITIGATION/COMPENSATION REQUIREMENTS

- 7.1 A summary of the ecological mitigation and/or compensations measures that have been identified as being required to avoid or reduce impacts on notable/protected species and/or habitats are provided in **Table 8** below.

Table 8: Summary of recommended mitigation/compensation requirements

Details of Mitigation Measure	Purpose	Timescale
Creation of Northern Green Access Corridor with sensitive lighting	To enhance and offset loss in area of semi-natural habitats and to provide an alternative resource for wildlife displaced from the development site	In conjunction with the development of the site
Creation of species-rich grassland and sensory garden	To offset loss of semi-improved amenity grassland	In conjunction with the development of the site
Tree replacement on at least a one for one basis and two for one when fruit trees or mature specimens are being lost	To offset loss of trees	In conjunction with the development of the site
Preparation and implementation of Construction Environment Management Plan	To detail the measures required to protect species and habitats during construction	Prior to works commencing on site
Preparation and implementation of Landscape and Ecology Management Plan	To ensure the long-term appropriate management of habitats to maximise their biodiversity and landscape value	Prior to works commencing on site
Adherence to Pollution Prevention Guidelines 5	To reduce the risk of aquatic pollution events	Throughout construction
Adherence to Arboricultural Method Statement	To prevent damage to retained trees and woodland	Throughout construction
Sensitive vegetation clearance (paragraph 6.16 refers), inclusion of 5 reptile hibernacula and installation of 10 bird boxes	To avoid impacts on nesting birds or reptiles (both legally protected)	Prior to, and/or during, construction
Installation of 5 integrated bat roost features on new buildings and three bat boxes on trees	To compensate for loss of roosting features for bats	During construction
Soft strip of features with bat potential under supervision of a licensed ecologist or update emergence/re-entry surveys immediately prior to demolition	To avoid impacts on roosting bats	Prior to demolition

Details of Mitigation Measure	Purpose	Timescale
Preparation and implementation of a sensitive lighting strategy	To prevent disturbance to foraging/commuting bats and other nocturnal species	Throughout construction and to be incorporated into proposals for permanent lighting for the completed scheme
Update bat surveys	To record any new bat activity on site and the need for additional mitigation/compensation	Prior to each phase of development
Update badger survey	To inform any new badger activity on site and the need for additional mitigation/compensation	Prior to each phase of development
New boundary features will be formed of hedgerows or raised fence panels	To enable hedgehogs to move around the site.	In conjunction with the development of the site

8.0 ENHANCEMENT

- 8.1 The creation of the Northern Green Access Corridor is predicted to have an overall net gain for biodiversity by enhancing habitat connectivity in the local area. Other landscape planting will include the creation of Section 41 Priority habitats (species-rich grassland) which provide habitat for a range of Section 41 species (including a range of breeding birds).
- 8.2 Opportunities include the installation of bat and bird boxes to increase the roosting/nesting opportunities available for these species.
- Twelve 2F Schwegler bat boxes (or equivalent) to be installed on suitable trees. Bat boxes should ideally be sited in open sunny positions and in groups of 3 to 5 boxes facing different directions (namely south & west aspects) to provide a variety of micro-habitats. This box has a double front panel, making it suitable for crevice dwelling species such as pipistrelles and *Myotis* bats. The boxes should be positioned at a height of between 3 to 6 metres.
 - A single 1SP Schwegler sparrow terrace box (or equivalent) to be installed on one of the new building to increase the number of nesting opportunities available for house sparrows that are known to be active in the area.
- 8.3 The biodiversity value of pond 1 will be enhanced through the control of bulrushes, this will be necessary to ensure that they do not shade out the other aquatic flora.

9.0 MONITORING

- 9.1 Details of ecological monitoring required to inform management of the Northern Green Access Corridor will be detailed in the LEMP.

10.0 CONCLUSIONS

- 10.1 By retaining the habitats of highest ecological value i.e. the woodland and majority of mature trees, many potential impacts on biodiversity receptors have been avoided through sensitive scheme masterplanning. A range of specific ecological surveys have nevertheless been undertaken to inform dedicated mitigation proposals that avoid or reduce impacts on protected species in line with national and local planning policy.
- 10.2 Provided that the recommendations made within this report are implemented, the ecological enhancements that are proposed should increase the biodiversity value of the site. Overall, therefore, the proposed development offers an opportunity to deliver dedicated and beneficial management for biodiversity enhancement at the application site alongside the primary purpose of development.

REFERENCES

BRITISH ORNITHOLOGISTS' UNION (2013). *The British List: A Checklist of Birds of Britain* (8th edition). *Ibis*, 155, 635-676.

ENGLISH NATURE (2001). *Great crested newt mitigation guidelines*. Version: August 2001. ISBN 1 85716 568 3

HARRIS, S., and YALDEN, D.W., eds. (2008). *Mammals of the British Isles: Handbook, 4th Ed.* Southampton: Mammal Society.

HMSO (1981). *Wildlife and Countryside Act 1981 (as amended)*.

HMSO (2006). *Natural Environment and Rural Communities Act 2006*.

HMSO (2010). *The Conservation of Habitats and Species Regulations 2010 (as amended)*.

HUNDT, L (2012). *Bat Surveys: Good Practice Guidelines*. 2nd Edition. Bat Conservation Trust.

INSTITUTE OF ENVIRONMENTAL ASSESSMENT (IEA) (1995). *Guidelines for Baseline Ecological Assessment*. London: E & F N Spon.

INSTITUTE OF ECOLOGY AND ENVIRONMENTAL MANAGEMENT (IEEM) (2006). *Guidelines for Ecological Impact Assessment in the UK*. Winchester: Chartered Institute of Ecology and Environmental Management.

INSTITUTE OF ECOLOGY AND ENVIRONMENTAL MANAGEMENT (IEEM) (2012). *Guidelines for Preliminary Ecological Appraisal*. Winchester: Chartered Institute of Ecology and Environmental Management.

JOINT NATURE CONSERVATION COMMITTEE (JNCC) (2010). *Handbook for Phase 1 habitat survey – a technique for environmental audit*. Peterborough: Joint Nature Conservation Committee.

OLDHAM, R.S., et. al., 2000. Evaluating the Suitability of Habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal*, 10, 143-155.

READING BOROUGH COUNCIL (2010). *Tree Strategy for Reading*. RBC.

READING BOROUGH COUNCIL (2012). *Reading Borough Local Development Framework- Sites and Detailed Policies Documents*. Available at: <http://www.reading.gov.uk/media/1049/Sites-and-Detailed-Policies-Adopted-October-2012/pdf/SDPD-Adopted-Oct12-Altered-Jan15.pdf>

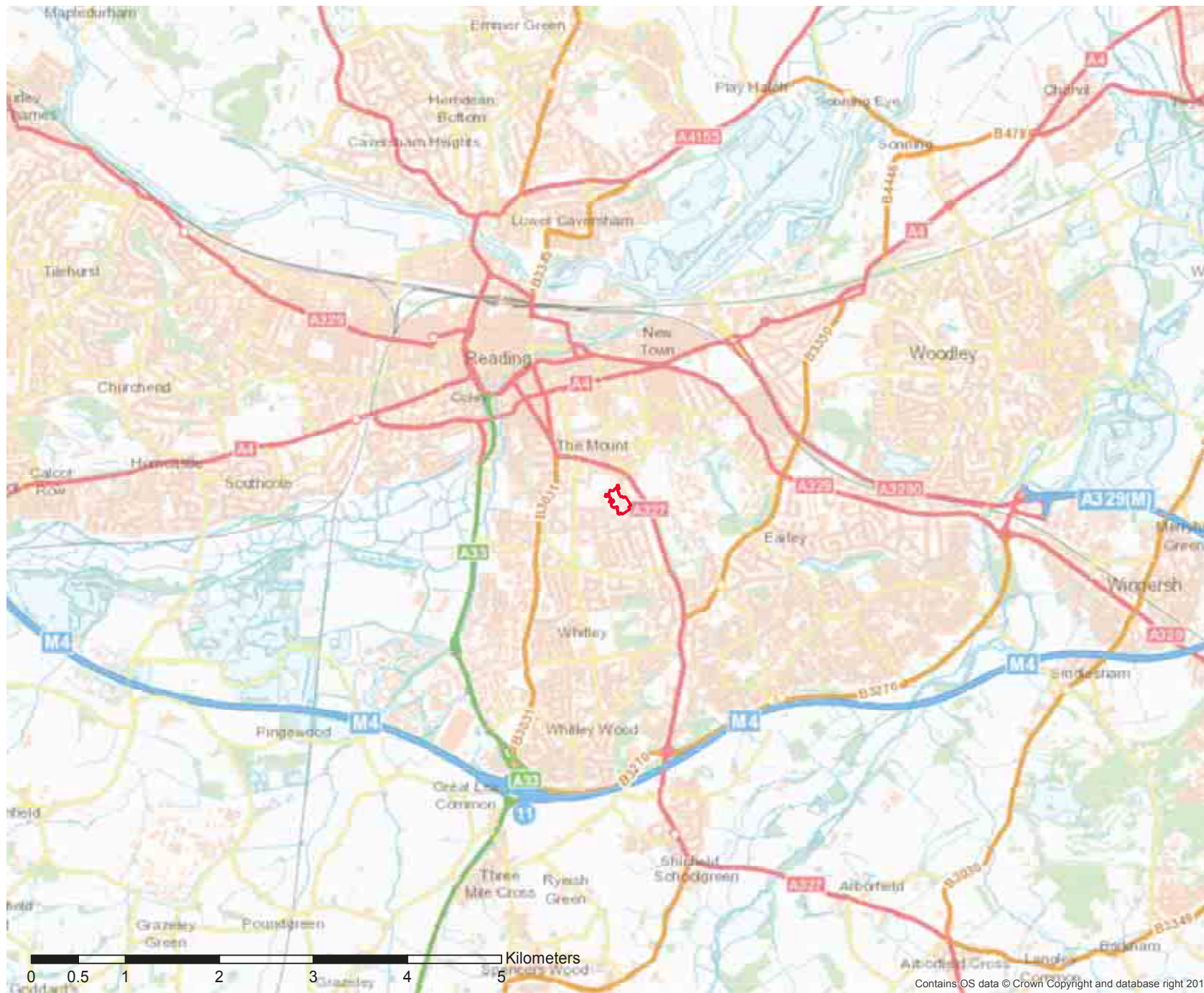
READING BOROUGH COUNCIL (2015). *Reading Core Strategy*. Available at: <http://beta.reading.gov.uk/media/1046/Core-Strategy-Adopted-January-2008/pdf/Core-Strategy-Adopted-Jan08-Altered-Jan15.pdf>

READING BOROUGH COUNCIL (2017). *Draft Reading Borough Local Plan*. Available at: http://www.reading.gov.uk/media/7154/DraftReadingBoroughLocalPlan0517/pdf/Draft_Reading_Borough_Local_Plan_0517.pdf

RPS (2007). *Appendix 6.3- Whiteknights Campus, University of Reading: Amphibian Survey*.

STACE, C.A. (2010). *New Flora of the British Isles 3rd Edition*. Cambridge: Cambridge University Press.

FIGURES



Site Location

ST PATRICKS HALL
UNIVERSITY OF READING

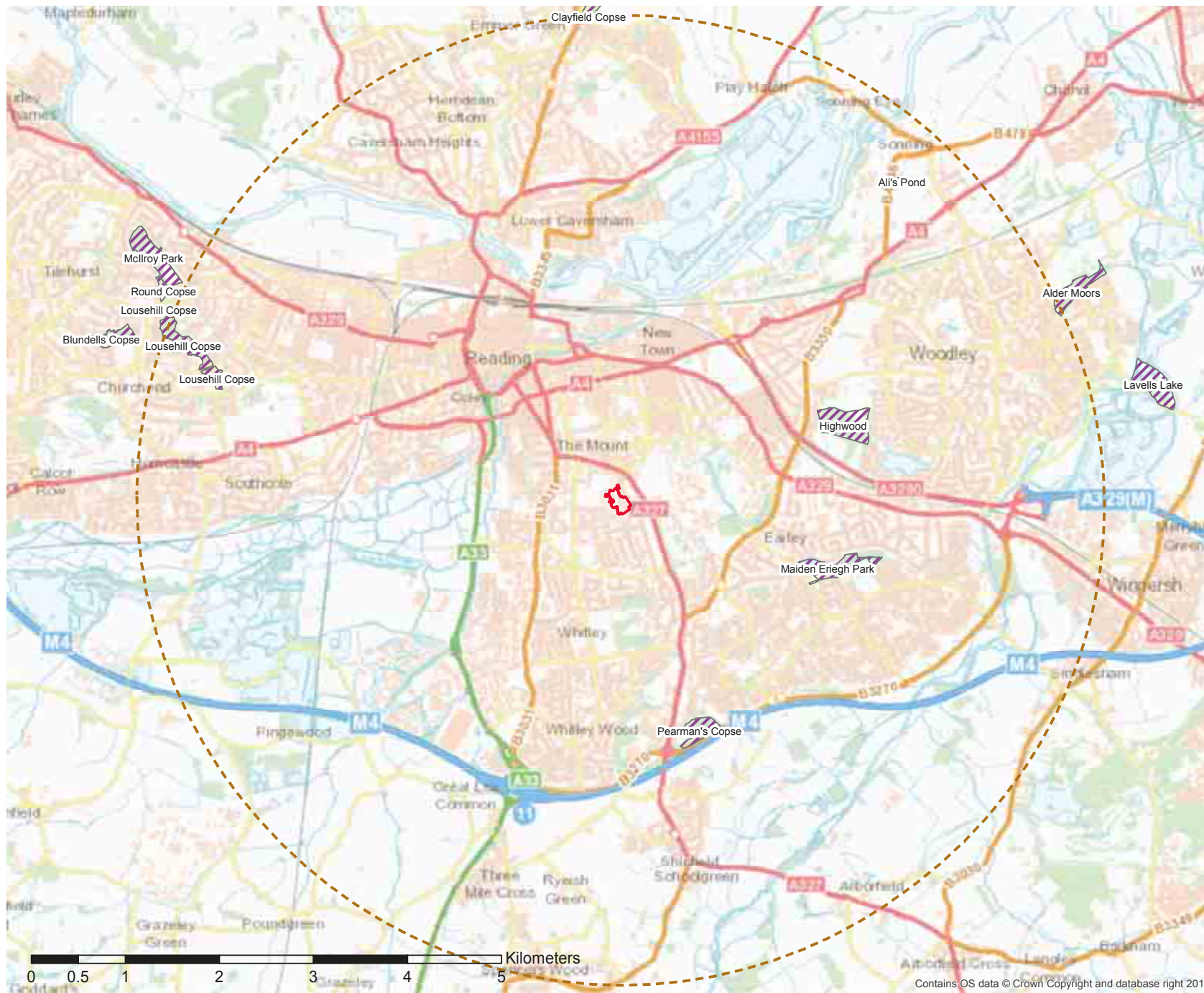
FIGURE 1
Site location plan

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



Site Location

5km buffer around site

LNR

FIGURE 2
Location of statutory designated sites
within 5km

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



- Legend
- Site Location
 - Broadleaved tree
 - Coniferous tree
 - Introduced shrub/ornamental planting
 - Running water
 - Fence
 - Intact species poor hedgerow
 - Hardstanding
 - Mixed semi-natural woodland
 - Standing Water
 - Buildings
 - Amenity Grassland
 - Target note

ST PATRICKS HALL
UNIVERSITY OF READING

FIGURE 3
Extended Phase 1 Habitat Map

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



Legend

- Site Location
- Building reference number
- Tree reference number
- Buildings

ST PATRICKS HALL
UNIVERSITY OF READING

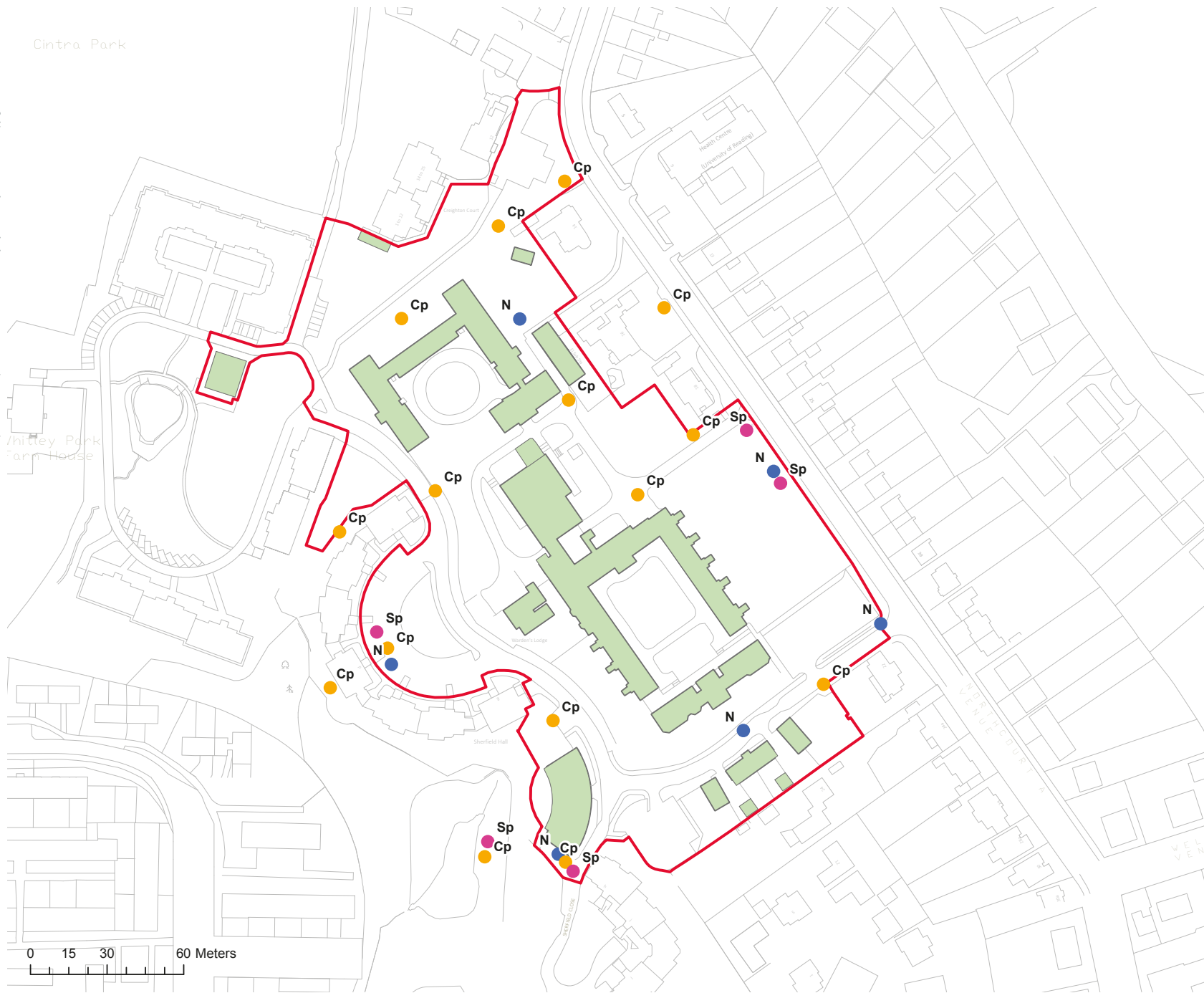
FIGURE 4
Building/tree reference number

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



- Legend
- Site Location
 - Buildings
 - Noctule (N)
 - Common pipistrelle (Cp)
 - Soprano pipistrelle (Sp)

ST PATRICKS HALL
UNIVERSITY OF READING

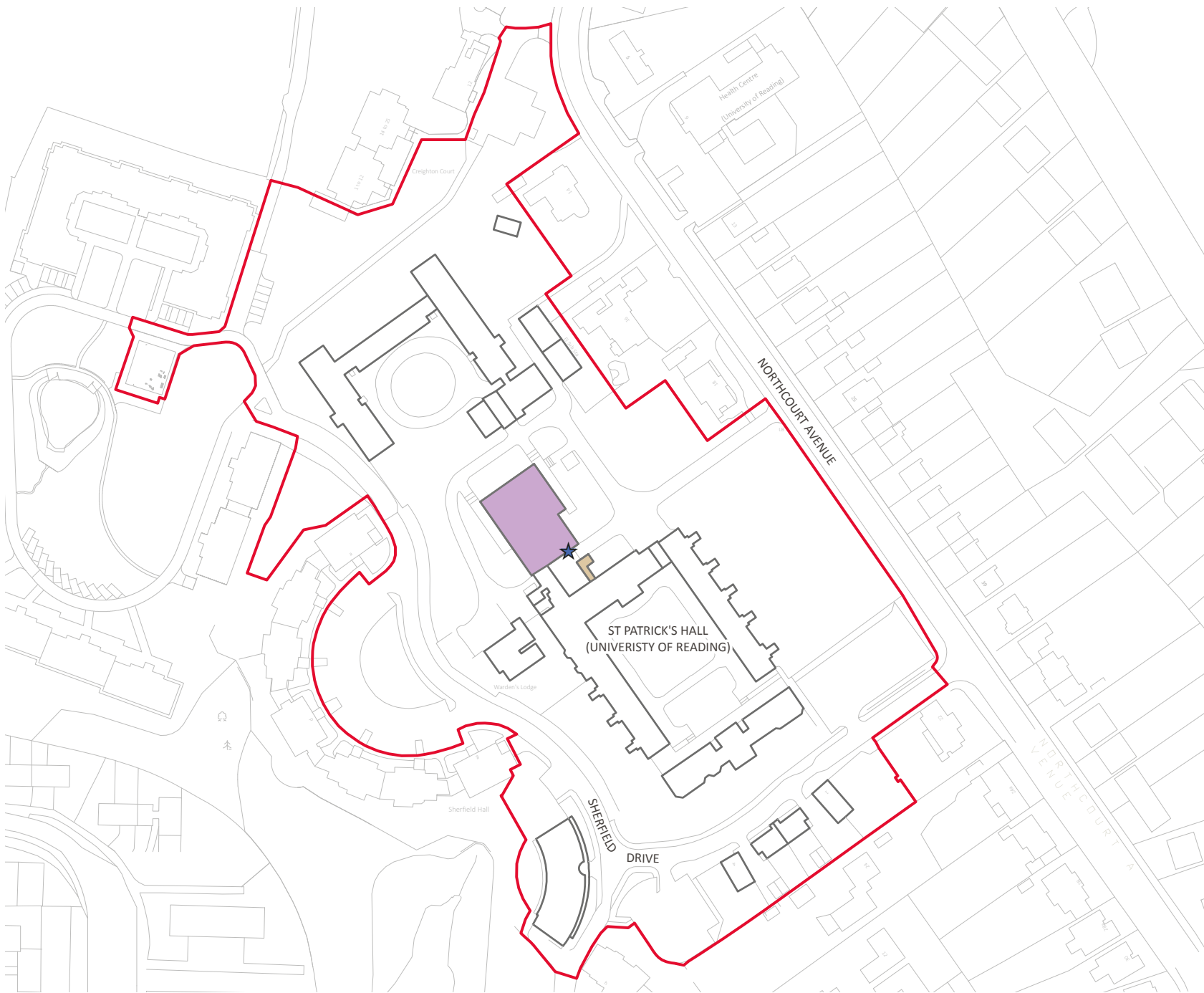
FIGURE 5
Bat transect survey results

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com



Legend

- Site Location
- ★ Location of potential bat roost*
- Pearson Court store
- Current cafe at the Northcourt Group site

*Subsequently re-surveyed and no bats or evidence found so feature blocked

0 12.5 25 50 Meters

ST PATRICKS HALL
UNIVERSITY OF READING

FIGURE 6
Building location and
potential bat roost

THE Landmark
PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

APPENDIX A: LEGAL CONTEXT

APPENDIX A: LEGAL FRAMEWORK

1.0 PROTECTED SITES (NATIONAL)

1.1 Local Nature Reserves

Local Nature Reserves are designated under Section 21 of **The National Parks and Access to the Countryside Act 1949** (HMSO, 1949) by principal local authorities. The declaring local authority must have a legal interest in the land concerned. Local Nature reserves are designated for people and wildlife. They are places with wildlife or geological features of special interest locally and that give people special opportunities to study and learn about them or simply enjoy them and have contact with nature.

2.2 NON-STATUTORY SITES

- 2.1 The majority of Local Authorities have a system of 'second tier' sites which do not wholly fulfil SSSI designation criteria, but which are, nonetheless, of local or regional value. The policies, encouraged by Government advice, recognise that protection should be extended beyond the statutory sites to include the best examples of wildlife habitats, populations of rare species and geological features remaining in the area and are particularly valuable in supplementing and supporting the national framework for SSSIs.

3.0 PROTECTED FEATURES

3.2 Tree Preservation Orders (TPOs)

TPOs are made under the Town and Country Planning (Tree Preservation) (England) Regulations 2012. They are made by local planning authorities to protect selected trees and woodlands if their removal would have a significant impact on the local environment and its enjoyment by the public. The criteria do not incorporate any specific considerations of ecological value. TPOs, however, provide legal protection to trees prohibiting the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction.

4.0 PROTECTED SPECIES (EUROPEAN)

4.1 Plants

Certain plant species are listed under Annex IVb of the Habitats Directive under which it is an offence to deliberately pick, collect, cut, uproot or destroy such a plant.

Under the Bern Convention 1979, Contracting Parties are required to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild flora species specified in Appendix 1. In the UK this is implemented through various national wildlife protection policies.

4.2 Bats

All British bats and their roosts are fully protected under international wildlife law against adverse effects including disturbance. Under the terms of the Bonn Convention, which encompasses the Agreement of the Conservation of Bats in Europe, there is a fundamental obligation to protect from damage or disturbance, sites which are important for the conservation status of bats. Such sites include those bats use for shelter or protection and important foraging areas.

4.3 Dormouse

The dormouse (*Muscardinus avellanarius*) is protected under Schedule 2 of the Habitats Regulations 2010 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Taken together, the Regulations and Act make it illegal to intentionally or deliberately kill, injure or capture dormice; deliberately disturb dormice and damage or destroy dormouse breeding sites or resting places.

4.4 Otter

The otter (*Lutra lutra*) is protected under Schedule 2 of the Habitats Regulations 2010 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Taken together, the Regulations and Act make it illegal to intentionally or deliberately kill, injure or capture otters; deliberately disturb otters and damage or destroy otter breeding sites or resting places.

4.5 Birds

In Britain all wild birds are granted legal protection under the EC Birds Directive and the Wildlife & Countryside Act 1981 (as amended). This legislation protects the birds, their eggs and nests whilst being built or in use.

Legal protection makes it an offence to intentionally kill, injure, take or have in possession any wild bird or egg. It is also an offence to intentionally damage or destroy the nest of any wild bird whilst it is being built or in use.

Under the Bern Convention 1979, Contracting Parties are required to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. In the UK this is implemented through various national wildlife protection policies.

4.6 Great Crested Newt

The great crested newt (*Triturus cristatus*) is fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. The legislation protects the newts and their places of shelter or protection, which may extend 500m from the breeding pond.

4.7 Invertebrates

Under the Conservation of Habitats and Species Regulations 2010, invertebrate species listed on Schedule 2 it is an offence to deliberately capture or kill, disturb, take or destroy eggs of such a species or to damage or destroy the breeding site or resting place of such an animal.

5.0 PROTECTED SPECIES (NATIONAL)

5.1 Plants

Statutory protection in Great Britain is provided by the Wildlife and Countryside Act 1981. The plants and fungi which have special protection are listed on Schedule 8 under which it is an offence to intentionally pick, uproot or destroy any plant on Schedule 8.

Five plant species are listed on the Weeds Act 1959 as injurious: common ragwort (*Senecio jacobaea*), broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), creeping thistle (*Cirsium arvense*) and spear thistle (*Cirsium vulgare*). The Act requires landowners

to eliminate scheduled weeds to prevent their seeds contaminating neighbouring land. The Ragwort Control Act 2003 amends the Weed Act with respect to common ragwort.

Thirty-eight species plus all species of *Elodea* (of which there are currently three species known to have been introduced) are listed on Schedule 9 of the Wildlife and Countryside Act 1981 under which it is an offence to plant or otherwise cause to grow in the wild the scheduled species. Two are marine, thirteen (plus all species of *Elodea*) aquatic and the remainder terrestrial.

5.2 Wild Mammals

Under the Wild Mammals (Protection) Act 1996 it is 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.

5.3 Badgers

Badgers (*Meles meles*) are protected under the Protection of Badgers Act 1992. This Act makes it illegal to wilfully kill, injure or take any badger, or attempt to do so and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett or disturb a badger when it is occupying a sett.

5.4 Water Voles

The water vole (*Arvicola terrestris*) receives protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under the Act it is an offence to intentionally kill, injure or take water voles and intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection or obstruct access to any structure or place used by water voles for shelter or protection or to disturb water voles while they are using such a place.

5.5 Birds

In Britain all wild birds are granted legal protection under the Wildlife & Countryside Act 1981 (as amended) and the EC Birds Directive. This legislation protects the birds, their eggs and nests whilst being built or in use.

Legal protection makes it an offence to intentionally kill, injure, take or have in possession any wild bird or egg. It is also an offence to intentionally damage or destroy the nest of any wild bird whilst it is being built or in use. Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are subject to special penalties and are also protected from disturbance while nesting including the disturbance of dependent young.

5.6 Reptiles

The slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*), adder (*Vipera berus*) and common lizard (*Lacerta vivipara*) are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) in respect of section 9(1) and 9(5) only. Under section 9(1) it is an offence to knowingly kill or injure a reptile. Section 9(5) refers to sale and trade.

5.7 Invertebrates

Statutory protection in Great Britain is provided by the Wildlife and Countryside Act 1981. The invertebrates which have special protection are listed on Schedule 5 under which it is an offence to intentionally kill, injure or take these invertebrates and intentionally or recklessly damage or destroy, or obstruct access to, any structure or place used for shelter or protection or disturb any such animal while occupying such a structure or place.

6.0 BIODIVERSITY CONSERVATION

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The Government has a duty to take reasonably practicable steps to further the conservation of the species and habitats that are included in lists published under Section 41.

Biodiversity 2020: A strategy for England's wildlife and ecosystem services sets out the means by which the Government will comply with its duty under Section 41 of the NERC Act to take or promote the taking by others of steps to further the conservation of listed habitats and species, including through the continued implementation of Action Plans.

REFERENCES

Countryside and Rights of Way Act 2000.

DEFRA (2011), Biodiversity 2020: A strategy for England's wildlife and ecosystem services.

European Community Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive).

European Community Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

Hedgerow Regulations 1997.

National Parks and Access to the Countryside Act 1949.

Natural Environment and Rural Communities Act 2006.

Planning and Compensation Act 1991.

Ragwort Control Act 2003.

The Protection of Badgers Act 1992.

The Conservation of Habitats and Species Regulations 2010, HMSO.

Town and Country Planning Act 1990

Town and Country Planning (Trees) Regulations 1999

UNESCO (1987), Convention on Wetlands of International Importance especially as Waterfowl Habitat as amended by the Conference of Parties 28.05.87.

Weeds Act 1959.

Wild Mammals (Protection) Act 1996.

Wildlife & Countryside Act 1981, and amendments, incl. Third Quinquennial Review of Schedules 5 & 8 to the Wildlife & Countryside Act, 1998.

APPENDIX B: ECOLOGICAL EVALUATION TECHNIQUES

APPENDIX B: ECOLOGICAL EVALUATION TECHNIQUES

1.0 INTRODUCTION

A number of systems and criteria are available to assess the nature and extent of ecological interest found at any site. Guidelines for Ecological Impact Assessment have been prepared by the Institute of Ecology and Environmental Management (2006), which have been employed below. The IEEM guidelines detail a recommended approach to the valuation of ecological receptors on the following scale:

- International importance
- UK importance
- National importance (England/Northern Ireland/Scotland/Wales)
- Regional importance
- County (or Metropolitan)
- District (or Unitary Authority, City or Borough)
- Local or Parish; and/or
- Within zone of influence only

2.0 HABITATS AND FEATURES

Internationally important habitats are considered to be those listed on Annex I of the Habitats Directive. All internationally important examples, however, should have been designated within Special Areas for Conservation (SACs). Other examples should be considered to be of value at the level for which they are designated (see below). There are published guidelines for the selection of SACs (see Brown et al, 1997) and SPAs and Ramsar Sites (Stroud et al, 1990).

There are similar published criteria for the selection of nationally important Sites of Special Scientific Interest (SSSIs) (NCC, 1989) which give criteria for both habitats and species.

The majority of Local Authorities have a system of 'second tier' sites which do not wholly fulfil SSSI designation criteria, but which are, nonetheless, of local to regional value. Policies, encouraged by Government advice, recognise that protection should be extended beyond the statutory sites to include the best examples of wildlife habitats, populations of rare species and geological features remaining in the District and are particularly valuable in supplementing and supporting the national framework for SSSIs. DEFRA (2006) has published Guidance on their Identification, Selection and Management of such sites. The Hedgerow Regulations (1997) provide a useful framework for the assessment of the ecological importance of hedgerows.

It is possible that there may be habitats that do not fall within designated sites but are considered to meet the published selection criteria. Similarly it is possible that habitats within designated sites may not fulfil the criteria for designation in their own right. This may be due to the site having deteriorated or that they have been included for other reasons such as secondary or supporting value. If a habitat is considered to be in an unfavourable condition, consideration must be given to its potential value if restored. Consideration should also be given to secondary or supporting value where a habitat or feature may have no particular interest in itself but may perform an important ecological function such as a buffer against negative impacts or an important link between habitats. The presence of a diverse range of habitats can increase the value of a site.

3.0 SPECIES

A number of resources are available to assess the rarity and vulnerability of individual species. Red Data Lists utilise standard criteria defined by the International Union for the Conservation of Nature (IUCN, 2001, now the World Conservation Union, WCU) to classify the scarcity and conservation status of species of flora and fauna. The Red Data List system can operate at an International, National or Regional level (e.g. County Red Data Lists). The IUCN maintains a list of threatened species on a global scale.

The IUCN threat categories are defined as follows: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (E). Species falling within the categories CR, EN and VU are considered to be threatened. These categories are defined by five criteria as follows:

- Criterion A considers the percentage decline of a taxon, regardless of current range or abundance.
- Criterion B is designed to identify threats associated with extremely restricted distribution when combined with other risk factors.
- Criterion C considers the combination of extremely small population size with similar risk factors to Criterion B.
- Criterion D identifies very small or restricted populations.
- Criterion E requires quantitative analysis to estimate the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options.

Earlier Red Data Lists and Books (such as the British Red Data Book for Insects (Shirt 1987) and subsequent reviews: Falk, 1991 and Hyman and Parsons, 1992) classified species on the former IUCN criteria as: Extinct, Endangered (RDB1), Vulnerable (RDB2), Rare (RDB3) and insufficiently known (RDBK).

Criteria for the selection of Nationally Notable insects (now termed Nationally Scarce) species generally follow Eversham (1983). These Nationally Notable/Scarce species are further divided into Notable A (present in 16-30 squares) and Notable B (31-100 squares).

Rare birds in Britain are defined as any species for which records would have to be verified by the British Birds Rarities Committee. County rarities are taken to include all national rarities and also any species listed in County bird reports requiring a full description, which should be submitted to the relevant County Recorder. The presence of rare birds at any time of year, including locally rare species, adds significantly to the ecological value of a site. In general, however, only rare birds with a regular pattern of occurrence at a site should be included in this category.

National and County distribution atlases and species reports such as county bird reports can provide valuable additional information for evaluation. They can also provide information on species status at the level of geographic coverage of the atlas. Species at the edge of their distribution (especially in the context of global change) and notably large populations of species that are uncommon or threatened in the wider context enhances a species value. A species that is rare and declining should be assigned a higher level of importance than one that is stable. Other rarity related evaluation criteria include the need to protect populations for which the UK holds a large / significant proportion of the international / European population. The presence of a diverse assemblage of species can enhance the value of a site.

Further guidance on the evaluation of certain protected species has been published by English Nature e.g. Great Crested Newt Mitigation Guidelines (EN, 2001) and Bat Mitigation Guidelines (Mitchell-Jones, 2004) and non-statutory organisations e.g. Froglife (1999, endorsed by English Nature).

4.0 OTHER RESOURCES

4.1 Natural Areas

English Nature (now Natural England) has divided England into 120 'Natural Areas' described as areas of the countryside identified by their unique combination of physical attributes, wildlife, land-use and culture (English Nature, 1998). Natural Areas provide a useful framework for assessing species and habitats beyond the traditional administrative boundaries. In the UK Biodiversity Action Plan they are described as:

"... biogeographical zones which reflect the geological foundation, the natural systems and processes and the wildlife in different parts of England, and provide a framework for setting objectives for nature conservation"

The Natural Area profiles provide contextual information to confirm temporal and spatial scope. They can provide information to aid evaluation of the relative importance of ecological receptors.

4.2 Biodiversity Action Plans

The **UK Biodiversity Action Plan** (UK BAP) published in 1994 (UK Biodiversity Steering Group, 1995-1999) highlighted 38 key habitat types (now termed priority habitats), which were subsequently revised to include 26 non-maritime and 19 maritime priority habitats. A review was undertaken in 2007 resulting in the publication of a new list comprising 1,149 priority species and 65 priority habitats (40 terrestrial and 25 maritime).

Under the 2007 review, priority habitats were selected according to the following criteria:

1. Habitats for which the UK has international obligations;
2. Natural and semi-natural habitats at risk, such as those with a high rate of decline in extent and/or quality, especially over the last 20 years, or which are rare;
3. Habitats important for assemblages of key species.
4. Habitats which are 'functionally critical' i.e. those 'essential for organisms inhabiting wider ecosystems', may be useful in some cases as a supporting criterion but is unlikely to be a qualifying criterion in its own right.

Priority species were selected against the following criteria:

1. International threat;
2. International responsibility (of the UK) + moderate decline in the UK;
3. Marked decline in the UK; or
4. Other important factor(s).

Following the establishment of devolved governments in Scotland, Wales and Northern Ireland in 1998, each country produced its own biodiversity strategy. In 2002, DEFRA published *Working with the Grain of Nature: a biodiversity strategy for England*. This has since been superseded by *Biodiversity 2020: A strategy for England's wildlife and ecosystem services* (DEFRA, 2011) which builds on the Natural Environment White Paper (TSO, 2011) and provides a comprehensive picture of how the Government is implementing its commitments under the Convention on Biological Diversity and the EU Biodiversity Strategy

in England. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The Government has a duty to take reasonably practicable steps to further the conservation of the species and habitats that are included in lists published under Section 41. The S41 list includes all the habitats and species in England identified as requiring action under the UK BAP with the addition of hen harrier which, without continued conservation action, it is considered unlikely that its population will increase from its current very low levels in England.

Biodiversity Action plans at lower levels such as regional and county have also been produced for many areas.

Selection of habitats and species for BAPs is on the grounds that they are in a sub-optimal state and does not imply any specific level of importance of a habitat or species. The value of priority habitats and species should be determined as described above. Only where a specific habitat or species action plan states that all areas of a particular habitat or all populations of a given species should be protected should the habitat or species be valued at the appropriate level of the BAP. BAPs can assist in ecological evaluation but must be reviewed on a case by case basis.

4.3 Bird Species of Conservation Concern

Bird Species of Conservation Concern in the UK, Channel Islands and Isle of Man was first published in 1996, updated in 2002 (Gregory et. al., 2002) and again in 2009 (Eaton et. al., 2009). The list is prioritised into species of high (red) and medium (amber) conservation concern; all other species are of lower (green) concern. Red-listed species are globally threatened according to IUCN (World Conservation Union) criteria or in rapid decline (greater than 50% over the past 25 years) in the UK, currently or historically and those that have declined historically and not shown a substantial recent recovery. Amber listed species are in moderate decline (25-49% over the past 25 years), rare breeders, localised or internationally important populations, of an unfavourable conservation status in Europe or those whose population has declined historically but made a substantial recent recovery. It should be noted that despite substantial declines, many red-listed species such as skylark (*Alauda arvensis*) and song thrush (*Turdus merula*) remain relatively common in the UK countryside. As for BAPs, inclusion of species on one of the lists is not sufficient in itself for assigning a level of value to the species concerned. Each species should be evaluated according to the guidelines above with reference to the criteria for inclusion of the species.

REFERENCES

- BROWN, A.E., et al. (1997). The Habitats Directive: selection of Special Areas of Conservation in the UK. Report 270. Peterborough: JNCC.
- DEFRA (2002). Working with the grain of nature: A Biodiversity Strategy for England. London: DEFRA.
- DEFRA (2006). Local Sites: Guidance on their Identification, Selection and Management. London: DEFRA.
- DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services. London: DEFRA.
- EATON, M.A., et al., (2009). Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds, 102, 296-341.
- ENGLISH NATURE (1998). Natural Areas: nature conservation in context.
- ENGLISH NATURE (2001). Great Crested Newt Mitigation Guidelines. Peterborough: English Nature.
- EVERSHAM, B (1983). Defining Rare and Notable species – a discussion document. Invertebrate Site Register Report No. 49. Peterborough: Nature Conservancy Council.
- FALK, S.J. (1991). A review of the scarce and threatened bees, wasps and ants of Great Britain. Peterborough: Nature Conservancy Council.
- FROGLIFE (1999). Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Halesworth: Froglife.
- GREGORY, R.D., et al., (2002). The population status of birds in the United Kingdom, Channel Islands and Isle of Man: an analysis of conservation concern 2002-2007. British Birds 95: pp 410-450.
- Hedgerow Regulations 1997 SI 1997 No. 1160.
- HYMAN, P.S. & PARSONS M.S. (1992). A review of the scarce and threatened Coleoptera of Great Britain: Part 1. Peterborough: Joint Nature Conservation Committee.
- IEEM (2006). Guidelines for Ecological Impact Assessment in the UK. Winchester: Chartered Institute for Ecology and Environmental Management.
- IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1, IUCN Species Survival Commission (www.iucn.org/webfiles/doc/SSC/RedList/redlistcatsenglish.pdf).
- IUCN (2003). Guidelines for using the IUCN Red List Categories and Criteria, IUCN Species Survival Commission.
- MITCHELL-JONES, A.J. (2004). Bat Mitigation Guidelines. Peterborough: English Nature.
- Natural Environment and Rural Communities Act 2006.
- Nature Conservancy Council (1989). Guidelines for the selection of biological SSSIs. Nature Conservancy Council and supplements. Peterborough: Joint Nature Conservation Committee.
- SHIRT, D B (1987). British Red Data Books 2: Insects. Peterborough: Nature Conservancy Council.
- STROUD, D.A., MUDGE, G.P., and PIENOWSKI, M.W (1990). Protecting internationally important bird sites. Peterborough: Nature Conservancy Council.

The Conservation of Habitats and Species Regulations 2010 SI 2010 No. 490.

THE STATIONARY OFFICE (TSO) (2011). The Natural Choice: securing the value of nature (Natural Environment White Paper). Norwich: TSO.

UK BIODIVERSITY STEERING GROUP (1995). Biodiversity: the UK Steering Group Report: Meeting the Rio Challenge, Volumes 1 and 2. London: HMSO.

UK BIODIVERSITY GROUP (1998-1999). Tranche 2 Action Plans, Volumes I-VI. Peterborough: English Nature.

APPENDIX C: SITE PHOTOGRAPHS

APPENDIX C: SITE PHOTOGRAPHS



Photograph 1: Typical ornamental borders found at St Patrick's Hall



Photograph 2: Row of mature lime trees, tightly mown amenity grassland and parking area in background



Photograph 3: Fruit trees and species-poor hedgerow



Photograph 4: Woodland



Photograph 5: Pond 1



Photograph 6: Pond 2

APPENDIX D: TVERC SPECIES RECORDS

APPENDIX D: TVERC SPECIES RECORDS

Species records within 2 km of the site were obtained from the Thames Valley Environmental Records Centre, those considered relevant to the site and within the last twenty years are summarised below.

Taxa	Species	Scientific name	Records	Designation ⁸
Amphibian	Common toad	<i>Bufo bufo</i>	10	WCA
	Smooth newt	<i>Lissotriton vulgaris</i>	3	WCA
Reptile	Slow worm	<i>Anguis fragilis</i>	2	WCA, S41
	Common lizard	<i>Zootoca vivipara</i>	1	WCA, S41
Mammal	Badger	<i>Meles meles</i>	8	Protection of Badgers Act
	Hedgehog	<i>Erinaceus europaeus</i>	5	S41
	Water vole	<i>Arvicola amphibius</i>	4	S41, WCA
Bird	Northern lapwing	<i>Vanellus vanellus</i>	1	S41, red
	Herring gull	<i>Larus argentatus</i>	1	S41, red
	Common cuckoo	<i>Cuculus canorus</i>	1	S41, red
	Common linnet	<i>Carduelis cannabina</i>	3	S41, red
	Common bullfinch	<i>Pyrrhula pyrrhula</i>	1	S41, red
	Spotted flycatcher	<i>Muscicapa striata</i>	1	S41, red
	House sparrow	<i>Passer domesticus</i>	8	S41, red
	Black redstart	<i>Phoenicurus ochrurus</i>	1	Sch 1
	Red kite	<i>Milvus milvus</i>	2	Sch 1
	Kingfisher	<i>Alcedo atthis</i>	3	Sch 1
	Common starling	<i>Sturnus vulgaris</i>	5	S41, red
	Song thrush	<i>Turdus philomelos</i>	14	S41, red
	Lesser spotted woodpecker	<i>Dendrocopos minor</i>	1	S41, red

⁸ WCA – Wildlife and Countryside Act 1981 (as amended) and Sch1 – Schedule 1 of the Act, S41 - Section 41 (S41) of the 2006 Natural Environment and Rural Communities (NERC) Act. Red – red rating of the population status of birds in the United Kingdom, Channel Islands and Isle of Man. Eaton et al British Birds 102 June 2009.

APPENDIX E: BBSBG SPECIES RECORDS

APPENDIX E: BBSBG SPECIES RECORDS

Bats receive a high level of legal protection under both domestic and international law. In addition, many species of bats are listed on Section 41 of the NERC Act 2006 as being species of principal importance for nature conservation. Summarised below are bat records since 1995, from within 4km of the site:

Species	Scientific name	Records	Distance from Site
Unidentified bat	Vespertilionidae (family)	3 roosts and 4 field records	Closest roost 4 km north east, closest field record 790 m south east.
Serotine	<i>Eptesicus serotinus</i>	5 field records	Closest 1.3 km west.
Daubenton's	<i>Myotis daubentonii</i>	3 roosts and 51 field records	Closest roost 2.2 km north, closest field record 1 km east.
Unidentified myotis	<i>Myotis sp.</i>	4 field records	Closest 3 km east.
Noctule	<i>Nyctalus noctula</i>	4 roosts and 24 field records	Closest roost 760 m south east, closest field record 520 m east.
Nathusius pipistrelle	<i>Pipistrellus nathusii</i>	1 field record	3.2 km south.
Common pipistrelle	<i>Pipistrellus</i>	35 field records	Closest roost 3.8 km north east, closest field record 280 m north-west.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	3 roosts and 29 field records	Closest roost 1.8 km north, closest field record 1.1 km east.
Unidentified pipistrelle	<i>Pipistrellus sp.</i>	8 roosts and 16 field records	Closest roost 1.5 km east, closest field record 1.3 km west.
Brown long-eared	<i>Plecotus auritus</i>	8 roosts and 6 field records	Closest roost 1.1 km north-east, closest field record 1.1 km due south
Unidentified long-eared	<i>Plecotus sp.</i>	2 roosts and 1 field record	Closest roost is 2.3 km due south, closest field record 3.8 km north-east

APPENDIX F: PRELIMINARY BAT ROOST ASSESSMENT- BUILDINGS

APPENDIX F: PRELIMINARY BAT ROOST ASSESSMENT- BUILDINGS

Building photographs can be seen at Appendix G.

Building Ref.		Name	Features	Bat Evidence	Bat Roost Pot.
2 ⁹		Wooden store (Photograph 2 refers)	A single storey building on a brick plinth. External: Pitched clay tiled roof with slipped and missing tiles. Wooden cladding on external walls, some cladding is lifted. Windows are boarded up. Internal: Building <i>not</i> inspected internally.	None.	Mod.
3		Electricity substation/ store (Photograph 3 refers)	A single storey building, subdivided into an electricity substation and bin store. External: Has a flat felt roof with wooden fascia boards. Exterior walls are brick. Vents in some doors provide potential egress points, other vents are meshed. Windows at back of property mean interior will be light, although some were boarded. Internal: Building <i>not</i> inspected internally.	None	Low
9		1 Sherfield Drive (Photograph 9 refers)	A modern detached bungalow. External: Pitched clay tiled roof with occasional lifted tiles. External walls are brick and there are aeration gaps around windows. Well fitted plastic soffit box. Internal: Daylight at base of rafters. Void is draughty. Lined with felt. Rat droppings present.	None	Low
10		Garage 1 + 2 (Photograph 10 refers)	A modern single storey double garage. External: Pitched clay tiled roof with occasional lifted tiles. Plastic soffit box not flush with brick wall. Internal: Building <i>not</i> inspected internally.	None	Low

⁹ Buildings 1, 4, 5, 6, 7 and 8 now fall outside the redline boundary, so have been excluded from the table

Building Ref.		Name	Features	Bat Evidence	Bat Roost Pot.
11		2 Sherfield Drive (Photograph 11 refers)	A modern semi-detached bungalow. External: Pitched clay tiled roof with occasional lifted tiles. External walls are brick. Velux window restricting size of void. Internal: Daylight at base of rafters. Lined with felt. Rat droppings present.	None	Low
12		3 Sherfield Drive (Photograph 12 refers)	A modern semi-detached bungalow. External: Pitched clay tiled roof with occasional lifted tiles. External walls are brick. Velux window restricting size of void. Internal: Building <i>not</i> inspected internally.	None	Low
13		Garage 3 + 4 (Photograph 13 refers)	A modern single storey double garage. External: Pitched clay tiled roof with occasional lifted tiles. Plastic soffit box not flush with brick wall. Internal: No void present. Lined with felt. Very cobwebby.	None	Low
14		4 Sherfield Drive (Photograph 14 refers)	A modern two-storey detached house. External: Pitched clay tiled roof with occasional lifted tiles. Plastic soffit box not flush with brick wall. Internal: Daylight at base of rafters. Lined with felt. Thick insulation. Frequent rat droppings present.	None	Low
15		Northcourt Reception (Photograph 15 refers)	A modern single storey building, part of the building is used as a bar, with lights and loud music. External: A single pitched metal roof with a wooden soffit box, occasional gaps where soffit not flush with wall. Exterior walls are brick with aeration gaps above windows. Internal: No void present.	None	Low

Building Ref.		Name	Features	Bat Evidence	Bat Roost Pot.
16a		Pearson's Court (Photograph 16a + 16b refers)	Comprised of two Edwardian buildings (a single storey to the south and A two/three-storey building to the north, east and west, surrounding a central courtyard. Flat felt roof extensions on eastern and western faces. External: Pitched slate roof with occasional lifted/missing slates especially on ridge. Occasional gaps under wooden fascia. Wooden soffit boxes. Exterior walls are brick, with regular drainage holes on third floor. Lifted lead flashing on window sills. Missing mortar around sash windows. Grilled basement entrance, basement filled with foam due to presence of asbestos (per. comm. Tony Parr). Internal: Majority of voids (8) were inspected, but 3 were locked and Block G had no void as dorma windows were present. Rat droppings present. Three-storey building. Void not lined (slates directly on purlins), lots of gaps where missing/raised slates. Cobwebby.	None	High
16b		Building adjacent to Pearson's Court (Photograph 16b refers)	A single storey Edwardian building. External: Pitched slate roof with occasional lifted/missing slates especially on ridge. Occasional gaps under wooden fascia. Wooden soffit boxes. Exterior walls are brick, with regular drainage holes on third floor. Lifted lead flashing on window sills. Missing mortar around sash windows. Internal: Void lined with foil, lining torn in places. Well sealed.	None	High

Building Ref.		Name	Features	Bat Evidence	Bat Roost Pot.
17		Pearson's Court Store (Photograph 17 refers)	A modern single storey building, used for storing cleaning products. External: Flat felt roof. Wooden soffit box with occasional gaps. External walls are brick with occasional missing mortar. Lifted lead flashing above windows. Gaps under doors. Internal: Building <i>not</i> inspected internally. Flat roof therefore very small void (if present at all).	None	Low
18		Pearson's Court Annex (Photograph 18 refers)	A modern single storey building. External: Flat moulded metal roof with wooden soffit boxes. No gaps. Exterior walls are brick with no missing mortar. Internal: Building <i>not</i> inspected internally. No features present that could be used by bats.	None	Neg
19		Warden's Lodge (Photograph 19 refers)	A two-storey detached Edwardian house. External: Pitched clay tiled roof with occasional slipped/missing tiles especially on ridge. Wooden soffit box and fascias above windows with gaps. Lifted lead flashing. Exterior walls are brick with occasional missing mortar. Internal: Lined with fabric, torn in places. Void breezy and cobwebby. Very dark, no obvious access points (apart from torn fabric).	None	High
20		Current Café at the Northcourt group site (Photograph 20 refers)	A modern single storey building that caters for many of St Pats students. External: Has a flat moulded metal roof with a raised skylight in centre. Gaps under fascia. Has hanging tiles at base of roof, some missing/slipped. Fascia beneath hanging tiles has aeration gaps. Exterior walls are brick, with occasional aeration gaps. Lifted lead flashing. Internal: No void present.	None	Mod

Building Ref.		Name	Features	Bat Evidence	Bat Roost Pot.
21		Café Annex (Photograph 21 refers)	A modern single storey building. External: Flat felt roof. Exterior walls are brick, occasional missing mortar but near ground level. Air vents present but these were blocked. Internal: Building <i>not</i> inspected internally. Flat roof therefore very small void (if present at all).	None	Low
22		New Court (Photograph 22 refers)	A modern three storey building. External: Pitched moulded metal roof, lip of roof (where meets wall) has occasional gaps. Soffit box not always flush with wall and with occasional gaps. Lead flashing above windows. Exterior walls are brick, with occasional aeration gaps. Internal: Void boarded. Faintly light at base of rafters, therefore narrow access present. Also daylight around pipework. Very clean void. Rat and mouse droppings present.	None	Low
23		Benyon Hall JCR (Photograph 24 refers)	A modern brick and timber structure, wooden clad with a mono-pitched aluminium flat roof. External: Gaps around window frames.	None	Low

APPENDIX G: BUILDING PHOTOGRAPHS

APPENDIX G: BUILDING PHOTOGRAPHS¹⁰



Photograph 2: Wooden store



Photograph 3: Electricity substation/store

¹⁰ Photographs 1, 4, 5, 6, 7 and 8 have been removed, as they now fall outside the redline boundary.



Photograph 9: 1 Sherfield Drive



Photograph 10: Garage 1+2



Photograph 11: 2 Sherfield Drive



Photograph 12: 3 Sherfield Drive



Photograph 13: Garage 3+4



Photograph 14: 4 Sherfield Drive



Photograph 15: Northcourt Reception



Photograph 16a Pearson's Court



Photograph 16b: Single storey building next to Pearson's Court



Photograph 17: Pearson's Court store



Photograph 18: Pearson's Court annex



Photograph 19: Warden's Lodge



Photograph 20: Current Café at the Northcourt group site



Photograph 21: Café annex



Photograph 22: New Court



Photograph 23: Feature from which a single common pipistrelle may have emerged



Photograph 24: Benyon Hall JCR

APPENDIX H: PRELIMINARY BAT ROOST ASSESSMENT- TREES

APPENDIX H: PRELIMINARY BAT ROOST ASSESSMENT- TREES

Tree photographs can be seen at **Appendix I**

Ref.	Species	Features	Bat Roost Potential
1 ¹⁰	Horse chestnut (Photograph 1 refers)	Mature pollarded standard next to road, with evidence of leaf miner beetle: -peeling bark -1 hole with bees (S) -several broken branches -1 hole in branch (W)	High
4	Pedunculate oak (Photograph 4 refers)	Mature standard in woodland, near Pond 1: -1 broken branch (W) -4 woodpecker holes (W) -1 split branch (E) -1 knot hole (E)	High
5	Horse chestnut (Photograph 5 refers)	Mature standard next to Warden's Lodge: -1 hole on limb (N) -big crack on main trunk where limb has broken off (W)	Moderate
6	Pear (Photograph 6 refers)	Semi-mature standard near Warden's Lodge: -1 small hole in upper limb (NE). This feature was inspected with an endoscope and did not extend. Therefore no further surveys deemed necessary.	Negligible
7	Apple (Photograph 7 refers)	Mature standard near café: -Main trunk mostly rotten with many large draughty holes -1 hole in limb (S)	Moderate
8	Pear (Photograph 8 refers)	Mature standard, next to New Court: -peeling bark (S) -several knot holes -1 rot hole extended upwards but cobwebby (S) -1 broken branch (N)	High

¹⁰ Tree 2 and 3 now fall outside the redline boundary, so have been removed from the table

APPENDIX I: TREE PHOTOGRAPHS

APPENDIX I: TREE PHOTOGRAPHS¹²



Photograph 1: Tree 1



Photograph 4: Tree 4

¹² Photographs 2 and 3 have been removed, as these trees now fall outside the redline boundary



Photograph 5: Tree 5 is located to the right of the frame



Photograph 6: Tree 6



Photograph 7: Tree 7



Photograph 8: Tree 8

APPENDIX J: WEATHER CONDITIONS AND SURVEY TIMINGS

APPENDIX J: WEATHER CONDITIONS AND SURVEY TIMINGS

Date	Survey Type	Tree/Building Reference (No. of surveyors)	Start/ End Time		Time of Sunset/ Sunrise	Temperature (approx.)		Rain (0-5)		Wind (Beaufort 1-12)	
			Start	End		Start	End	Start	End	Start	End
15.07.15	Emergence (Dusk)	15 (2)	20:45	22:25	21:15	19.7	17.6	0	0	1	1
30.07.15	Emergence (Dusk)	20 (2)	20:41	22:11	20:56	14.8	11.8	0	0	1	1
31.07.15	Re-Entry (Dawn)	16 outside (4)	03:56	05:26	05:26	6.4	5.3	0	0	1	1
04.08.15	Re-Entry (Dawn)	16 inside (2), 2 (2)	04:02	05:32	05:32	14	13	0	0	1	2
06.08.15	Emergence (Dusk)	22 (4)	20:29	21:59	21:44	19.8	16.6	0	0	1	1
07.08.15	Re-Entry (Dawn)	19 (2)	04:00	05:36	05:36	10.5	9.4	0	0	1	1
10.08.15	Emergence (Dusk)	11+ 12 (2)	20:22	21:46	20:37	19.1	18.1	0	0	1	1
17.08.15	Emergence (Dusk)	21 (1), 8 (1)	20:08	21:38	20:23	19	17	0	0	1	1
20.08.15	Emergence (Dusk)	9 (2), 19 (2)	20:15	21:39	20:24	18.5	18	1	0	1	1
21.08.15	Re-Entry (Dawn)	10 (1), 13 (1), 14 (2)	04:28	06:02	05:58	18	17	0	0	1	2
24.08.15*	Emergence (Dusk)	1 (1),	19:53	21:23	20:08	13.7	13.4	0	4	4	4
25.08.15	Re-Entry (Dawn)	4 (1), 5 (1), 7 (1), 8 (1)	04:35	06:05	06:05	9.9	8.3	0	0	1	1
27.08.15	Emergence (Dusk)	16 outside (4)	19:45	21:30	20:02	16	13	0	0	2	2
28.08.15	Re-Entry (Dawn)	20 (2)	04:35	06:09	06:09	9	8	0	0	1	1
03.09.15	Emergence (Dusk)	2 (2) 16 inside (2)	19:32	21:02	19:47	13.3	12.3	1	0	2	2
04.09.15	Re-Entry (Dawn)	22 ¹¹ (1), 1 (1)	04:51	06:21	06:21	11	11	0	0	1	2
07.09.15	Emergence (Dusk)	17 (2)	19:29	20:38	19:37	15	12	0	0	1	1

¹¹ An additional dawn survey (by a single surveyor) was carried out on New Court (Building 22), to cover the inner face where early bat activity was recorded during the first emergence survey.

Date	Survey Type	Tree/Building Reference (No. of surveyors)	Start/ End Time		Time of Sunset/ Sunrise	Temperature (approx.)		Rain (0-5)		Wind (Beaufort 1-12)	
			Start	End		Start	End	Start	End	Start	End
08.09.15	Re-Entry (Dawn)	20 ¹² (2)	05:27	06:27	06:27	10	11	0	0	1	1
14.09.15*	Emergence (Dusk)	19 (2)	19:07	20:37	19:22	12.1	9.8	0	0	8	8
15.09.15*	Re-Entry (Dawn)	20 ¹³ (1)	05:08	06:38	06:38	9.8	9.6	0	1	8	8
17.09.15	Emergence (Dusk)	4 (1), 5 (1), 7 (1)	19:00	20:25	19:15	15	13	0	0	2	1
18.09.15	Re-Entry (Dawn)	1 (1), 8 (1)	05:15	06:45	06:43	8.8	10.1	0	0	1	1
24.09.15	Emergence (Dusk)	16 outside (4)	18:44	20:14	18:59	13.9	12.2	0	0	1	1
25.09.15	Re-Entry (Dawn)	16 inside (2), 4 (1)	05:22	06:52	06:52	6.3	5.7	0	0	1	1
05.08.16	Re-Entry (Dawn)	20 (2)	04:05	05:35	05:35	11.9	11.1	0	0	1	1
15.08.16	Emergence (Dusk)	20 (2)	20:10	22:06	20:25	19.8	15.9	0	0	1	2
02.09.16	Re-Entry (Dawn)	20 (2)	04:49	06:19	06:19	13.3	12.7	0	0	1	1

* Suboptimal survey (i.e. too wet, windy or cold)

Temperature data taken from Earley weather station, Whiteknights Road. Available at: <http://www.wunderground.com/personal-weather-station/dashboard?ID=IEARLEY5#history/tdata/s20150715/e20150715/mdaily>

¹² An additional dawn survey was carried out on the Current Café at the Northcourt group site (Building 20), to cover the feature from which a bat possibly emerged.

¹³ A second additional survey (at dusk) was carried out on the Current Café at the Northcourt group site (Building 20), to cover the feature from which a bat possibly emerged.

APPENDIX K: STATIC RECORDER RESULTS

APPENDIX K: STATIC RECORDER RESULTS

Month	Date	Common pipistrelle	Soprano pipistrelle	Noctule	<i>Myotis</i>	Total
July	16th	32	20	10	1	63
	17th	60	6	7	1	74
	18th	78	58	10	0	146
August	11th	153	8	2	0	163
	12th	64	1	1	0	66
	13th	30	0	2	0	32
September	7th	4	0	4	0	8
	8th	13	0	8	0	21
	9th	2	0	9	0	11

APPENDIX L: GENERAL ARRANGEMENT PLAN

Reproduced with the permission of the controller of her Majesty's Stationary Office. • • Crown Copyright - Licence No. AR100017235

Environmental Planning EIA Landscape Architecture Ecology

GENERAL NOTES:

1. ALL DIMENSIONS AND LEVELS SHALL BE CHECKED ON SITE PRIOR TO CONSTRUCTION WORK COMMENCING.
2. ALL DIMENSIONS OF DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND SPECIFICATIONS.
3. ALL DIMENSIONS TO BE READ IN CONJUNCTION WITH THE LANDSCAPE SPECIFICATION.
4. ANY DISCREPANCY CONCERNING THE DRAWINGS SHOULD BE REFERRED TO THE CA IMMEDIATELY.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
6. ALL LEVELS IN METRES.
7. DO NOT SCALE OFF THIS DRAWING.
8. EXISTING SERVICE ALIGNMENTS SHALL BE CHECKED ON SITE AT THE CONSTRUCTION PRIOR TO CONSTRUCTION WORK COMMENCING.

DRAWING NOTES:
TO BE READ IN CONJUNCTION WITH:
3025_L_HW_0_01
3025_L_SW_0_01
3025_L_TP_0_01



Rev	Date:	Description:	Drawn	Chkd	CLIENT		
01	20/11/17	FOR PLANNING	AS	JB	UPP PROJECTS LTD		
					PROJECT		
					UNIVERSITY_OF_READING		
					TITLE		
					LANDSCAPE_GENERAL_ARRANGEMENT		
					Scale:	Drawn:	Checked:
					PLANNING	JB	GS
					1:500@A1	Date:	Approved:
						02.11.17	
					Drawing Number:	3025 L GA 0 01	0101

THE Landmark PRACTICE

Hope Chapel House
Hope Chapel Hill
Hotwells
Bristol BS8 4ND
United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com
www.thelandmarkpractice.com

S:\PROJECTS\0000 - 3049\3025 - University of Reading - St Patrick's REDESIGN\GRAPHIC

APPENDIX M: TREE RETENTION AND REMOVAL PLAN



TREE REMOVAL AND PROTECTION PLAN

- SITE BOUNDARY**
- TREES TO BE PLANTED = 95
(NON FRUIT TREES: 87)
(FRUIT TREES: 8)
- EXISTING TREES RETAINED = 132
IN ACCORDANCE WITH BS5837:2012
- EXISTING TREES TO BE REMOVED = 68
(NON FRUIT TREES: 60)
(FRUIT TREES: 2 (& 6 CHERRY))
- TO BE REMOVED IN ACCORDANCE
WITH BS 5837:2012
- PROPOSED MEMORIAL TREES = 3
TO REPLACE REMOVED MEMORIAL
TREES WITH, WHERE POSSIBLE,
THE SAME SPECIES AND IN CLOSE
PROXIMITY TO ORIGINAL
- FOR FURTHER DETAIL REFER TO
ARBORICULTURAL ASSESSMENTS
NOVEMBER 2015,
CHALLICE CONSULTING LTD.

TREE REMOVAL SCHEDULE

Category B	
T10	1
T15	1
T38	1
T40	1
T44	1
T48	1
T65	1
T66	1
T68	1
T69	1
T71	1
T73	1
T74	1
T75	1
T89	1
T90	1
T131	1
G72 x7	7
Category C	
T14	1
T39	1
T45	1
T46	1
T47	1
T51	1
T52	1
T53	1
T54	1
T55	1
T56	1
T57	1
T58	1
T59	1
T60	1
T61	1
T63	1
T70	1
T76	1
T91	1
T97	1
T99	1
T101	1
G67 x 5	5
G96 x 8	8
G98 x 2	2
G127 x 3	3
Category R	
T7	1
T33	1
T130	1
TOTAL TREES TO BE REMOVED: 68	

Reproduced with the permission of the controller of her Majesty's Stationary Office. Crown Copyright - Licence No. AR100017235

Environmental Planning EIA Landscape Architecture Ecology

GENERAL NOTES:
1. ALL DIMENSIONS AND LEVELS SHALL BE CHECKED ON SITE PRIOR TO CONSTRUCTION WORK COMMENCING.
2. ALL LANDSCAPE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS' AND ARCHITECTS' DRAWINGS AND SPECIFICATIONS.
3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE LANDSCAPE SPECIFICATION.
4. ANY DISCREPANCY CONCERNING THE DRAWINGS SHOULD BE REFERRED TO THE CA IMMEDIATELY.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
6. ALL LEVELS IN METRES.
7. DO NOT SCALE OFF THIS DRAWING.
8. EXISTING SERVICE ALIGNMENTS SHALL BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORK COMMENCING.

DRAWING NOTES:
TO BE READ IN CONJUNCTION WITH:
3025_L_GA_0_01
3025_L_HW_0_01
3025_L_SW_0_01



Rev.	Date:	Description:	Drawn:	CdG:
01	09/11/17	FOR PLANNING	AS	JB

CLIENT UPP PROJECTS LTD		
PROJECT 3025 UNIVERSITY OF READING		
TITLE TREE RETENTION AND REMOVAL PLAN		
Status PLANNING	Drawn: AS	Checked: GS
Scale: 1:500@A1	Date: 03.11.17	Approved: AS
Drawing Number: 3025_L_TP_0_01	Rev: 01	

THE

Landmark

PRACTICE

Hope Chapel House

Hope Chapel Hill

Hotwells

Bristol BS3 4ND

United Kingdom

Tel: +44 (0)117 923 0455

enquiries@thelandmarkpractice.com

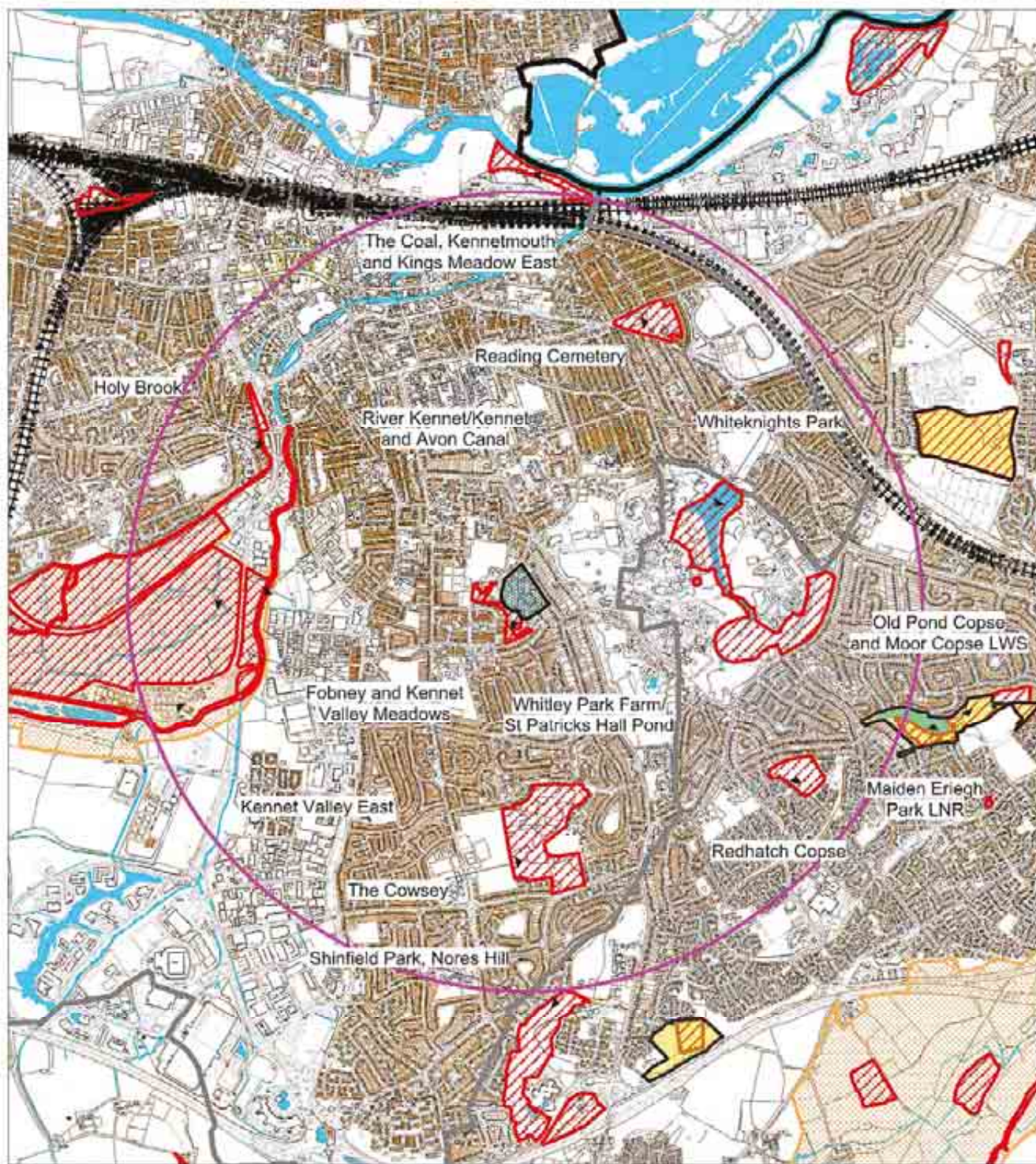
www.thelandmarkpractice.com

5 PROJECTIONS - 30493201 - University of Reading - St Patrick's REDESIGN GRAPHICS

(WORKING CAD/PLOT FILES)

APPENDIX N: LOCATION OF NON-STATUTORY DESIGNATED SITES

St Patrick's Campus Designated Wildlife Sites



- Local Nature Reserves
- Local Wildlife Sites
- Biodiversity Opportunity Areas

- St Patrick's Campus Site
- Search Area

Scale: 1:30000