LEIGHTON PARK SCHOOL

LEIGHTON PARK SCHOOL, READING

ECOLOGICAL APPRAISAL REPORT

23 OCTOBER 2015

soltysbrewster
ECOLOGY

4 Stangate House,
Stanwell Road,
Penarth,
Vale of Glamorgan,
United Kingdom.
CF64 2AA

Telephone:- 029 2040 8476
e-mail:- enquiry@soltysbrewster.co.uk
Web Site:- www.soltysbrewster.co.uk

LEIGHTON PARK SCHOOL

LEIGHTON PARK SCHOOL, READING

ECOLOGICAL APPRAISAL REPORT

Document Ref: E1565501/ Doc 01 – 23 October 2015

Issue	Revision	Stage	Date	Prepared by	Approved by	Signed
1	-	Draft	23 October 2015	Annabelle Phillips	Dr. M Watts (Director)	

CONTENTS

Summary

1.0 Introduction

2.0 Methodology

Desk study

Field survey

3.0 Results

Desk study

Extended Phase 1 Habitat Survey

Fauna

4.0 Legislation, Policies and Plans

5.0 Conclusions and Recommendations

References

Appendices

Appendix I Local records map received from TVERC

Appendix II Target notes to accompany Extended Phase 1 Habitat Survey

Appendix III Advice sheet on the use of street lighting and bats

SUMMARY

Soltys Brewster Ecology were commissioned to undertake an ecological appraisal at Leighton Park School in Reading in order to inform a planning application for an extension to an existing building at the site. The ecological baseline conditions at the site were established in October 2015 through a combination of desk study and Extended Phase 1 Habitat Survey.

Desk based consultation confirmed that the site itself does not hold any form of statutory or non-statutory nature conservation designation although a number of Local Wildlife Sites are located within the surrounding area including Whiteknights Park, Whitley Park Farm/ St Patrick's Hall Pond and The Cowsey. However due to the habitats present on the application site and their physical separation from the designated sites, none would be considered of particular relevance. Local records received from the Thames Valley Environmental Records Centre (TVERC) indicate the presence of a number of protected or notable species associated with the surrounding area including a variety of birds, invertebrates, reptiles and bats.

The Phase 1 Habitat survey undertaken in October 2015 identified that the site was dominated by amenity grassland, buildings and areas of hard standing which were considered of limited ecological interest and represents the most suitable areas of the site to support development. A small number of semi-mature trees are also associated with the site and would require removal as a result of the proposed works. The loss of these trees is considered unlikely to result in a significant adverse impact when considered against the retention of large areas of trees and woodland in the wider school site. It is recommended that any additional site lighting should be designed to maintain retained trees and woodland as dark corridors as far as practicable to limit any potential impacts on wildlife using these features.

No evidence of bats was identified during the external and internal building inspections and both buildings associated with the site were considered of negligible potential to support roosting bats.

An Oak *Quercus robur* tree immediately outside the site boundary was also identified as supporting features suitable for use by roosting bats. Should this tree require felling or pruning as part of the proposed works further survey to establish the presence/ absence of roosting bats would be required. Optimum season for bat activity surveys is May to August inclusive although a climbing inspection check of the tree could be undertaken at any time of year.

Other considerations would include the avoidance of the bird nesting season (March-August) for any vegetation clearance. Tree planting to replace those to be lost as part of the proposed scheme, the use of native species or species of known benefit to wildlife within any soft landscaping and the provision of bird or bat boxes (i.e. incorporated as part of the new building or on retained trees) would also be recommended to provide localised enhancements at the site.

1.0 INTRODUCTION

1.1. Soltys Brewster Ecology were commissioned by Leighton Park School to undertake an ecological appraisal of a parcel of land at Leighton Park School in Reading. An extension is proposed to an existing building and to inform this a survey to establish the ecological baseline is required in the first instance.

1.2. The site is centred at grid reference SU 7320 7145 within the centre of the school campus. The surrounding area is dominated by school playing fields, existing residential development with the University of Reading campus to the north.

1.3. The current report presents the findings of an ecological desk study, Extended Phase 1 Habitat survey and building inspection undertaken at the site in October 2015. The report describes the existing ecological conditions as well as identifying any potential ecological constraints/ opportunities associated with the proposed development at the site.

2.0 METHODOLOGY

2.1. In order to establish the baseline ecological conditions on site and in the adjoining habitats, a combination of desk-based consultation, Extended Phase 1 Habitat survey and building inspection were undertaken in October 2015.

Desk study

2.2. The desk study primarily involved consultation with the Thames Valley Environmental Records Centre (TVERC) in October 2015 to identify any records of rare, protected or notable flora and fauna within the site boundary and surrounding 1km area. The search criteria also included information relating to the location and citation details (where available) for any sites designated for their nature conservation interest such as Sites of Special Scientific Interest (SSSIs) or Sites of Importance for Nature Conservation (SINCs).

Extended Phase 1 Habitat Survey

2.3. The fieldwork was undertaken on 01 October 2015 by a suitably experienced ecologist[1] and followed standard Phase 1 Habitat Survey protocol (JNCC, 1990) as amended by the Institute of Environmental Assessment (1995). All habitats within the site were classified and mapped as accurately as possible. Habitats considered to have potential to support rare, protected or otherwise notable species of flora and fauna were noted, as were any direct signs of these species (e.g. Eurasian Badger *Meles meles* setts and dung-pits). Incidental observations of birds on or flying over the site were also recorded.

2.4. A map of habitats was drawn up and target notes were used to identify features of ecological interest. Where possible, habitats were cross-referenced to any relevant important UK priority habitats or those adopted within the Local Biodiversity Action Plan (LBAP).

2.5. The survey included an external and internal inspection of the existing buildings. In order to establish the presence of roosting bats within the structures on site, an external inspection of the buildings within the site was undertaken. This survey aimed to identify: -

- if bats are, or have been, present within the buildings to be lost and, if so, which species are present;
- the type of roost (e.g. maternity roost, day roost used by males or non-breeding females, feeding perch, night roost, mating roost, transitional roost, hibernaculum);
- how bats use the buildings (e.g. location of roosting bats, flight paths and flight behaviour, exit and entrance points to the roost); and
- the intensity of use (e.g. number of bats, sex of bats, time and duration of use).

2.6. External surveys at the site involved the use of binoculars and ladders to identify possible access/entry points into all structures and aimed to identify any evidence of use by bats such as droppings, staining, prey remains etc. The survey was undertaken from ground-level around the exterior of the site buildings with ladder access (up to a maximum of 5.5m) where required, and was assisted by the use of close-focus binoculars and a high powered torch (1 million candlepower).

2.7. The surveyor searched for roost evidence (droppings, staining, scratch marks, noise, etc.) as described above and an assessment of the buildings potential to support nesting birds was also undertaken. The scope of the bat inspection survey, including timing, survey effort etc., was based on guidelines published by the Bat Conservation Trust (BCT, 2012).

[1] Full Member of the Chartered Institute of Ecology and Environmental Management.

2.8. In addition any trees present were assessed for their potential to support roosting bats and were categorised in relation to the bat roosting features (BCT, 2012). The categories are as follows:

- Known or confirmed roost.
- Category 1* - Trees with multiple, highly suitable features capable of supporting larger roosts.
- Category 1 - Trees with definite bat potential, supporting fewer suitable features that category 1* trees or with potential for use by single bats.
- Category 2 - Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
- Category 3 - Trees with no potential to support bats.

3.0 RESULTS

Desk Study

3.1 The data provided by TVERC confirmed that the site does not contain any statutory or non-statutory nature conservation designations. A number of Local Wildlife Sites (LWS) are located within the surrounding area including Whiteknights Park, Whitley Park Farm/ St Patrick's Hall Pond and The Cowsey. Whiteknights Park is designated due to the Parkland and Wood Pasture habitats and associated species it supports. Whitely Park Farm/ St Patrick's Hall LWS is designated due to the lowland mixed deciduous woodland habitats and associated bird assemblage including Bullfinch *Pyrrhula pyrrhula*, Linnet *Carduelis cannabina*, Lesser Spotted Woodpecker *Dendrocopos minor*, Spotted Flycatcher *Muscicapa striata* and Song Thrush *Turdus philomelos*. The Cowsey LWS is designated due to the lowland mixed deciduous woodland it supports.

3.2 Based on the physical separation and the habitats present on the Leighton Park School site (amenity grassland, buildings and scattered trees) these sites were not considered of particular ecological relevance. Maps indicating the location of Local Wildlife Sites in the surrounding area are displayed in Appendix I.

3.3 The TVERC data species data confirmed a number of species within the surrounding 1km area including Heath Cudweed *Gnaphalium sylvaticum*, Stag Beetle *Lucanus cervus*, Smooth Newt *Lissotriton vulgaris*, Green Woodpecker *Picus viridis*, Song Thrush, Starling *Sturnus vulgaris*, Bullfinch, Slow-Worm *Anguis fragilis*, West European Hedgehog *Erinaceus europaeus*, Common Pipistrelle *Pipistrellus pipistrellus* and other unidentified Myotid bat species *Myotis sp.*.

3.4 These records were associated with habitats in areas other than the site and were not considered of particular relevance to the Leighton Park School site based on the known habitat preferences of the species listed above, the physical separation from the site and the site conditions. Mobile species such as birds and bats in the surrounding area are considered of relevance to the site, and in particular the trees and woodland associated with the wider school site which is likely to provide nesting habitat for birds and foraging/ commuting habitat for bats locally.

Extended Phase 1 Habitat Survey

3.5 The distribution and extent of habitats within and adjacent to the site is illustrated in Figure 1 with accompanying target notes in Appendix II. The site is dominate by amenity grassland, buildings and areas of hard standing with a number of areas of ornamental shrub planting and scattered trees also associated with the site.

Amenity grassland

3.6 The site is dominated by areas of amenity grassland associated with school playing fields across site (Target Note 4, Plate 1). The grassland was regularly mown and of limited species diversity, with species present including Perennial Rye-grass *Lolium perenne*, Annual Meadow-grass *Poa annua*, Broadleaved Plantain *Plantago major*, Daisy *Bellis perennis*, White Clover *Trifolium repens* and Yarrow *Achillea millefolium*.

Trees and shrubs

3.7 Scattered native and ornamental trees were also found within the site and the surrounding area with species including Oak *Quercus robur*, Claret Ash *Fraxinus angustifolia,* Norway Maple *Acer Platanoides*, and Cedar *Cedrus sp.* (Target Note 3, 5 & 6, Plate 1, 2 & 3). Ornamental shrub planting were also found within the site including *Mahonia sp.*, Holly *Ilex sp.*, *Photinia sp.*, Rose Rosa *sp.* and Smoke Bush *Cotinus sp.*.

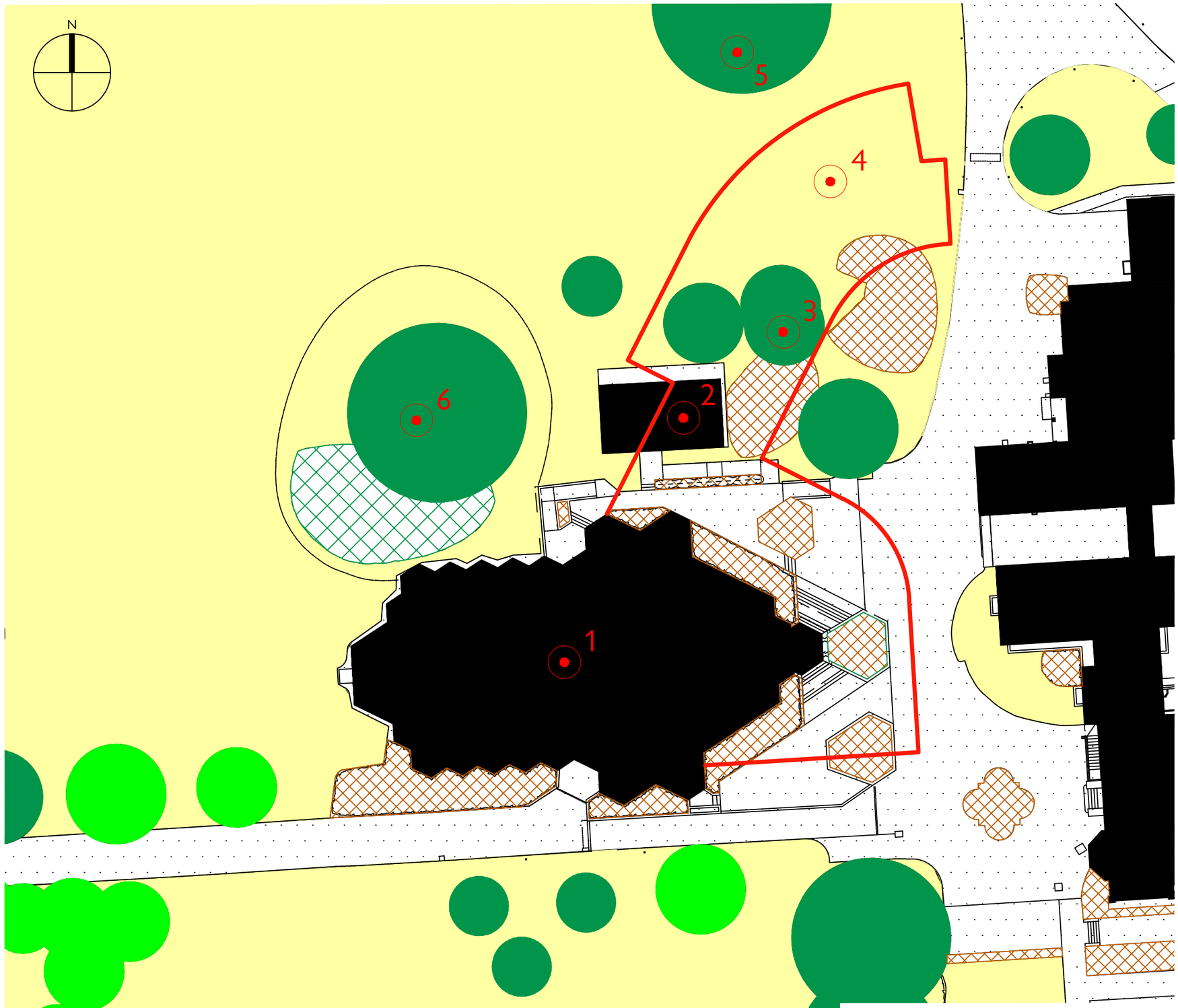
Buildings

3.8 The site also supported two buildings including a two storey brick building and a smaller demountable building. The potential of these buildings to support roosting bats is discussed in Section 3.10 below.

Plate 1. Amenity grassland and scattered trees (Target Notes 3 & 4)

Plate 2. Trees and ornamental shrub planting (Target Note 3)

Plate 3. Mature Oak tree (Target Note 6)



Key:

- Broad-leaved Tree
- Coniferous Tree
- Dense scrub
- Ornamental Shrub Planting
- Amenity Grassland
- Bare Ground/ Hard Standing
- Building
- Site Boundary
- Target Note

client/project	drawing			
Leighton Park School **Leighton Park School, Reading**	Figure 1. Phase 1 Habitat Plan			
drawing no.	revision	scale	drawn	date
E1565501/001	*	NTS@A3	AP	Oct 2015

soltysbrewster ECOLOGY

4 Stangate House
Stanwell Road
Penarth
Vale of Glamorgan
CF64 2AA

Telephone:- + 44(0) 29 2040 8476
Facsimilie:- + 44(0) 29 2040 8482
e-mail:- enquiry@soltysbrewster.co.uk

Soltys Brewster Ecology is the trading name of Soltys Brewster Ecology Ltd. Registered Offices:- 4 Stangate House, Stanwell Road, Penarth, Vale of Glamorgan. CF64 2AA. Registration No. 5779051.
Dimensions should not be scaled from this drawing, only figured dimensions are to be used. All discrepancies or queries regarding this drawing should be referred to Soltys Brewster Ecology Ltd. Soltys Brewster Ecology Ltd accept no liability for any expense, loss or damage of whatever nature and however arising from variation made to this drawing or in the execution of the work to which it relates which has not been referred to them and their approval obtained.

Fauna

3.9 In the course of the survey, a search of field signs for protected or notable species was undertaken and the potential of the habitats to support these species considered. In the context of this report, these species meet any of the following criteria:

- Species protected by British or international law;
- UK BAP Priority Species or local BAP species;
- Nationally rare or nationally scarce species;
- Species of Conservation Concern (e.g. JNCC Red List, RSPB/BTO Red or Amber Lists);

Bats

3.10 Two buildings were found within the red-line boundary including a modern two storey brick building (Target Note 1, Plate 4 and front cover) and a small demountable building (Target Note 2, Plate 6). The two storey brick building was found to have a flat roof. A small number of raised areas of roofing material were noted along the roof line but these appeared to be sealed beneath and did not lead to gaps or cavities suitable for use by roosting bats.

3.11 The roof space within this building houses stage lighting associated with the school hall below and the lights are left on throughout the day resulting in a light interior. No gaps or holes noted which could allow bat access and no evidence of roosting bats found. A boiler room with louvre vent leading to outside was also found within this building but the interior of this room was found to be light and the vents were covered in cobwebs and no evidence of roosting bats noted. Overall the brick building was considered of negligible potential to support roosting bats.

3.12 The demountable building was of plastic construction with a flat roof and lacked features suitable for use by roosting bats and as such is considered to be of negligible bat potential.

3.13 An Oak tree to the west of the site (outside the redline boundary) supported a number of rot holes, cracks and woodpecker holes which were considered to offer roosting opportunities to bats (Target Note 6, Plate 3 & 7). This tree was considered of at least Category 1 potential for roosting bats. The trees, woodland and scrub within the wider school grounds are likely to offer good foraging and commuting habitats for bats in the local area.

Birds

3.14 During the survey a number of bird species were noted on or flying over the site including Blackbird *Turdus merula*, Wood Pigeon *Columba palumbus*, Carrion Crow *Corvus corone*, Dunnock *Prunella modularis*, Blue Tit *Cyanistes caeruleus* and House Sparrow *Passer domesticus*. The species present at the time of survey would

not be considered representative of the full range of species that the site could potentially support (in winter, during the breeding season etc.).

3.15 Although none of the bird species noted would be considered particularly rare, Dunnock are included on the Amber list of birds of Conservation Concern in the UK, with House Sparrow appearing on the Red list (Eaton *et al.*, 2009).

3.16 The scrub and trees within the site and the surrounding area were considered suitable to suitable to support a variety of breeding birds as well as offering shelter and foraging opportunities.

Other species

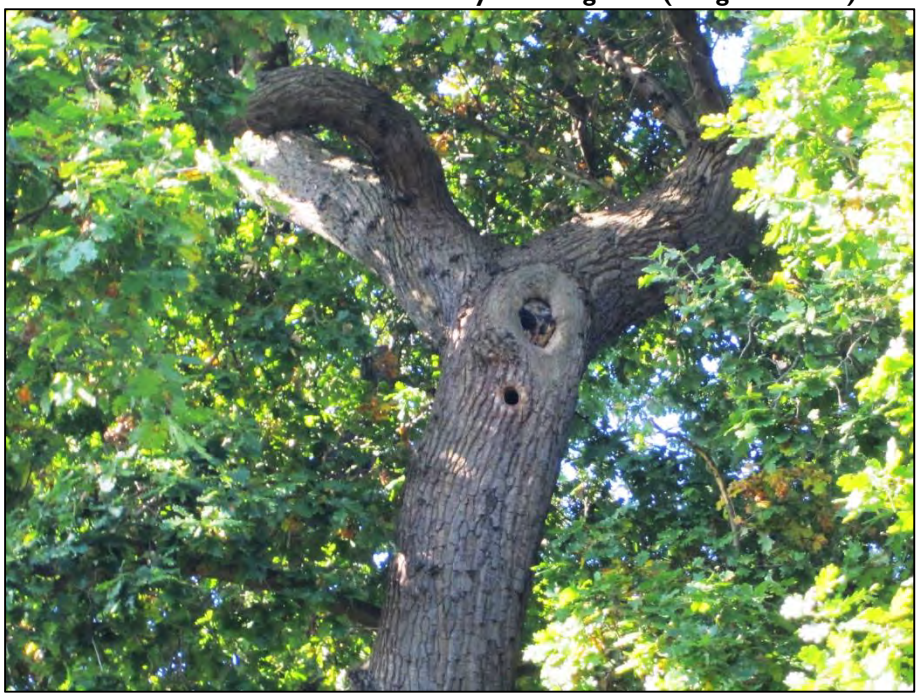
3.17 No standing water was found within the site boundary and as such the site was considered unsuitable to support breeding amphibians. Similarly the habitats within the site boundary were regularly managed resulting in a short grassland sward unsuitable to support reptiles. No evidence of use of the site by Badger was found during the current survey.

Plate 4. Two storey brick building (Target Note 1, viewed towards southern elevation)

Plate 5. Roof space above brick building (Target Note 1)

Plate 6. Demountable building (Target Note 2)

Plate 7. Oak tree with cracks and holes suitable for use by roosting bats (Target Note 6)



4.0 LEGISLATION, POLICIES AND PLANS

4.1 The following legislation and planning policy relating to nature conservation and biodiversity are considered of at least some relevance to the area surveyed and to any the proposed future development of the site.

Legislation Pertaining to the Protection of Bats

4.2 Under Annex II of the *Council Directive 92/43/EEC 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (EC Habitats Directive) some bat species are listed as of Community Interest, the conservation of which requires designation of Special Areas of Conservation (SACs); Under Annex IV of the EC Habitats Directive all bat species are listed as of Community Interest, in need of strict protection. In England and Wales, the EC Habitats Directive has been transposed into law in 1994 and, following recent amendments is set out in the *Conservation of Habitats & Species Regulation 2010* to give bats, their breeding sites and resting places a high level of strict protection making it an offence (subject to certain specific exceptions) to deliberately capture or kill/injure a bat, to damage or destroy a place used for shelter or protection or to deliberately disturb a bat in such a place.

4.3 Bats are also afforded protection within England and Wales under the Wildlife and Countryside Act 1981 (as amended); Countryside and Rights of Way Act 2000; Natural Environment and Rural Communities Act 2006.

Legislation Pertaining to Birds

4.4 Under the Wildlife & Countryside Act 1981 (as amended) all wild birds are protected against killing or injury and their nests against damage or destruction whilst they are being built or contain eggs/dependent young.

Natural Environment and Rural Communities Act 2006

4.5 Section 40 of the Natural Environment and Rural Communities Act 2006 (the NERC Act) places a duty ('the biodiversity duty') on every public authority - including a local authority and a local planning authority – to have regard to the purpose of conserving biodiversity (which also includes restoring or enhancing a population or habitat). Of the key principles, the most relevant to this site are those directed at maintaining and promoting biodiversity, as well as preventing harm to biodiversity.

National Planning Policy Framework (2012)

4.6 This document set out the Government's planning policies for England and how these are expected to be applied. Chapter 11 deals with Conserving and Enhancing the Natural Environment and states:

The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Reading Borough Local Development Framework - Core Strategy

4.7 The Reading Borough Local Development Framework Core Strategy was adopted in January 2008. This document will guide how the city will grow socially, economically and environmentally and sets out the authorities planning policies. Policies within the Core Strategy considered of relevance to the current site include:

CS36: Biodiversity and Geology

a) Development should retain, protect and incorporate features of biodiversity or geological interest (including protected species and their habitats) found within the application site into their schemes.

On sites with recognised biodiversity or geological value, development will not be permitted where there would be a direct or indirect adverse impact on the site, unless it can be clearly demonstrated that: -

i. The need for development clearly outweighs the need to protect the value of the site; and

ii. ii. Appropriate compensation, impact minimisation, mitigation and compensation are provided.

b) Local Nature Reserves and Wildlife Heritage Sites will be safeguarded and where possible, enhanced. Permission will not be granted for any development that would adversely affect a designated nature reserve or Wildlife Heritage Site.

c) Any development that would sever or threaten the integrity of an established wildlife link, as indicated on an adopted proposals map, will not be permitted. Where applicable, developments should be designed to protect,

consolidate, extend and enhance the network of wildlife links and corridors in and adjoining the Borough, working with neighbouring authorities where appropriate.

CS38: Trees, Hedges and Woodlands

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

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 The combination of desk and field surveys undertaken at the site identified a limited range of habitat types dominated by amenity grassland, hard standing and buildings with a small number of scattered trees and ornamental shrub planting also associated with the site. The amenity grassland, ornamental shrub planting, buildings and hard standing were considered to be of low intrinsic ecological value and represent the most suitable areas of the site to support development. Although a number of semi-mature trees would be lost as a result of the proposed works this is considered unlikely to result in a significant adverse impact when considered against the retention of larger areas of woodland and trees within the wider school site.

5.2 No evidence of bats was identified during the external and internal building inspections and no features suitable to support roosting bats were found. As such both buildings were considered of negligible bat potential and no further survey of these buildings would be required to inform the proposed works. However in the unlikely event a bat were discovered all works should immediately cease and the project ecologist or Natural England contact for advice on how to proceed.

5.3 The Oak tree directly adjacent to the site was identified as supporting features suitable for use by roosting bats (Category 1 potential). Should this tree require felling or pruning as part of the proposed works further survey to establish the presence/ absence of roosting bats would be required. The optimum season for bat activity surveys are May to August inclusive. Alternatively, if surveys are required prior to May 2016 to inform pruning or felling works, a climbing inspection by a licensed bat worker with rope-access training could be undertaken – there is no seasonal constraint on this type of survey. If evidence of roosting bats was found, specific mitigation and a European Protected Species (EPS) licence would be required to permit works to the tree. To minimise impacts on bats and other species foraging/ commuting over the site it is also recommended that development seeks to minimise impacts on any retained habitats such as trees and woodland through sensitive design of site lighting (see Appendix III).

5.4 Given the high likelihood of a number of birds nesting on site clearance of trees and scrub vegetation associated with any future development should be undertaken outside of the bird nesting season (i.e. clearance possible between September and February inclusive) or preceded by a thorough check for the presence of nesting birds. All wild birds are protected against killing and injury under the Wildlife and Countryside Act 1981 (as amended) and their nests against damage or destruction whilst in use or being built.

5.5 Further recommendations include the use of native species or species of known benefit to wildlife in any soft landscaping scheme associated with future development and the use of diverse seed mixes for lawn areas to enhance the habitat for local birds and invertebrates. Replacement tree planting would also be recommended to mitigate for those to be lost as part of the proposed scheme. The incorporation of bird and bat boxes as part of any proposed development – i.e. incorporated into the new building or on retained trees - would provide localised enhancement for these groups.

REFERENCES

Bat Conservation Trust (2012) *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

Eaton, M. A. Brown, A. F. Noble, D.G. Musgrove, A. J. Hearn, R. Aebischer, N. J. Gibbons, D.W. Evans, A. & Gregory, R.D. (2009) *Birds of Conservation Concern 3: The Population Status of Birds in the United Kingdom, Channel Islands and Isle of Man British Birds* 102: 296-341

Institute for Environmental Assessment (1995) *Guidelines for Baseline Ecological Assessment*. E & FN Spon, Hong Kong.

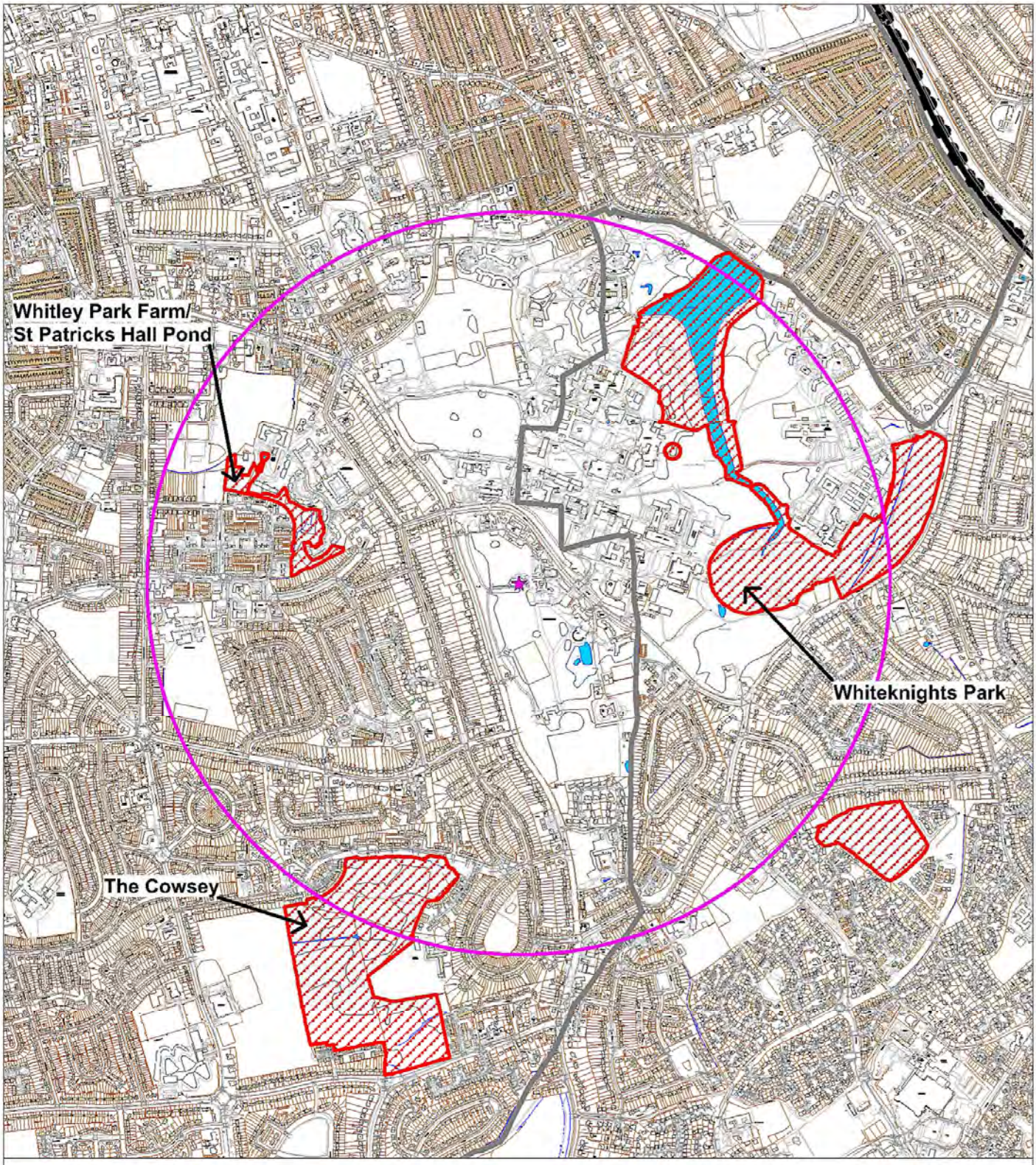
Joint Nature Conservation Committee (JNCC) (1990) *Handbook for Phase I Habitat Survey. A technique for environmental audit.* JNCC, Peterborough.

Mitchell-Jones, A.J. (2004) *Bat mitigation guidelines; January 2004*. English Nature. Peterborough.

APPENDIX I DESK-STUDY INFORMATION RECEIVED FROM TVERC

Leighton Park School, Reading
Designated Wildlife Sites Map

TVERC



Site central grid reference

Scale: 1:15,000

Search Area

Local Wildlife Site

Map produced by Thames Valley Environmental Records Centre in 2015

© Crown Copyright. All rights reserved Oxfordshire County Council Licence No 100023343 (2015)
FOR REFERENCE PURPOSES ONLY, NO FURTHER COPIES MAY BE MADE

APPENDIX II TARGET NOTES TO ACCOMPANY PHASE 1 HABITAT SURVEY MAP

Target Note	Description/Comment
Birds seen/ heard: Blackbird, House Sparrow, Carrion Crow, Dunnock, Blue Tit, Wood Pigeon.	
1	Two storey building of brick construct with a flat roof. Small number of raised areas of roofing material noted along the roof line but these appeared to be sealed beneath and did not lead to gaps or cavities suitable for use by roosting bats. No other gaps or holes suitable for use by roosting bats noted. Roof space above building houses stage lighting associated with the school hall below. Lights left on throughout the day and roof space very light as a result. No gaps or holes noted which could allow bat access and no evidence of roosting bats found. Boiler room with louvre vent leading to outside was light internally with vents covered in cobwebs and no evidence of roosting bats noted. Building of negligible bat potential.
2	Small demountable building of plastic construction. No gaps or holes suitable for use by roosting bats and building is of negligible bat potential.
3	Group of semi-mature Oak trees with Norway Maple immediately outside site boundary to the south. No gaps or holes noted in any trees which would be suitable for use by roosting bats. All category 3 bat trees. Associated ornamental shrub planting includes species such as *Mahonia sp.*, Holly, *Photinia sp.*, Rose and Smoke Bush.
4	Regularly managed amenity grassland of limited species diversity. Species present include Perennial Rye-grass, Annual meadow Grass, Broadleaved Plantain, Daisy, White Clover and Yarrow.
5	Mature Oak tree. No obvious gaps or holes suitable for use by roosting bats. Category 2 bat tree.
6	Mature Oak tree. Evidence of past pruning works and limb removal. Numerous cracks, rot holes and woodpecker holes present. Category 1 bat tree.

APPENDIX III ADVICE SHEET ON THE USE OF STREET LIGHTING AND BATS

The following advice in relation to residential lighting where bats may be an on-site or influencing factor is based up on information contained within an article by Emery (2008) and available via Urbis lighting (http://www.urbislighting.co.uk/).

Firstly in terms of light source, the use of Low Pressure Sodium (SOX) is recommended, as these lamps emit light at a single wavelength with a very low amount of UV meaning that very few insects are attracted to this light source. This light also has a minimal effect on the bats. However, the use of these light sources is currently being phased out.

Next best would be High Pressure Sodium (SON) as these lamps emit light over a slightly broader wavelength spectrum attracting more insects but as these are a more intense light source they have a greater effect on bats. There are ranges of metal halide lamps available and they are classed as white light sources, these emit light at wavelengths across the colour spectrum but can also emit high levels of UV. These can attract large numbers of insects and are also a closer match daylight meaning these have an even greater impact on bats (avoid these types).

The lighting types recommended would be 8m Column heights (rather than 10m - however, see notes below) using (in order of preference) external rear louvres, or internal rear louvres, or 120mm rear shields. Either flat or curved glass protectors may be used with the former being preferred, as light spillage is marginally less than curved. However, there may be conflicts with using some louvres (plus, spacing will be reduced and so more lighting columns may be required, therefore increasing costs).

Units may be obtained from numerous suppliers, as the above-mentioned items are standard items. However, talking to Matt Emery from Urbis Lighting with regards to bats is recommended. He is a lighting engineer firstly with an interest in bats and how light influences their behaviour and this information is also recommended by the Institute of Lighting Engineers (ILE) http://www.ile.org.uk/.

FURTHER NOTES

Lower Mounting Height

This option is easily implemented and would generally result in a reduced column cost.

In comparison studies between 10m and 8m column heights, the overall spread of light has been reduced by lowering the column height, however due to the lower mounting height the intensity of the light on the road has been increased with the higher illuminance values spreading further. This option reduces the column spacing by 20% resulting in more columns being required thereby neutralising the benefit of the lower unit costs.

Louvres – External

External louvres are used with a flat protector so there is no spacing constraint from the optic. As with the shields mentioned below, these are externally mounted so there are increased stresses on the supporting columns and brackets from additional wind loading. As with the internal louvres (see below) an additional unit cost will incur.

In comparative studies, the external louvre almost completely blocks all the light emitted behind the units. However, this does have a greater effect on the column spacing achievable as large amounts of light are being blocked. Excellent for light sensitive species of bats (i.e. *Myotis sp.*). Urbis therefore recommends the use of its ZX2 and ZX3 product designs that have been proven to reduce light on a road scheme in the Sirhowey Valley, Caerphilly.

Louvres - Internal

Internal louvres are not available with a flat protector due to the limited space available inside the optic. Louvres are a specially designed accessory with each one requiring testing resulting in higher additional costs per unit than any of the other options described here.

In comparative studies, the internal rear louvre greatly reduces the spread of light behind the units. However it does reduce the column spacing achievable, this is because the louvre is blocking the light emitted from the optic making the luminaire less efficient.

Rear Shield

Shields are becoming more widely available on a range of luminaires but as they are an accessory they incur an extra cost per luminaire. The longer the length of the shield the more effective it is, however the increased surface area causes greater stresses on the supporting column and bracket due to wind loading.

In comparative studies, the shield has helped reduce the spread of light behind the lighting column by almost 40%. However, the column spacing is reduced by 20% resulting in the possibility of more columns being required and also there is an increased unit cost for the accessory.

Using Flat Glass Protectors

The majority of Traffic Route luminaires are available with a flat glass protector option, so this method of limiting light emitted at high angles is easily available at little or no extra cost on unit prices. However the range of protectors typically used on traffic route lighting include curved bowls due to their less restrictive light distribution.

In comparison studies results show that there is little effect on the spread of light when a flat protector is used to light roads. This is due to the decreased column spacing required to still achieve the required lighting specification on the road increasing the intensity of the light in the area. The decrease in column spacing will also mean that extra columns could be required on longer stretches of road increasing costs.

REFERENCES

Bat Conservation Trust. (2008). *Bats and Lighting in the UK; Version 2, January 2008.* http://www.bats.org.uk/

Emery, M. (2008). *Effect of Street Lighting on Bats*. Urbis Lighting Ltd., 2 January 2008. http://www.urbislighting.com/