

UOR Health and Life Sciences: Technical Summary Note

1. INTRODUCTION

- 1.1 This note on bats and lighting has been prepared for the University of Reading to provide advice on how to minimise the effects of the proposals for the Project Health and Life Sciences Building on the local bat assemblage. Where it is not fully possible to mitigate impacts, compensation measures have been identified.
- 1.2 Planning Condition 4 of the Wokingham Borough Council decision notice requires the submission of a lighting design strategy that accommodates the requirements of light sensitive nocturnal species (such as bats).
- 1.3 Two bat surveys were completed on the former Engineering building in September (2016) and the habitat surrounding the building was described as “sub-optimal and well-lit” (Phase 2 Bat Survey Report, EPR 2016).

Ecological Context

- 1.4 The University of Reading, Whiteknights Campus is subject to moderate-high levels of baseline lighting from various sources including security lighting associated with the car parks, footpaths and University buildings. As only low levels of bat activity were recorded around the former Engineering building, it is not thought to be a regularly used commuting route for bats, but is used by low numbers of foraging bats, such as Common Pipistrelles *Pipistrellus pipistrellus*.
- 1.5 The largest concern of light-spill is onto the Harris Gardens to the East of the Site which has been identified as an important foraging and commuting route for common species of bats. The other areas which have been highlighted as low impact lighting include the locations of the newly installed wildlife boxes (bird and bat boxes) and the new planted areas. With the addition of artificial lighting, bats could become confused, have reduced foraging opportunities, alter their commuting paths or even abandon a roost altogether, depending on the light sensitivity of the species. Increasing artificial light so much that a bat abandons a roost could constitute as an offence (Garland and Markham, 2007), therefore it is important that use of an area by bats is thoroughly assessed prior to the addition of artificial lighting (BCT, 2018). Other studies have shown that bats are also more prone to predation in artificially lit areas, and that they modify their behaviour in response to this threat.
- 1.6 Stone (2013) developed a matrix which identified which species are most sensitive to light pollution. The species most frequently recorded at The University of Reading (including Common and Soprano Pipistrelles *Pipistrellus pygmaeus* and Noctule bat (*Nyctalus noctula*) are all listed as “Low Impact” species with regards to the addition of artificial light whilst foraging or commuting. Other species are more sensitive to light pollution, these include the Horseshoe bats (*Rhinolophus.sp.*), Long-eared bats (*Plecotus sp.*) and Barbastelle *Barbastella barbastellus* bats, but none of which were recorded on Site (RCEP, 2012).
- 1.7 On this basis, methods to reduce light-spill have been suggested in order to avoid illuminating the “Low lighting corridors” at the same time as provide a safe environment for students and provide accessibility around the University Campus.

2. IMPACT AVOIDANCE MEASURES & LIGHTING MITIGATION

Lighting Mitigation

Aims and Objectives

2.1 As it relates to bats, the proposed lighting strategy has three principal elements:

- External lighting will be minimised to the extent required for safety and orientation;
- Direct lighting of key areas of bat foraging, commuting and roosting habitat will be avoided; and
- Where lighting is required, its obtrusiveness will be minimised through the application of best practice measures undertaken in accordance with technical guidance issued by the Bat Conservation Trust (2016) and the Institution of Lighting Professionals (2018).

Reducing Light-spill

2.2 As discussed in the Project Health and Life Sciences Ecological Management Plan, (EPR 2018), the best method of impact avoidance is reducing the light-spill as much as possible. This will be achieved by adopting the following methods:

- Minimise the number of lights on site to lower the overall levels of light pollution and reduce the impact that lighting will have on wildlife;
- All light will be directed downwards, in order to minimise light-spill in the wider area.
- The proposed lighting system is fitted with hood and guards built-in to reduce light-spill;
- All proposed luminaires will be IP65 or above and comply with all relevant British and European standards. The lighting design and installation work shall be carried out in accordance with British Standard 5489-1 for Security Risks.
- A LED light source is going to be installed. The characteristics for most LED luminaires do not emit any UV or Infra-red (IR) and are a sharp cut off in the photometric output and minimal backward light spill. LED units are also the equivalent to a convention flat glass luminaire, which minimises any upward light so reducing sky glow and light spill;
- Use luminaries that ensure light is not emitted at an angle greater than 70°. The proposed lights have a 60-degree optic tilted at 30 degrees.

Summary and Conclusions

2.3 If the above methods can be adopted in addition with the recommendations made in the Ecological Management Plan (EPR, 2018) it is not thought the proposals and additional lighting associated with the Project Health and Life Sciences building will cause any significant impact to the local bat assemblage on the Whiteknights Campus.

3. REFERENCES

Bat Conservation Trust (2009) Bats and the Built Environment Series: Bats and Lighting in the UK

Bat Conservation Trust (2014) Interim Guidance: Artificial lighting and wildlife – Recommendations to help minimise the impact of artificial lighting

Bat Conservation Trust (2018): Guidance Note on Bats and Artificial Lighting in the UK (Guidance Note 08/18)

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland*.

RCEP Report on Artificial Light in the Environment – 23/04/12 RCEP report summarising environmental impacts of artificial lighting

EPR Engineering Building, UOR Whiteknights Campus - Phase 2 Bat Report (September 2016)

EPR Ecological Management Plan Report (April, 2018)

Stone, E.L. (2013) Bats and lighting: Overview of current evidence and mitigation

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A handwritten signature in purple ink, appearing to read 'Grace Turner', with a long horizontal stroke extending to the right.

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