



TECHNICAL NOTE

DATE:	01 November 2023	CONFIDENTIALITY:	Public
SUBJECT:	Lighting Design – Ecological Assessment		
PROJECT:	70118178	AUTHOR:	Lydia White
CHECKED:	Joanne O’Keeffe	APPROVED:	Sarah Proctor

INTRODUCTION

This document has been prepared by WSP UK Ltd (WSP) on behalf of Vinci Building (the ‘Client’) in support of discharging of Planning condition 29 for the planning application 132567/JO/2021. The planning application relates to the variation of conditions associated with a new 150 bed Adult Mental Health Unit (AMHU) with associated infrastructure (the ‘Proposed Development’) at North Manchester General Hospital, M8 5RB (the ‘Site’).

In order to discharge planning condition 29, as shown below, a detailed lighting report, which takes account of local ecology is to be provided to Manchester City Council.

‘Planning condition 29: Notwithstanding the lighting scheme outlined within the External Lighting Report referenced NMGNPH-RAM-VV-XX-RP-E-6320, received by the City Council as Local Planning Authority on 10 November 2020, prior to the installation of any external lighting, a more detailed lighting report, which also takes account of local ecology, shall be submitted to and agreed in writing by the City Council as Local Planning Authority.

Reason - To safeguard amenity, in the interests of public safety and local ecology, pursuant to policies DM1, EN15 and SP1 of the Manchester Core Strategy.’

Local policy EN15 of the Manchester Core Strategy¹ states that “Developers will need to demonstrate how they have assessed and taken full account of the potential effect of their proposed development on biodiversity or geodiversity”.

A lighting report² has been created detailing the lighting design and specifications to be used during the operational phase of the Proposed Development. This document summarises the lighting information provided by the Client, within the detailed lighting report and assesses the suitability of the proposed external lighting scheme in relation to the local ecology, with a focus on nocturnal species.

METHODS

A detailed review of the documentation relating to the ecology on Site has been undertaken alongside a review of the relevant lighting documents and good practice guidelines. The lighting specifications have been compared to the recommendations set out in good practice guidelines in order to assess the suitability of proposed lighting scheme and potential impacts to the local ecology.

The following reports and documentation, regarding lighting specifications and good practice guidelines have been consulted:

¹ Manchester City Council (2012). Manchester’s Local Development Framework Core Strategy Development Plan Document (adopted 11th July 2012). Available online at: [file:///C:/Users/UKLKW003/Downloads/Final_Core_Strategy_low_res%20\(1\).pdf](file:///C:/Users/UKLKW003/Downloads/Final_Core_Strategy_low_res%20(1).pdf) [accessed 24th October 2023].

² Whitecroft Lighting; Lighting Design Summary, Rev 09, dated 06.07.2023

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- WSP (2020) New Park House Mental Health Unit (MHU) Preliminary Ecological Appraisal.
- WSP (2020) New Park House AMHU Bat Survey Report.
- RSK Biocensus (2021) North Manchester General Hospital Bat Survey Report – South Enabling Works.
- Steven Whitcher, RSK Biocensus (2021) Bat Mitigation Class Licence Method Statement.
- Bat Conservation Trust and Institute of Lighting Professionals (2023). Guidance Note 08/23. Bats and Artificial Lighting at Night.
- Institution of Lighting Professionals (2021). Guidance Note 01/23. The Reduction of Obtrusive Light.
- Ramboll; Electrical Services Entrance Building Roof Lighting Layout; NMGNPH-RAM-V2-02-DR-E-6320, dated 19/11/2021.
- Whitecroft Lighting; Lighting Design Summary, Rev 09, dated 06.07.2023 (the ‘Lighting Report’).
- Whitecroft Lighting; BREEAM and Light Pollution Compliance Summary, dated 19.09.2023.
- Whitecroft Lighting; P22 Manchester General Hospital Park House; 21084_CALC_EX_R09; dated 06/07/2023. and
- Whitecroft Lighting; External Lighting Layout; 21084 EX 00001, dated 08/12/2022.

ASSESSMENT

WSP provided ecological support for the Proposed Development in 2020, comprising a Preliminary Ecological Appraisal (PEA) and Bat Activity Surveys. Updated Bat Activity Surveys were undertaken by RSK Biocensus in 2021 to comply with planning conditions.

The 2021 surveys identified the presence of two common pipistrelle *Pipistrellus pipistrellus* day roosts within two of the buildings on Site. Mitigation detailed in the Bat Mitigation Class Licence Method Statement requires the erection of bat boxes within the tree line to the east of the Site.

The Site is located within a suburban environment and was noted to be brightly illuminated on all aspects during the night-time surveys. Across surveys completed by WSP and RSK Biocensus, incidental bat activity recorded consisted of small numbers of common pipistrelle foraging and commuting on Site, with activity primarily occurring in vegetated areas such as the trees to the east of the Site. No evidence of other protected or notable nocturnal species such as badger *Meles meles* or hedgehog *Erinaceus europaeus* were recorded during the PEA or incidentally on bat surveys.

Artificial lighting at night can affect species behaviour and have negative consequences on survival rates. Good practice guidance published by the Institute of Lighting Professionals (ILP) and Bat Conservation

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Trust (BCT) (BCT and ILP, 2023³) outlines that the following considerations be made to protect nocturnal species when designing a lighting scheme:

- All luminaires should lack UV elements when manufactured and LED luminaires should be used where possible.
- A warm white light source (2700 Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012⁴).
- Column heights should be carefully considered to minimise light spill and glare visibility.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered (the maximum value of which should be below 5% in a suburban environment, (ILP,2021)).
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged.
- Baffles, hoods or louvres to reduce light spill should only be used as a last resort.

An assessment of the lighting specifications in relation to good practice guidelines is provided within **Table 1** below.

It is understood that the external lighting detailed will be subject to a curfew and be automatically switched off between the hours of 11pm to 7am⁵, and no building will be lit directly as a night-time feature⁶. It is also understood that lighting will avoid and light spill will be significantly reduced around features of ecological interest will be placed, such as the treeline to the east, in which the majority of bat activity was recorded and the newly instated bat boxes⁷. Within this area, the west edge receives the highest level of illuminance (45lx at the brightest point)⁷.

³ Bat Conservation Trust and Institute of Lighting Professionals (2023). Guidance Note 08/23. Bats and Artificial Lighting at Night.

⁴ Stone, E.L., Jones, G., Harris, S. (2012). *Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats*. Global Change Biology. 18, 2458-2465

⁵ Whitecroft Lighting; BREEAM and Light Pollution Compliance Summary

⁶ Whitecroft Lighting; BREEAM and Light Pollution Compliance Summary

⁷ Whitecroft Lighting; P22 Manchester General Hospital Park House; 21084_CALC_EX_R09

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Table 1 - Lighting specifications and assessment against good practice guidelines

Good practice guideline	Do the lighting specifications meet the recommendations of good practice guidelines? (Y/N)								
	Lighting reference								
	EXT-1	EXT-2	EXT-3	EXT-4	EXT-5	EXT-6	EXT-7	EXT-9	EXT-10
LED Luminaires	Y	Y	Y	Y	Y	Y	Y	Y	Y
2700 Kelvin	N	N	N	N	N	N	N	N	N
Peak wavelength higher than 550nm	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Upward light ratio of less than 5%	N	Y	Y	Y	Y	Y	Y	Y	N
Security light triggered by motion sensors	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Use of baffles, hoods or louvres	N	N	N	N	N	N	N	N	N

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All lighting on Site will contain LED bulbs, consistent with good practice guidelines and dark corridors will be maintained around the Site, including around the trees located to the east of the Site.

Upward light spills of lights EXT-2 through to EXT-9 comply with good practice. However, the upward light ratio of EXT-1 and EXT-10 is higher than the tolerance of 5% for suburban environments. These two light types are largely linked to the perimeters and pathways around and within the Proposed Development, including around landscaped areas containing ornamental and native tree species at the hospital entrance. Some EXT-1 light types are located on the perimeter of the Proposed Development bordering the trees to the east. The Kelvin levels for all external lights are higher than the suggested maximum of 2,700K.

The curfew, in which external lights will be automatically switched off between the hours of 11pm to 7am⁸, does not ensure darkness at dusk for much of the year. Artificial lighting may delay or prevent the emergence of bats from roost sites. Good practice guidelines suggest motion sensor lighting where possible and the avoidance of illuminating roost sites to mitigate this consequence.

Given the anecdotal evidence relating to the previously high levels of light on Site in conjunction with the low levels of bat activity, occasional roost use by small numbers of bats and the absence of other nocturnal species on Site, it is considered unlikely that the proposed lighting scheme will negatively impact the local ecology.

CONCLUSION

Previous ecological appraisals identified limited opportunities for nocturnal species in the Site due to the sub-urban nature and high levels of artificial light at night (ALAN). Despite this, small numbers of common pipistrelle were recorded using trees and vegetation around the Site. Common pipistrelle are frequent inhabitants of urban areas and are often found utilising urban environments such as buildings for roost sites. Although they have been recorded avoiding gaps that are well lit when commuting, and retaining dark corridors within urban areas remains important mitigation for this species. Despite this, the species are more tolerant of ALAN and are considered a ‘light opportunistic’ species, having been recorded foraging around white light sources (BCT and ILP, 2023).

The lighting specifications provided by the client were found to largely follow best practice guidelines, with dark areas around features of ecological interest and LED luminaires used with minimal upward light spills. The Kelvin levels for all external lights are higher than the suggested maximum of 2,700K. Additionally, the upward light ratios of EXT-1 and EXT-10 located around external walkways are higher than the tolerance of 5% for suburban environments but the combined average upwards light ratio for all lights, as calculated during the BREEAM assessment, falls below 5%.

Due to the sub-urban and previously well-lit nature of the Site along with a commitment to a lighting scheme which generally complies with best practice guidelines, no adverse impacts of the lighting design to

⁸ Whitecroft Lighting; BREEAM and Light Pollution Compliance Summary



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wildlife are anticipated. Where bat boxes are yet to be installed, it is recommended that these are placed to the east of the mitigation area, where illuminance is lowest. To further comply with good practice guidelines, warmer light sources (maximum 2,700K) could used where possible.