

External Lighting – Proposed Bat Corridor Assessment

Project:	Llangatwg Community School	Date:	26.11.2025
Job Number:	WA0347	Author:	JP
Work Stage:	RIBA Work Stage 4	Checked:	KS
Report Purpose:	External Lighting – Proposed Bat Corridor Assessment	Rev:	P01

Executive Summary

This report presents an external lighting assessment for the proposed bat corridor locations at the Llangatwg Community School site. The corridors under consideration are situated along the North, East, and West boundary lines, as indicated by the red markings on the landscape plan shown in Figure 1.

Lighting calculations have been undertaken to determine the lux levels at these proposed corridor locations under two scenarios:

- + With the sports pitch floodlighting switched on
- + With the sports pitch floodlighting switched off

When floodlighting is in operation, the average illuminance levels across the proposed bat corridors range from 3 lux to 20 lux, with localised bright patches reaching between 10 lux and 78 lux. These values exceed the recommended thresholds for bat corridors as set out in ILP Guidance Note GN08/23: *Bats and Artificial Lighting at Night*.

In addition, the proposed location of the bat house will be affected by light spill from the sports pitch floodlighting.

In the absence of floodlighting, the proposed bat corridor to the North maintains light levels below 0.25 lux. The Eastern corridor remains below 1 lux, provided that additional motion detection is implemented alongside timeclock and photocell controls on back-of-house lighting to minimise bright spots. The Western corridor generally remains below 0.5 lux, except at the main entrance road where a localised bright spot of just over 2 lux occurs due to the proposed roadway lighting; this level decreases to below 1 lux within a few meters.

It is important to note that all general external lighting will be controlled via timeclock settings to operate only during hours when natural daylight is insufficient.

The use of the two pitch floodlights will be managed through a community booking system for out-of-hours school access. Pitch availability is limited to the following times:

- + **Weekdays: 8:00 AM – 10:00 PM**
- + **Saturdays: 9:00 AM – 8:00 PM**
- + **Sundays: 9:00 AM – 6:00 PM**

Floodlighting will typically be required only during the autumn and winter months and will operate exclusively within the above timeframes and only when confirmed bookings are in place.

Introduction

Llangatwg Community School will be provided with external lighting on the building perimeter, access roads, pedestrian walkways, and Sports Pitch floodlighting.

To date, the external lighting has been designed to support outdoor functionality and meet Secured by Design Gold standards, whilst adhering to the requirements of ILP GN01/21 The Reduction of Obtrusive Light. The site has been classified as Environmental Zone E2, in accordance with Table 2 of GN01/21.

Sports pitch lighting has been specified to achieve an average illuminance of 200lux with a uniformity ratio of 0.6, satisfying Class II requirements as defined in BS EN 12193:2018 – Light and Lighting: Sports Lighting. Given the high levels of illumination associated with these facilities, this study evaluates the potential impact of external lighting on proposed bat corridors within the development site. The proposed location of these corridors is indicated in Figure 1.

It is important to note that all general external lighting will be controlled via timedclock settings to operate only during hours when natural daylight is insufficient.

The use of the two pitch floodlights will be managed through a community booking system for out-of-hours school access. Pitch availability is limited to the following times:

- + Weekdays: 8:00 AM – 10:00 PM
- + Saturdays: 9:00 AM – 8:00 PM
- + Sundays: 9:00 AM – 6:00 PM

Floodlighting will typically be required only during the autumn and winter months and will operate exclusively within the above timeframes and only when confirmed bookings are in place.



Figure 1- Landscape plan (Bat Corridor routes indicated by red lines)

Calculation

Software Utilized:

DiaLux Evo lighting calculation software was used to determine the illuminance (lux) levels for each of the proposed Bat Corridors. For clarity within the calculations, the corridors have been designated as North, East, and West.

Calculation Surfaces:

- + Horizontal Plane: Surfaces measuring 2m in width were positioned at a height of 2m above ground level.
- + Vertical Plane: Surfaces measuring 2m in width were placed such that their centre was 2m above ground level.

This arrangement creates a 2m × 2m corridor representation, enabling lux level calculations across both horizontal and vertical planes.

Calculation Scenarios:

Two separate lighting calculations were conducted:

1. Without Floodlights - to establish baseline lux levels within the bat corridors.
2. With Floodlights - to assess the impact of floodlight operation on corridor illuminance.

Results

Without floodlights

Eastern Corridor:

- + Average Illuminance: 1.41lux
- + Maximum Bright Spots:
 - + Vertical Plane: 12.4lux
 - + Horizontal Plane: 8.92lux

General Observation: Most of the corridor remains below 0.2lux, despite localized bright spots. **These bright spots occur at back of house locations, so the use of a motion sensor PIR activation in addition to timeclock photocell control will considerably limit the amount of time these lights are in use.**

Western Corridor:

- + Average Illuminance: 0.18lux
- + Maximum Bright Spots:
 - + Vertical Plane: 2.24lux
 - + Horizontal Plane: 0.32lux

General Observation: Most of the corridor is below 0.1lux, indicating minimal light intrusion. The bright spot of 2.24lux on the vertical plane is caused by the first and second lighting column on entrance road. Although, this drops below 1lux within a few meters.

Northern Corridor:

- + Average Illuminance: < 0.1lux
- + Maximum Bright Spot:
 - + Vertical Plane: 0.23lux
 - + Horizontal Plane: 0.009lux

General Observation: The corridor maintains very low light levels throughout.

With Floodlights

Eastern Corridor:

- + Average Illuminance: 20.9lux
- + Maximum Bright Spots:
 - + Vertical Plane: 39.3lux

- + Horizontal Plane: 47.5lux

General Observation: Most of the corridor is greater than 20lux, indicating light intrusion levels greater than required for the bat corridor.

Western Corridor:

- + Average Illuminance: 3.42lux
- + Maximum Bright Spots:
 - + Vertical Plane: 10lux
 - + Horizontal Plane: 2.23lux

General Observation: Most of the corridor is greater than 10lux, indicating light intrusion levels greater than required for the bat corridor.

Northern Corridor:

- + Average Illuminance: 9.77lux
- + Maximum Bright Spot:
 - + Vertical Plane: 43.9lux
 - + Horizontal Plane: 77.8lux

General Observation: Most of the corridor is greater than 10lux, indicating light intrusion levels greater than required for the bat corridor.

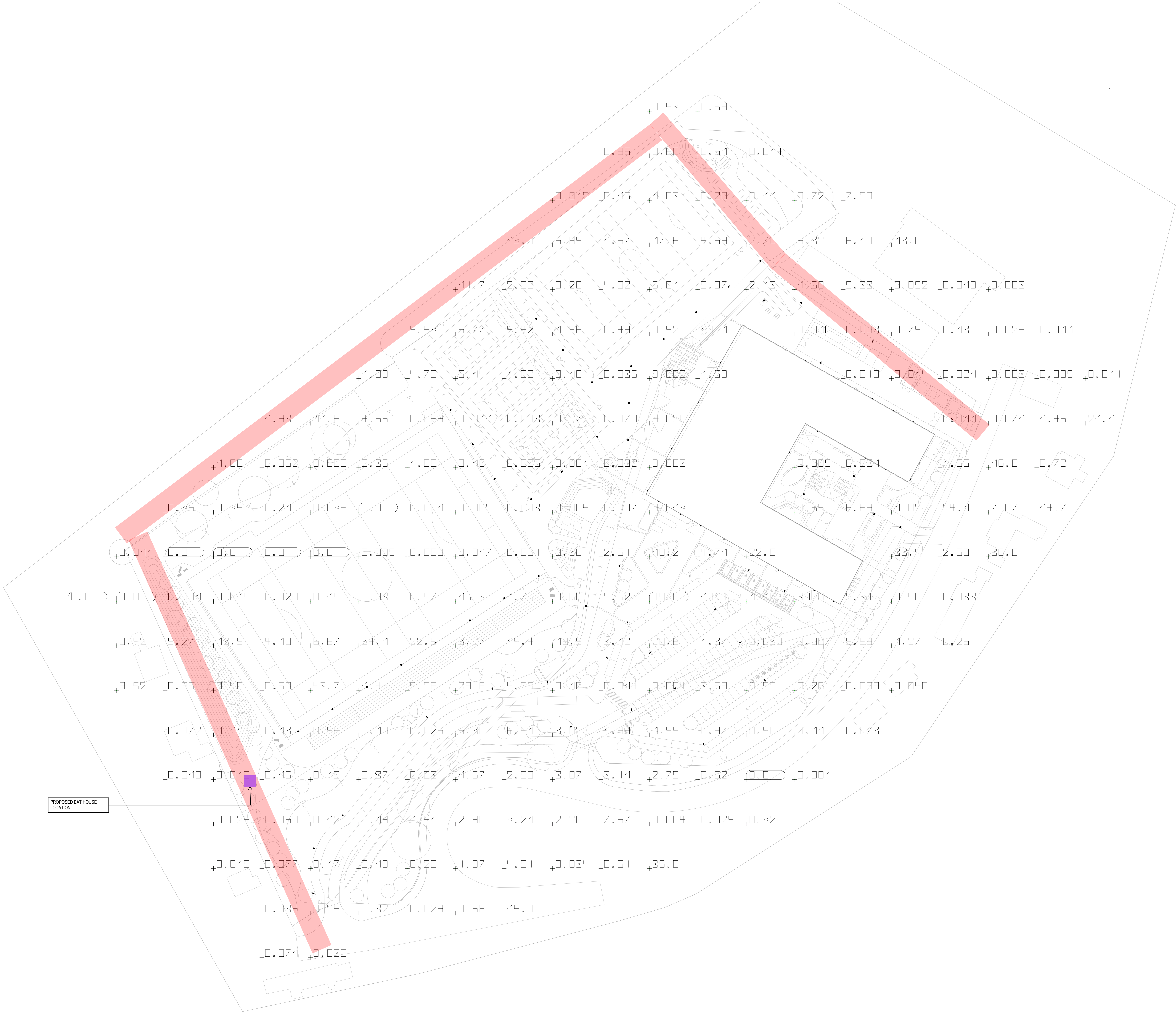
Conclusion

In the absence of sports pitch floodlighting, the proposed bat corridors experience minimal light intrusion. Where bright spots occur along the Eastern corridor, these can be effectively managed using PIR motion sensors, significantly reducing the duration of illumination.

When sports pitch floodlighting is in operation, light levels within the bat corridors will exceed the thresholds recommended in ILP GN08/23. Additionally, the proposed location of the bat house will be subject to light spill from the pitch lighting.

It is also important to note that external lighting will generally operate during autumn and winter evenings, a period when bats are typically in hibernation. However, some overlap may occur in the weeks immediately before and after hibernation. This should be reviewed and confirmed in consultation with the project ecologist.

APPENDIX A – External Lighting Calculations – Bat Corridors Without Sports Pitch Floodlighting



PROPOSED BAT HOUSE
LOCATION

NOTES-LEGEND

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS INTENDED AS DESIGN INTENT ONLY.
3. DRAWING TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWINGS:
 - 26CC07-TBA-54-00-D-E-6310 - GROUND FLOOR LIGHTING LAYOUT SHEET 1 OF 4
 - 26CC07-TBA-54-00-D-E-6311 - GROUND FLOOR LIGHTING LAYOUT SHEET 2 OF 4
 - 26CC07-TBA-54-00-D-E-6312 - GROUND FLOOR LIGHTING LAYOUT SHEET 3 OF 4
 - 26CC07-TBA-54-00-D-E-6313 - GROUND FLOOR LIGHTING LAYOUT SHEET 4 OF 4
 - 26CC07-TBA-S1-XX-D-E-6001 - EXTERNAL ELECTRICAL SERVICES LAYOUT
4. REFERENCE SHOULD BE MADE TO THE ASSOCIATED SCHEDULE OF LUMINAIRES.
5. ALL EXTERNAL LUMINAIRES TO BE HOODED TO LIMIT UPWARD LIGHT SPILL.
6. ALL EXTERNAL LIGHTING WILL BE CONTROLLED VIA TIMECLOCK AND PHOTOCELL CONTROLS. ADDITIONALLY, BACK OF HOUSE EXTERNAL LIGHTING WILL HAVE ADDITIONAL MOTION SENSOR PIR ACTUATION TO LIMIT LIGHT SPILL WHEN THESE AREAS ARE NOT IN USE.

PROPOSED BAT CORRIDOR LOCATIONS
INDICATED BY RED HATCHING

P01	FOR INFORMATION	JP	KS	26.11.2025
Rev	Doc	Description	Drawn/Chkd	Date

FOR INFORMATION

**TROUP
BYWATERS**
+ ANDERS
Bringing Buildings to Life

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Project
LLANGATWG COMMUNITY HIGH SCHOOL

Title
ELECTRICAL SERVICES
EXTERNAL LUX PLOT - WITHOUT
SPORTS PITCH LIGHTING

Client
NEATH PORT TALBOT COUNCIL
Architect
AUSTIN-SMITH/LORD

Project No.	Drawn By	Date	Checked	Scale
WA0347	RN	26.02.2025	KS	NTS

Acad Model	Revision
	P01

Drawing No.
26CC07-TBA-55-XX-D-E-6303

APPENDIX B - External Lighting Calculations – Bat Corridors With Sports Pitch Floodlighting



NOTES-LEGEND

1. DO NOT SCALE FROM THIS DRAWING.
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 - 26CC07-TBA-54-00-D-E-6311 - GROUND FLOOR LIGHTING LAYOUT SHEET 2 OF 4
 - 26CC07-TBA-54-00-D-E-6312 - GROUND FLOOR LIGHTING LAYOUT SHEET 3 OF 4
 - 26CC07-TBA-54-00-D-E-6313 - GROUND FLOOR LIGHTING LAYOUT SHEET 4 OF 4
 - 26CC07-TBA-S1-XX-D-E-6001 - EXTERNAL ELECTRICAL SERVICES LAYOUT
4. REFERENCE SHOULD BE MADE TO THE ASSOCIATED SCHEDULE OF LUMINAIRES.
5. ALL EXTERNAL LUMINAIRES TO BE HOODED TO LIMIT UPWARD LIGHT SPILL.
6. ALL EXTERNAL LIGHTING WILL BE CONTROLLED VIA TIMECLOCK AND PHOTOCELL CONTROLS. ADDITIONALLY, BACK OF HOUSE EXTERNAL LIGHTING WILL HAVE ADDITIONAL MOTION SENSOR PIR ACTIVATION TO LIMIT LIGHT SPILL WHEN THESE AREAS ARE NOT IN USE.

PROPOSED BAT CORRIDOR LOCATIONS
INDICATED BY RED HATCHING

P03	STAGE 4 ISSUE - UPDATED FOR PLANNING		JP	KS	19.09.2025
P02	STAGE 3 ISSUE - UPDATED FOR PLANNING		JP	KS	29.05.2025
P01	STAGE 3 ISSUE		JP	KS	25.04.2025
Rev	Doc	Description	Dwn	Chkd	Date

STAGE 4

TROUP
BYWATERS
+ ANDERS
Bringing Buildings to Life

3 Park Place
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Project
LLANGATWG COMMUNITY HIGH SCHOOL

Title
ELECTRICAL SERVICES
EXTERNAL LUX PLOT

Client
NEATH PORT TALBOT COUNCIL

Architect
AUSTIN-SMITHLORD

Project No.	Drawn By	Date	Checked	Scale
WA0347	RN	26.02.2025	KS	NTS

Acad Model	Revision
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Drawing No.	Revision
26CC07-TBA-55-XX-D-E-6301	P03