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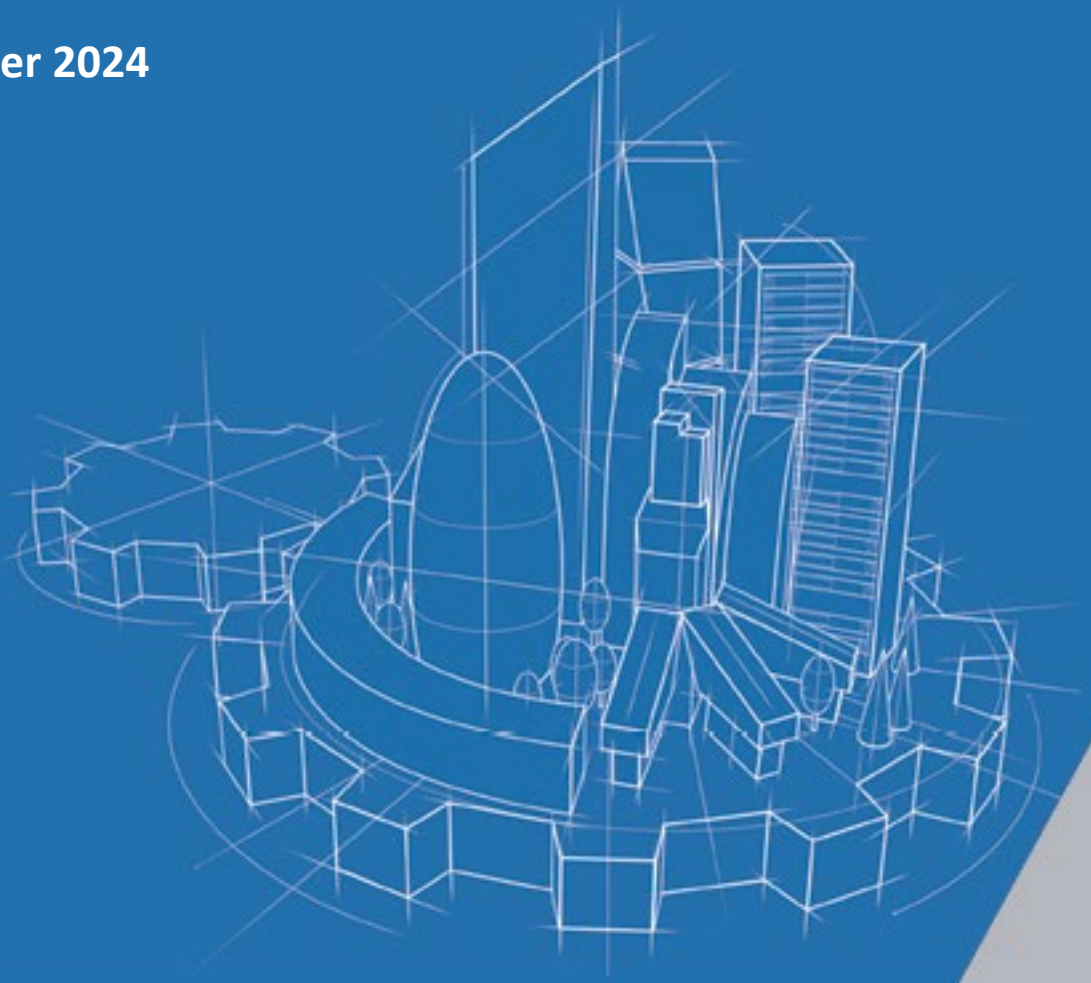
ARK DATA CENTRES

Spring Park Expansion – P6 Corsham Land South of Westwells Road

External Lighting Report

1 October 2024



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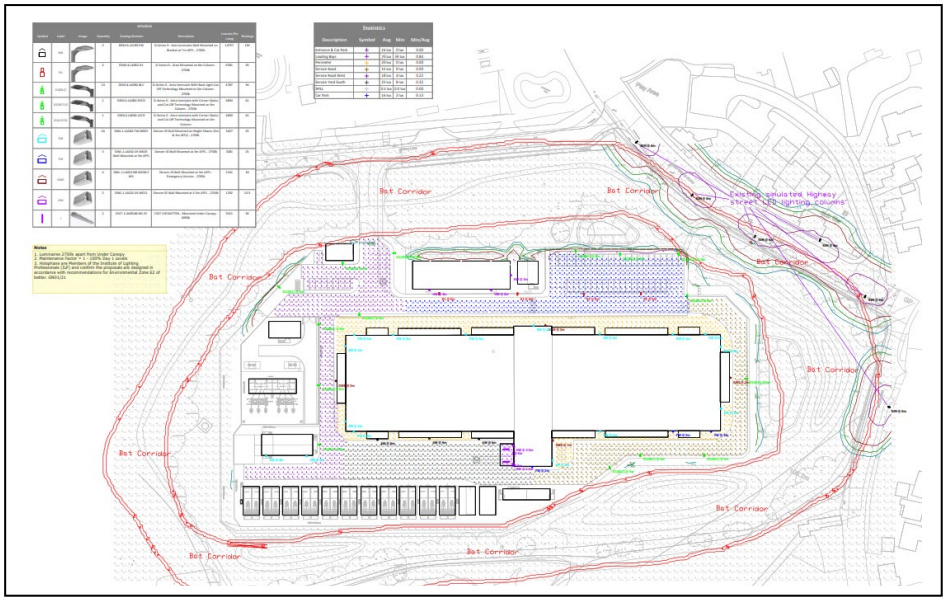
Spring Park Expansion – P6 Corsham Land South of Westwells Road

External Lighting Report

Building P6,
Spring Park,
Land South of Westwells Road,
Corsham

9123.0800.000.010.JCARDOC.001.R06

1 October 2024



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Version	Date	Author	Checked	Details
P01	12 May 2023	LC	PJL / AK	RIBA Stage 2 Issue
P02	25 May 2023	LC	PJL / AK	Appendix A updated in accordance with TylerGrange comments
P03	25 May 2023	LC	PJL / AK	Updated in accordance with Savills comments
P04	11 April 2024	LC	PJL / AK	Site Plan Updated
P05	01 October 2024	PJL	LC/AK	Updated in accordance with comments received from the planning authority
P06	15 October 2024	PJL	LC/AK	Cover and flysheet date amended

Contents

1.0 Introduction to Project

This document has been produced to identify the 'Stage 2' external lighting installation for the Spring Park Expansion – P6 Corsham development located on the land south of Westwells Road, Corsham and ensuring compliance with the conditions of Planning Permission.

The associated 'Stage 2' lighting lux plots within this report have been based upon the information from the external lighting design calculations and are based upon the worst case 100% output values from these dimmable luminaires.

The lighting lux plots which have been produced are based upon the 'Stage 2' external lighting scheme which demonstrates that the lighting does not impact on the adjacent ecological corridors which have been identified as bat habitat especially within the protected wildlife corridors and the area of retained and improved woodland.

The external luminaires shall have a correlated colour temperature of 2700K which is a warm white light source in accordance with the requirements of ILP Guidance note 08/23 Bats and artificial lighting at night.

All proposed external luminaires are designed to minimise light spillage into adjacent areas utilising efficient and well controlled manufactured optics and shielding with careful consideration of their placement within the external lighting scheme.

2.0 Design Consideration

2.1 General

The external lighting scheme has been designed to address the conditions of the Planning requirements.

The effects of light pollution have been carefully assessed and considered to ensure that any potential nuisance pollution to the commuting Bat corridors and zones and neighbouring premises and the effects of sky glow caused by upward light spillage is fully addressed.

The lighting design has also addressed energy efficiency as well as the impact on the surrounding wildlife.

The Environment Agency identifies how artificial external lighting affects the local wildlife by creating a false dawn which can disrupt bird's behaviour and disrupting tree and plant habits that are controlled by the day length.

The external lighting plan details the Ecologists identified dark corridors for the commuting bats that will be maintained around the site.

The existing Bat roost for the lesser horseshoe, greater horseshoe and myotis bats, which are considered to be SAC bats (as identified by the ecology specialists) are within the slope shaft, which is off site, refer to Ecologist report for further details. There is no external lighting within the vicinity of the slope shaft.

To ensure the proposed development addresses the issues of light pollution, the external lighting shall be designed, installed and commissioned in conjunction with the requirements of the following design guidance documents:

- The Environmental Protection Act 1990 – (Section 79)
- Clean Neighbourhood and Environment Act 2005 – (Section 102)
- CIBSE Lighting Guide LG6
- BS 5489-1:2013 - Code of Practice for Design of Road Lighting
- BS EN 13201-3:2016 – Road Lighting
- CIBSE Guidance Notes for/ Reduction of Light Pollution
- ILP Guidance Note 08/23: Bats and artificial lighting in the UK.

JCA have developed the external lighting design with Holophane Lighting design team who are qualified members of the Institute of Lighting Professions (ILP) and as such Holophane Lighting design have validated that the proposed lighting scheme conforms to the recommendations for environmental zone E2 as detailed in the ILP document 'Guidance Notes for the Reduction of Obtrusive Light – Guidance Note 01:20'.

2.2 Proposed Lighting level.

The proposed external lighting scheme for building P6 has been based upon not exceeding the average lighting levels (at ground level), in conjunction with the requirements of, BS5489, BS EN 13201 and CIBSE Lighting Guide LG6.

The tables below details both the proposed average and minimum illuminance levels in Lux at ground level for the proposed external lighting scheme.

Isolux lux contour lines have been clearly detailed and defined on the proposed external lighting plan these are shown for when the dimmable luminaires are operating at 100% output.

The external lighting lux lines (Isolux lines) have been detailed on the external lighting layout for the following; 0.3 Lux, 0.5 Lux and 1.0 Lux, along with the calculated Lux values figures also detailed on the layout with the dimmable luminaires operating at 100% output.

External Lighting Scheme Design Lux Levels		
Area Description	Proposed Average, illuminance (lux)	Proposed Minimum illuminance (lux)
Entrance & Car park	16	0
Loading Bays	70	59
Building Perimeter	20	0
Service Road	15	0
Service Road West	18	4
Service Yard South	25	8
Spill	0.5	0
Car Park	16	2

2.3 Glare control and lighting pollution assessment

The proposed external lighting scheme design has been based upon utilising LED luminaires with zero upward light components and high-quality control optics, in conjunction with light baffles to prevent any back spillage of light into the adjacent ecological corridor. Full consideration has been given to minimising the following:

- Light Spill
- Upward Light and Upward Reflected Light
- Direct Glare
- Light Scatter

The specification of the proposed LED luminaires will ensure a high-quality designed and manufactured product, with good photometric control characteristics for meeting with the recommendations for environmental zone E2 as detailed in the ILP document 'Guidance Notes for the Reduction of Obtrusive Light – Guidance Note 01:20'

2.4 Lighting Control

The lighting control proposed for the P6 external lighting scheme design is based upon dividing the external lighting installation into a minimum of two external lighting control channels which serve the access roads and service yards areas. This allows for the option of a reduced lighting level for security purposes, with the main lighting control being provided via a photocell and time switch arrangement.

The wall mounted lighting on the building perimeter will be controlled via photocell and presence detection (with manual override).

The lighting for generators will be used only for maintenance purposes and controlled via time switch, presence detection and photocell with manual override.

Emergency lighting will be provided on site located directly above the building exit doors in accordance with BS5226. Emergency lighting will be provided via converted luminaires (maintained mode) with 3h batteries integrated into designated luminaires.

The proposed external lighting control measures shall comprise of:

- Wall mounted luminaires which shall be dimmed by 50% output to 1000 Lumen.
- Dusk to Dawn photocell sensor shall be installed to control external lighting during hours of darkness.
- The VCR Security Room will be provided with the facility to operate dimmer switches to allow security staff to raise or lower associated external lighting to suit the sites operational requirements.
- When Dusk to Dawn sensor activates to turn off lighting the external lighting levels will reset and when called for (next Cycle) will return at 50% output.
- External maintenance Staircases and Maintenance Roof Lighting;

  The external staircases and roof lighting will be available during dusk to dawn period and will only initiate when the maintenance lighting switches are operated. These maintenance light switches will also then provide the facility for local switching. Should the Luminaires be inadvertently left on they will automatically switch off when the dusk to dawn sensor activates on detection of day light. In addition, the luminaires will not automatically re-illuminate during the next cycle until either of the switches are operated.

Notes:

- The project external lighting calculations have been based upon the worst case 100% output illuminance value for each of the dimmable luminaire types
- The external lighting calculations include for light spill from the P6 building
- There is no existing site lighting
- There is no existing site entrance road lighting
- There is no adjacent site lighting
- The external lighting calculations have included for the existing highway street lighting installation, with best endeavours to match as best the existing street lighting positions and their LED columns to provide a baseline

3.0 Conclusion

Based on the 'Stage 2' External lighting information, the lux plot calculations layouts are provided within the Appendix and these are based on the worst case 100% output illuminance values for the dimmable luminaires.

The 'Stage 2' External lighting plots demonstrate that the external lighting levels are within the requirements of the Planning Conditions. It is evident also from the external lighting calculation plots that for the areas that are outside of the P6 site boundary the lux levels are zero. This ensures that there is no adverse effect to the surrounding areas, which is especially important to the ecological corridor on the northern boundary.

Energy efficiency of the proposed external lighting system is addressed by ensuring automatic lighting control measures are designed and applied to the scheme. The light sources shall be all low energy use, utilising quality LED luminaires with long life. These external luminaires shall have a correlated colour temperature of 2700K which is a warm white light source in accordance with meeting the requirements of ILP Guidance note 08/23 Bats and artificial lighting at night.

JCA have developed the external lighting design with the Holophane Lighting design team who are qualified members of the Institute of Lighting Professions (ILP) and validate that the proposed lighting scheme conforms to the recommendations for environmental zone E2 as detailed in the ILP document 'Guidance Notes for the reduction of Obtrusive Light – Guidance Note 01:20'.

The provision of the temporary site lighting installation during the construction phase of the works would be fully assessed to ensure that the external lighting is purely limited to localised lighting to meet the requirements dictated by the Planning Condition.

4.0 Luminaire Schedule

Schedule							
Symbol	Label	Image	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	AW		3	DSX0.4.LA182.FW	D-Series 0 - Area luminaire Wall Mounted on Bracket at 7m AFFL - 2700k	14757	130
	B1		4	DSX0.4.LA082.AY	D-Series 0 - Area Mounted on 6m Column - 2700k	6581	56
	D1(BLC)		13	DSX0.4.LA082.BLC	D-Series 0 - Area luminaire With Back Light Cut-Off Technology Mounted on 6m Column - 2700k	4787	56
	D1(RCCO)		1	DSX0.4.LA082.RCCO	D-Series 0 - Area luminaire with Corner Optics and Cut-Off Technology Mounted on 6m Column - 2700k	4830	61
	D1(LCCO)		1	DSX0.4.LA082.LCCO	D-Series 0 - Area luminaire with Corner Optics and Cut-Off Technology Mounted on 6m Column	4830	61
	EW		16	DWL.1.LA042.FW.W025	Denver iD Wall Mounted at Height Shwon (3m & 4m AFFL) - 2700k	3427	25
	FW		3	DWL.1.LA042.AY.W025 Wall Mounted at 3m AFFL	Denver iD Wall Mounted at 3m AFFL - 2700k	3281	25
	GWE		4	DWL.1.LA032.NR.W018.EM3	Denver iD Wall Mounted at 3m AFFL - Emergency Version - 2700k	2241	18
	HW		5	DWL.1.LA022.AY.W011	Denver iD Wall Mounted at 3.5m AFFL - 2700k	1292	10.3
	I		2	CSVT.1.LM0548.M1.SY	CSVT LED BATTEN - Mounted Under Canopy - 4000k	5011	36

5.0 Appendix A – Proposed external lighting layouts with lux plot

Notes

1. Luminaires 2700k apart from Under Canopy
2. Maintenance Factor = 1 - 100% Day 1 Levels
3. Holophane are Members of the Institute of Lighting Professionals (ILP) and confirm the proposals are designed in accordance with recommendations for Environmental Zone E2 of better. GN01/21

Schedule

Symbol	Label	Image	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	AW		3	DSX0.4.LA182.FW	D-Series 0 - Area luminaire Wall Mounted on Bracket at 7m AFFL - 2700k	14757	130
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	D1(RCCO)		1	DSX0.4.LA082.RCCO	D-Series 0 - Area luminaire with Corner Optics and Cut-Off Technology Mounted on 6m Column - 2700k	4830	61
	D1(LCCO)		1	DSX0.4.LA082.LCCO	D-Series 0 - Area luminaire with Corner Optics and Cut-Off Technology Mounted on 6m Column	4830	61
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	I		2	CSVT.1.LM0548.M1.SY	CSVT LED BATTEN - Mounted Under Canopy - 4000k	5011	36

Statistics

Description	Symbol	Avg	Min	Min/Avg
Entrance & Car Park	+	16 lux	0 lux	0.00
Loading Bays	+	70 lux	59 lux	0.84
Perimeter	+	20 lux	0 lux	0.00
Service Road	+	15 lux	0 lux	0.00
Service Road West	+	18 lux	4 lux	0.22
Service Yard South	+	25 lux	8 lux	0.32
SPILL	+	0.5 lux	0.0 lux	0.00
Car Park	+	16 lux	2 lux	0.13

NOTES:
FOR BUILDING LAYOUTS AND DESCRIPTION REFER TO ARCHITECTURAL DRAWING 22077-PL1101.

HOLOPHANE
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Rev	Drawn By	Date	Chkd By	Date	Aprvd By	Date
P04	STAGE 2 ISSUE FOR PLANNING					
	CF	30.09.24	LC	30.09.24	PA	30.09.24
P03	STAGE 2 ISSUE FOR PLANNING					
	LC	11.04.24	LC	11.04.24	LC	11.04.24
P02	STAGE 2 ISSUE FOR PLANNING					
	LC	02.06.23	LC	02.06.23	LC	02.06.23
P01	STAGE 2 ISSUE FOR PLANNING					
	LC	03.05.23	LC	05.05.23	LC	05.05.23

Revisions

Approval Status

A - Approved
B - Approved with Comments
C - Do Not Use

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Client

ARK DATA CENTRES

Project

SPRING PARK EXPANSION
CORSHAM

Drawing Title

SITE PLAN
EXTERNAL LIGHTING LAYOUT

Status S5 – SUITABLE FOR CLIENT APPROVAL

Scale 1:500 @A0 Proj.No. OPP09123

Drawing No. 9123-JCA-ST-XX-D-E-63001 Revision P04

DATE PLOTTED: 30.09.24

FILE NAME: X:\OPP09123 - ARK PFS\JCA\Drawings\Drawn\9123-JCA-ST-XX-D-E-63001.dwg