Cross Keys Manchester

External Lighting Assessment
Ref: P2194-NOV-EXT-001

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AMENDMENT HISTORY

REVISION	DESCRIPTION	DATE	AUTHOR	CHECKED
A	First Issue	26.02.24	R. Grubb	B. Duckworth
B	Revised Luminaire	28.02.24	R. Grubb	B. Duckworth
C	Revised GA's	09.05.24	R. Grubb	B. Duckworth
D	Updated to suit revised TGA General arrangemnts	06.03.25	R. Grubb	B. Duckworth

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1 EXECUTIVE SUMMARY

The aim of this lighting environmental impact report at Cross Keys was to identify the physical effects that the ground floor garden lighting may have on the surrounding areas.

The design goal was to provide adequate horizontal illumination for the external walkways during non-daylight hours which provides a safe method of passage.

Any adverse nuisance spill light and/or glare impact to the surrounding residences has been minimised and controlled while fulfilling the functional needs of the project.

The lighting design proposed by Novo provides an optimal combination of luminaire choice, height, location, and controls to achieve the required illumination on the escape route whilst avoiding light pollution and associated light spill.

The calculations demonstrate no adverse impact to residents above existing ambient values of illumination already in place.

In conclusion, the proposal to provide external lighting to the ground floor garden at Cross Keys appears to be achievable without an adverse impact on residents living within the immediate area.

2 INTRODUCTION

The design goal was to provide adequate horizontal illumination for the external walkways during non-daylight hours which provides a safe method of passage without any potential nuisance lighting to the surrounding residents.

The basis of this report is to acknowledge, consider and apply the specific requirements of the Institute of Lighting Professionals (ILP) Guidance Note on the Reduction Of Obtrusive Light and to provide the new rooftop areas with the required lighting.

2.1 SITE LOCATION & CONTEXT

Cross Keys is a new build residential development within Manchester. The 9-story development consists of a large number of apartments & amenity space.

Generally, no surrounding buildings look on to the garden area where the lighting is to be positioned.

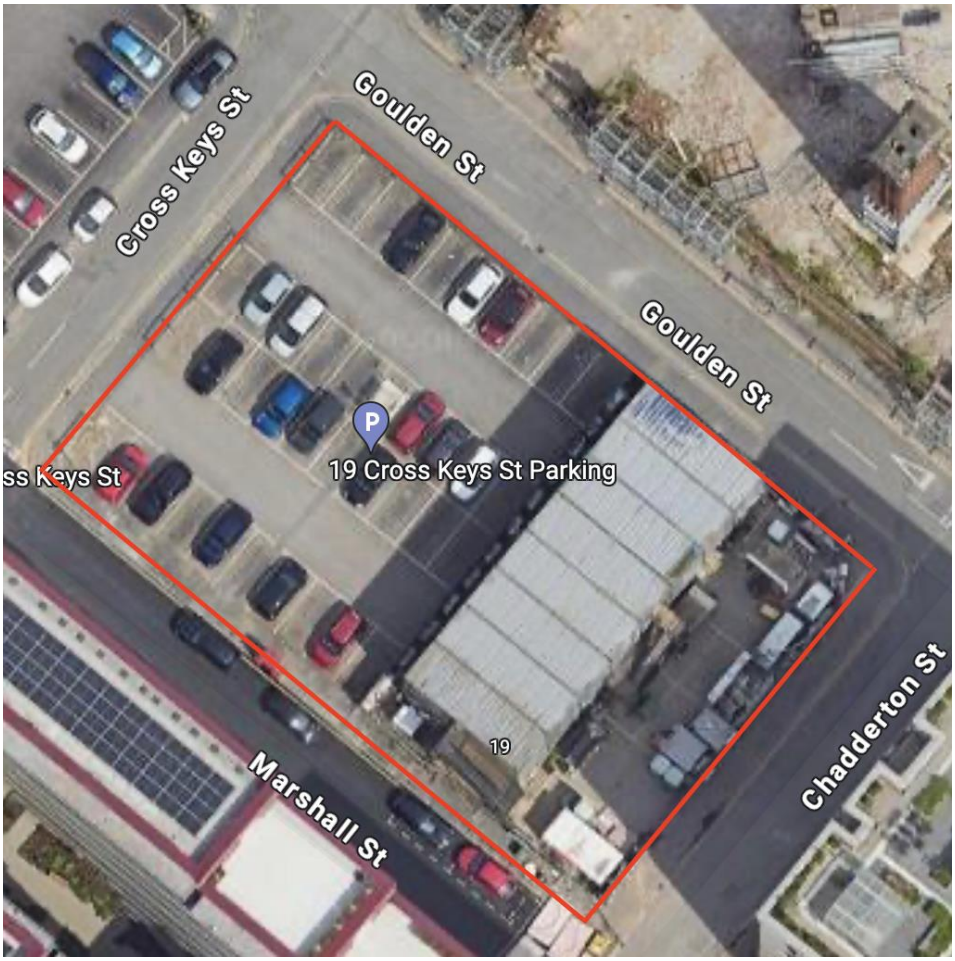

Figure 1: Cross Keys Location Map

The proposed lighting is to provide an illuminated walkway on the ground floor garden areas. This is to be via floor mounted bollard luminaires mounted to floor in the garden. Additional feature Festoon type lighting will be provided between proposed building features and garden furniture.

3 LEGISLATION & DESIGN GUIDANCE PERFORMANCE CRITERIA

3.1 INSTITUTE OF LIGHTING PROFESSIONALS GUIDANCE GN01/21 NOTE ON THE REDUCTION OF OBTRUSIVE LIGHT 20201

The Institution of Lighting Professionals (ILP) is the UK and Ireland's largest and most influential professional lighting association.

The ILP have produced considerable design guidance with regard to obtrusive light, which is considered an industry standard in the avoidance of obtrusive light being present in external lighting installations.

In addition to wasted energy due to poorly controlled and misdirected light, the potential to cause a nuisance to surrounding areas through glare and sky glow have a potential adverse impact on local wildlife.

3.2 LUMINAIRE SELECTION

The luminaire proposed for the general walkway lights within this area is the Dark Sky 2 LED Bollard luminaire from the Apollo Lighting range or Equal and Approved. The IP66 IK10 40W LED 918 lumen 998mm high bollard is manufactured from high pressure die-cast aluminium, a colour temperature of 3000ºK and a colour rendering index exceeding 70Ra.

Figure 2: Proposed LED Bollard

The luminaire proposed for the general walkway lights, seating areas & furniture lighting within this area is the Festoon Lights LED String harness luminaire from the Festoon Lighting Range or Equal and Approved.. The IP66 5.9W LED 806 lumen mounted at 3 meters to 3.5 meters with a temperature of 3000ºK and a colour rendering index exceeding 70Ra.

Figure 3: Proposed LED Festoon Lighting

Figure 4: Proposed LED Up Lighting

The luminaire proposed for the general feature lighting within this area is the floor recessed LED spot luminaire from the Whitecroft lighting Marine SD Range or Equal and Approved. The IP66 20W LED 1620 lumen floor recessed with a temperature of 3000ºK and a colour rendering index exceeding 70Ra.

3.3 LIGHTING CONTROLS

The lighting is to be controlled via a photocell to reduce wasted energy within day light hours. The lighting will be required to be on constantly throughout the night to provide a safe illuminated walkway.

3.4 SKY GLOW & BACKSPILL

Sky glow and back spill from the proposed lighting has been negated due to the fact the luminaires are complete with the upper lid eliminating potential upward lighting. The parapet wall also assists with the reduction of spill lighting by blocking any horizontal lighting outside the building parameter.

The minimal degree of back spill is illustrated in Appendix A.

4 APPENDICES

Appendix A External Lighting Calculations & Light Spill Calculations (Ground Floor Garden)

4 APPENDICES

Appendix A

External Lighting Calculations & Light Spill Calculations (Ground Floor Garden)

Cross Keys

Installation : External Lighting

Project number	:	P2194
Customer	:	Cert Property Group
Processed by	:	Ross Grubb
Date	:	09.05.2024

Project description:
Cross Keys - Ground Floor Garden External Lighting Calculation (For Planning)

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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1 Luminaire data

1.1 ARCLUCE, INGR-S180 11W UB INOX ... (11W LED 4000K I...)

1.1.1 Data sheet

Manufacturer: ARCLUCE

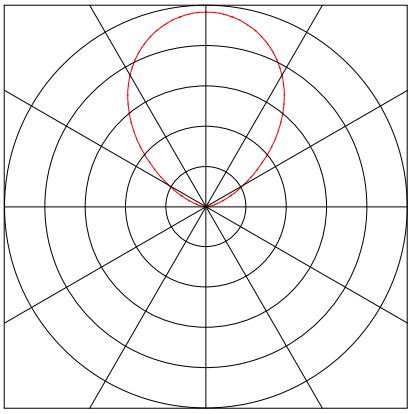
11W LED 4000K INGROUND180 Short uplighter with ultra wide flood 91° optic INOX TONDA ON/OFF **INGR-S180 11W UB**

Luminaire data

Absolute Photometry		
Luminaire efficacy	:	65.91 lm/W
Classification	:	E03 ↓0.0% ↑100.0%
CIE Flux Codes	:	0 0 0 0 100
UGR 4H 8H	:	- / -
Power	:	11 W
Luminous flux	:	725 lm
Dimensions	:	Ø134 mm x 1 mm

Equipped with

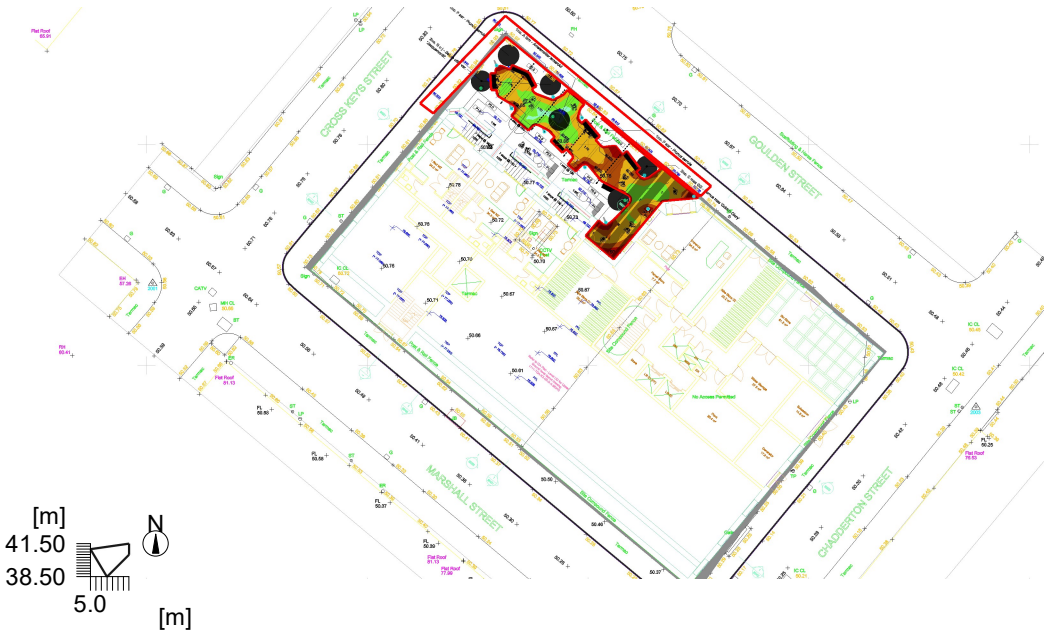
Quantity	:	1
Designation	:	LED Array, 4000K, 80CRI, <3 SDCM,
Colour	:	

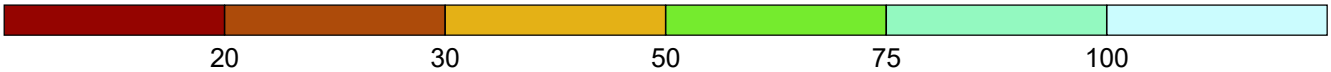


2 Exterior 1

2.1 Summary, Exterior 1

2.1.1 Result overview, Ground Floor Garden





Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux of all lamps	11355 lm
Total power	433 W
Total power per area (5.75 m²)	75.30 W/m²

Illuminance

Average illuminance	Em	40.4 lx
Minimum illuminance	Emin	7.8 lx
Maximum illuminance	Emax	81.6 lx
Uniformity Uo	Emin/Em	1:5.15 (0.19)
Diversity Ud	Emin/Emax	1:10.4 (0.1)

Type No.\Make

Apollo Lighting Ltd

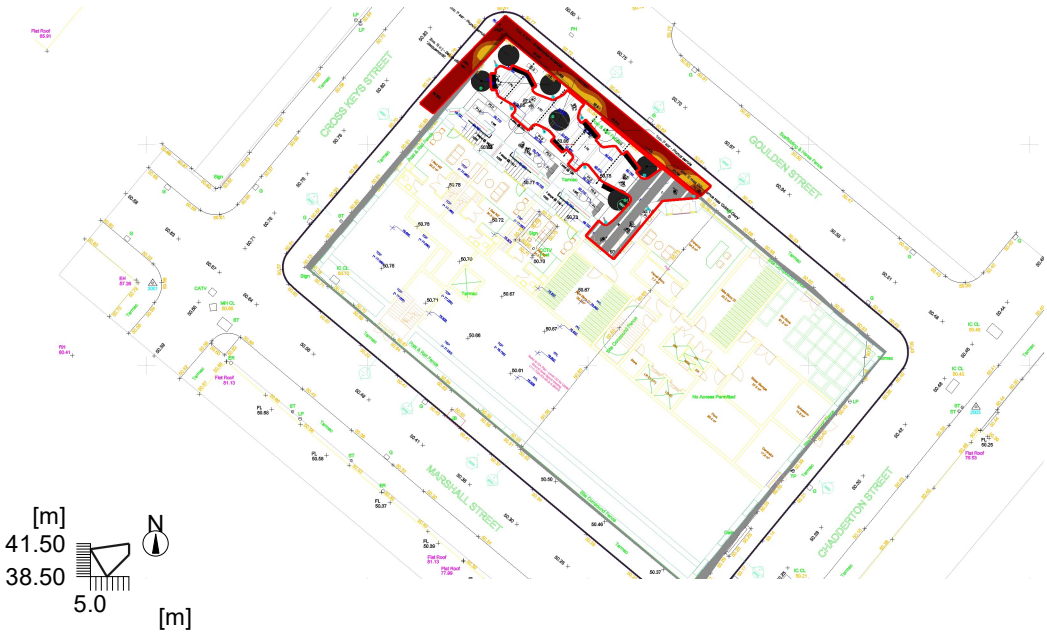
6 10
Order No. : DK236030K
Luminaire name : Dark Sky 2 Bollard 360 Deg 918 llm 40W 3000K
Equipment : 1 x LED 40 W / 918 lm

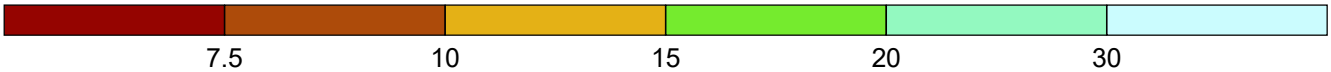
ARCLUCE

7 3
Order No. : 11W LED 4000K INGROUND180 Short uplighter with ultra wide flood 91° optic
Luminaire name : INGR-S180 11W UB INOX TONDA ON/OFF
Equipment : 1 x LED Array, 4000K, 80CRI, <3 SDCM, L80-B2 11 W / 725 lm

2.1 Summary, Exterior 1

2.1.2 Result overview, Ground Floor Garden Light Spill





Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80
Total luminous flux of all lamps	11355 lm
Total power	433 W
Total power per area (5.75 m²)	75.30 W/m²

Illuminance

Average illuminance	Em	14.7 lx
Minimum illuminance	Emin	0.3 lx
Maximum illuminance	Emax	45.4 lx
Uniformity Uo	Emin/Em	1:55.3 (0.02)
Diversity Ud	Emin/Emax	1:171 (0.01)

Type No.\Make

6 10

Apollo Lighting Ltd
Order No. : DK236030K
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7 3

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