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MIX MANCHESTER



250364

External Lighting Report

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External Lighting Report



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1.0 Introduction

This report details the proposed external lighting design and associated products for use at Mix Manchester (hereafter referred to as the "Site").

The proposed development is to be undertaken in three phases, this report details the requirements, strategies and calculation results for the detailed element only. This includes construction of four new buildings, a multistorey carpark, associated roadways, loading bays, accessible parking bays, footpaths and amenity spaces.

The site is situated approximately 1.25km north of Manchester Airport and predominantly consists of previously developed land with a surface car park. The closest residential properties are to the north east of the site. There are also nearby hotels to the north west and south of the site. There is an existing footbridge to the south of the site which is to be retained.

Due to the proximity of nearby residential buildings, the lighting design will be sensitive and compliant with the principles set out within the ILP (Institute of Lighting Professionals) Guidance Note 1, The Reduction of Obtrusive Light, minimising nuisance light to these residences and nearby hotels. As the site is also in close proximity to Manchester Airport care has been taken to keep the upwards light to a minimum. This is in accordance with the pre-application consultation with MAG's Safeguarding Teams.

This report should be read in conjunction with the included CPW external lighting drawing: **250368-CPW-XX-00-DR-E-221001**.

2.0 Lighting Design Brief

The proposed new development will contain various commercial units, new pedestrian footpaths, amenity spaces, accessible parking bays, loading bays and roadways. The proposed lighting design is for these areas only.

For this project, it is proposed that the lighting will be controlled via photocells and timeclocks, to ensure that the lighting will be energised at low ambient light levels and will remain on throughout the night until sunrise.

Due to the proximity of the residential buildings to the north east and hotels to the north west and the south, obtrusive light calculations have been carried out to ensure the lighting design is within the parameters set out in the GN01 ILP Guidance Note 1 the Reduction of Obtrusive Light (2021) for an E3 environmental zone.

Due to the airport situated south of the site, the design aims to keep the upwards light to a minimum.

The external lighting concept design has been developed with reference to:

- BS EN 13201-1 (2014) Road Lighting
- BS EN 13201-2 (2015) Road Lighting
- BS EN 12464-2 (2024) Outdoor Work Places
- LG06 The Outdoor Environment
- ILP GN01 Guidance Note for the Reduction of Obtrusive Light (2021)
- Manchester's Local Development Framework – Core Strategy Development Plan Document (2012)
- Places for Everyone (2024) policy JP-S1 Sustainable Development

Calculations have been made to assess the horizontal and vertical illuminance produced by the lighting design, as well as light pollution intensities on various grid planes around the site to minimise the light trespass toward nearby stakeholders and over the site boundary.

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3.0 Product Types

A range of luminaires have been used across the site to fulfil various purposes. Post top luminaires from DW Windsor have been used to illuminate the roads, loading bays and accessible parking bays, the spill light from these columns also illuminates the main pathways. Light stacks have been used to illuminate pedestrian areas such as footpaths and amenity spaces. A small, recessed downlight has been proposed for building entrances with canopies, these will be manufactured by Ligman and supplied by DW Windsor. For building perimeters and entrances without canopies a wall mounted luminaire has been introduced. Tree up lights and linear strip lights from iGuzzini have been proposed to seating areas and trees near amenity spaces, these are for aesthetic purposes only. The luminaires are briefly described below.



EX1
Manufacturer: DW Windsor
Product: Kirium Pro1
Product Type: Post Top
Engine: 12378lm, 95W
Optic: Forward throw C2
Colour Temperature: 3000K
Mounting Height: 8m
Finish: Mid grey, polyester powder coat
0% upwards light



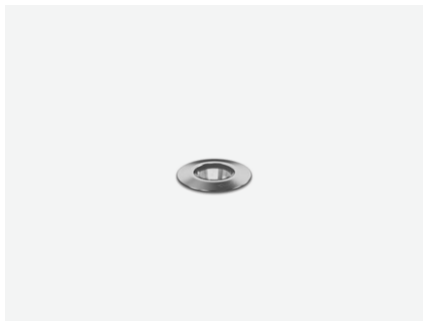
EX2
Manufacturer: DW Windsor
Product: Silka Area
Product Type: Light stack
Engine: 2335lm, 16W
Optic: Area symmetric, C3
Colour Temperature: 3000K
Mounting Height: 3m
Finish: Mid grey, polyester powder coat
0.02% upwards light



EX3
Manufacturer: DW Windsor
Product: Kirium Wall
Product Type: Wall mounted luminaire
Engine: 888lm, 6W
Optic: Medium, frosted
Colour Temperature: 3000K
Mounting Height: 3m
Finish: Mid grey, polyester powder coat
0% upwards light



EX4
Manufacturer: Ligman (supplied by DW Windsor)
Product: Nikon
Product Type: Recessed downlight
Engine: 294lm, 7.8W
Optic: Elliptical
Colour Temperature: 3000K
Mounting Height: 2.3m, final height TBC
Finish: Stainless steel
0% upwards light



EX5
Manufacturer: iGuzzini
Product: Light Up Orbit
Product Type: In ground uplight
Engine: 338lm, 4W
Optic: Medium
Colour Temperature: 3000K
Mounting Height: 0m
Finish: Stainless steel
100% upwards light, to be recessed below trees



EX6
Manufacturer: iGuzzini
Product: Underscore In Out
Product Type: Linear strip
Engine: 395lm/m, 4.9W/m
Optic: NA
Colour Temperature: 2900K
Mounting Height: TBC
Finish: Polymer sheath
0.08 upwards light
To be mounted to wall along seating area so that the light is emitted in a downwards direction

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4.0 Illumination Levels

In accordance with the standards and guidance listed in Section 2.0, the required illumination levels are given in the table below.

Area	Maintained Illuminance (Lux)	Minimum Illuminance (Lux)
Roadways: P1 Classification	15	3
Main Pedestrian Paths: P4 Classification	5	1
Footpaths/Amenity Spaces: P5 Classification	3	0.6
Loading Bays and Adjacent Parking	20	0.25 (uniformity)

Average illumination levels achieved on CPW drawing:

Area	Maintained Illuminance (Lux)	Minimum Illuminance (Lux)
A1 Amenity Space	11.47	0.9
A1 Footpath	13.34	1.4
A1 Loading Bays and Parking	33.54	0.62 (uniformity)
A1 Main Path	23.23	8.4
A1 Pedestrian Route	14.03	5.5
A2 Loading Bays and Parking	36.34	0.79 (uniformity)
A2 Main Entrance Path	23.42	10.6
A2 Northwest Entrance Path	7.99	1.4
A2 Southwest Entrance Path	11.79	1.7
A2-A5 Footpath	13.30	1.5
A2-A5 Pedestrian Route	16.67	4.0
A5 Loading Bays and Parking	32.43	0.77 (uniformity)
A5 Main Entrance Path	24.14	11.8
A5 Northwest Entrance Path	17.87	7.2
A5 Southwest Entrance Path	21.30	11.1
A7 Amenity Space	16.50	2.0
A7 Main Path	14.11	1.7
E1 Amenity Space	8.27	0.9
E1 Loading Bay	30.68	0.75 (uniformity)
E1 Main Entrance Path	22.07	11.6
E1 Perimeter Path	13.73	0.7
E1-B1 Amenity Space	10.68	0.6
Main Road East	23.46	11.1
Main Road South	23.56	9.7
Secondary Road North	26.95	16.7
Secondary Road West	26.56	19.8
Substation Path	14.99	1.6

5.0 ILP Guidance Notes for the Reduction of Obtrusive Light, 2021

In accordance with the Institute of Lighting Professionals (ILP) ‘Guidance Notes for the Reduction of Obtrusive Light, (2021)’. The development has been classed with having an environmental zone of E3.

Zone	Surrounding	Examples
E0:	Protected – Dark	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1:	Natural - Dark	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc
E2:	Rural – Low district brightness	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3:	Suburban – Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4:	Urban - High district brightness areas	Town/city centres with high levels of night-time activity

Having an environmental zone of E3 indicated that the design shall need to comply with the table below:

Environmental Zone	Sky Glow (Max ULR %)	Light Trespass (into windows) Ev (Lux)		Source Intensity I (cd)		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L
E0:	0	n/a	n/a	0	0	<0.1
E1:	0	2	<0.1	2500	0	<0.1
E2:	2.5	5	1	7500	500	5
E3:	5	10	2	10000	1000	10
E4:	15	25	5	25000	2500	25

- ULR** Upward light ratio of the installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.
- EV** Vertical illuminance in lux and is measured flat on the glazing at the centre of the window.
- I** Light intensity in Cd.
- L** Luminance in Cd/m².
- Curfew** Time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of lighting applied by the local authority. If not stated—23:00h is suggested.

6.0 Comparison to ILP Guidance Notes for the Reduction of Obtrusive Light, 2021

Obtrusive light calculations have been undertaken on the closest residential areas and nearby hotels. The following values have been obtained, which demonstrate compliance to the ILP guidance table for an E3 environmental zone. These calculations were carried out on the reference points outlined in Section 7.0. All calculations in this report are with all external lighting on at 100% output, excluding luminaire reference EX6 which is for decorative purposes only.

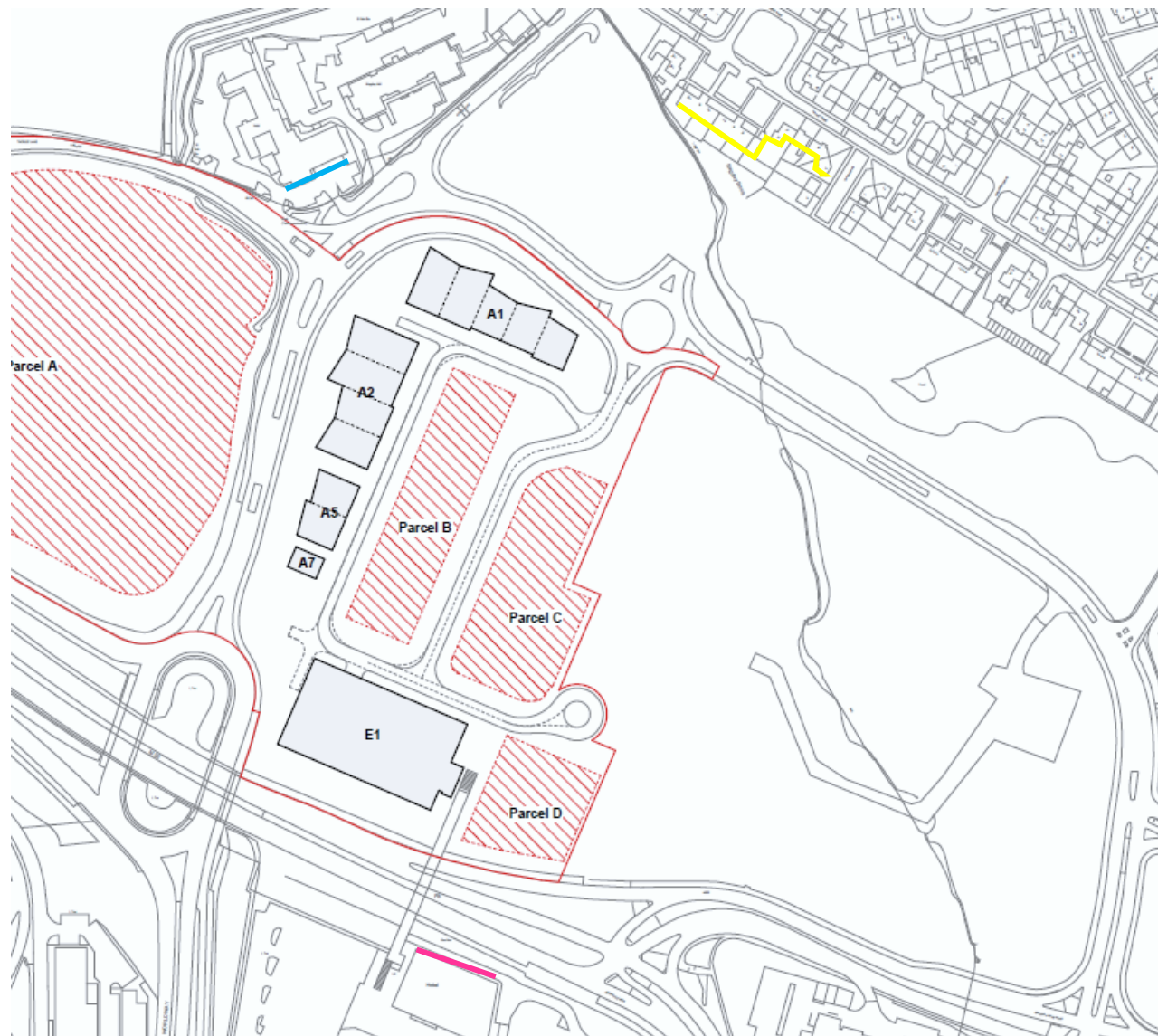
	E3 Maximum	North east Residential	North west Hotel	South Hotel
Sky Glow ULR Max %	5%	0.9%	0.9%	0.9%
Light Intrusion (into windows) Ev Lux				
Pre-curfew	10	0.0	0.1	0.1
Post-curfew	2	0.0	0.1	0.1
Luminaire Intensity I (candelas)				
Pre-curfew	10000	30	36	23
Post-curfew	1000	30	36	23

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7.0 Observer Reference Points

The below image displays the illustrative masterplan of the site and its surroundings. The nearest residences and hotels are identified below, to the north and to the south.



- Approximate site boundary
- Observer reference point – North east, residential
- Observer reference point – North west, hotel
- Observer reference point – South, hotel
- Outline planning elements

8.0 Lighting Levels

Calculation results are shown in Section 10 – Appendix One of this report and on CPW drawing number: **250364-CPW-XX-00-DR-E-221001**.

Light levels of 20 lux average and a uniformity of 0.25 have been targeted for the loading bays and adjacent parking bays, this is in accordance with BS EN 12464-2. For roads a P1 classification has been selected, which is an average of 15 lux and a minimum value of 3 lux. For the main pedestrian walkways near the road, a P4 classification has been selected, which is an average of 5 lux and a minimum value of 1 lux. For the smaller pedestrian footpaths and amenity spaces a lower P5 classification has been selected, which is an average of 3 lux and 0.6 lux minimum. These targets are in reference to the P classes set out in BS EN 13201-1 and BS EN 13201-2.

The results for the loading bays are slightly higher than the target. This to minimise the number of columns needed for the site as a whole and to cover future loading bays on the opposite side of the road.

Obtrusive light calculations were carried out with all luminaires on at 100% output, excluding luminaire reference EX6 which is for decorative purposes only. This ensures compliance with the GN01 ILP Guidance for the Reduction of Obtrusive Light (2021) for an E3 environmental zone. These results are listed in Section 6.0.

It is proposed that lighting will be controlled via photocell and timeclocks, to allow luminaires to remain on throughout the night and switch off at sunrise.

These lighting levels are baseline targets which meet the minimum levels within current, relevant lighting standards and guides as listed in Section 2.0. Across all elements of the design, care has been taken to ensure compliance with these documents.

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9.0 Summary

The scheme has been developed to provide an energy efficient and good quality lighting design to serve the exterior pedestrian routes, roadways, loading bays and parking bays, providing safe and practical light levels in line with the relevant lighting standards and guides.

Columns are proposed for the roads, loading bays, parking bays and adjacent walkways. While light stacks have been proposed for the pedestrian amenity areas and footpaths. This is a sleeker and more aesthetically pleasing product, that provides good light levels and facial illumination.

The lighting strategy has been developed in conjunction with the landscape proposals and in line with recommendations in the Places for Everyone policy to enhance the outdoor amenity spaces through appropriate lighting. Feature luminaires have been introduced, this includes some uplighters to be concealed beneath the trees. These will highlight the trees and provide visual interest to people sat in the amenity space near the E1 multistorey car park. To the other side of the car park is a bench seating area bordered by a solid wall. It is proposed that a linear strip light is to be mounted along this section of the wall to provide a soft glow of illumination to the seating area. This luminaire shall be mounted so that the light is emitted in a downwards direction to minimise the upwards light.

In line with Manchester's Core Strategy policy DM1, this scheme has also been developed to ensure that any potential impact on the nearby residential areas and hotels is minimised. The scheme shows that the illuminance spillage towards the nearest residential properties to the development are within the parameters of environmental zone E3, as per ILP GN01 for the Reduction of Obtrusive Light (2021). Care has been taken to minimise the upwards light to reduce nuisance light to Manchester Airport and neighbouring residences.

The lighting scheme is based around a low pollution, low energy and low maintenance strategy. Considerations were also given to high quality products which have excellent light control optics, such that their efficiencies are maximised and carbon footprint minimised.

Alternative luminaires may develop and be introduced into the market during the detailed design stage, however the design philosophy outlined in this report should be retained and implemented into the finalised design.

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10.0 Appendix One



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+44 (0) 121 709 6600

Interface 100
Arleston Way, Solihull
B90 4LH

birmingham@cpwp.com
www.cpwp.com

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