

**FOR:
23-LP-052 – LAND AT HEYWOOD
BUSINESS PARK, HEYWOOD**

**A PROJECT FOR:
INDURENT MANAGEMENT LTD**

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**STATUS:
FOR OUTLINE PLANNING**

DOCUMENT MANAGEMENT

DOCUMENT REVISIONS

Rev:	Description:	By:	Date:
1	Planning Issue	ABN	14.06.24
2	Planning Issue – Comments Incorporated	ABN	04.07.24
3	Planning Issue – Client name updated	ABN	29.07.24



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1.0 INTRODUCTION

This External Artificial Lighting Assessment Statement has been prepared by MBA Consulting Engineers Limited on behalf of Indurent Management Ltd to assist the local planning authority in its consideration for the artificial lighting strategy for the proposed development on Plot H4 of Heywood Distribution Park in Rochdale. Outline planning permission is sought for the development of the Plot 4 site as follows

Outline planning application for the development of land within Use Classes E(g)(iii) (industrial processes), B2 (general industrial), B8 (storage and distribution) and removal of existing structures and hard standing and associated works. All matters reserved for subsequent approval.

The external lighting design shall give consideration to all external areas surrounding the building including service yard, car parking, cycle parking, walkways and the access road to the development area

The proposed lighting design requires that all the luminaires be mounted horizontally with a zero-degree tilt to the finished road surface, in addition to the use of full cut-off luminaires. The proposed lighting design also ensures that the column mounted luminaires parallel to the central estate road is orientated so that the peak intensity is not directed towards the receptors further reducing source intensity glare.

The scheme is based on the use of LED luminaires fixed to the building façades, on lighting columns and low level lighting bollards to parking areas adjacent to main building entrances.

2.0 LIGHTING STANDARDS AND GUIDES

The following lighting standards, policies and guidance documents will form the basis within this report for assessment and were consulted during and post completion of the theoretical lighting design: -

- National Planning Policy Framework (Revision 24th July 2018)
- Clean Neighborhoods and Environment Act 2005 (CNEA)
- Environmental Protection Act (1990)
- HSE Executive Lighting at Work (ISBN 978 0 7176 1232 1) 1997
- British Standards, Lighting of Outdoor Work Places (BS EN 12464-2:2021)
- British Standards, Accessible & Inclusive Built Environment (BS 8300-1:2018)
- British Standards, Roads (BS 5489-1:2020)
- British Standards, Photobiological Safety of Lamp Systems (BS EN 62471:2008)
- CIBSE Lighting Guide LG1, The Industrial Environment (2018)
- CIBSE Lighting Guide LG6, The Outdoor Environment (2016)
- ILP Guidance Notes for the Reduction of Obtrusive Light (2021)
- ILP Technical Report TR12 Lighting of Pedestrian Crossings (2015)
- ILP Professional Lighting Guide PLG23 Lighting for Cycling Infrastructure (2020)

3.0 LIGHTING SOLUTION

1. Care will be taken when selecting the luminaires that ensures the appropriate products will greatly reduce spill light and glare to and around site boundaries and prevent sky glow.
2. Other than for low level bollards, the remainder of the planned facility lighting will be planned using Full cut-off luminaires, horizontal, “flat” floodlights and LED modules that are housed in the luminaires canopy.

3. Best lighting practice design guide lines will followed in order to achieve the criteria outlined in The Institution of Lighting Professionals: Guidance Notes for the Reduction of Obtrusive Light 01/21, covering Environmental Zones E0 to E4.
4. The proposed luminaires will all have a ULR of 2% or less which drastically reduce the upward spread of light near to and above the horizontal. All luminaires will be installed at a tilt of 0% to achieve this.
5. The most sensitive/critical zones for minimising sky glow are those between 85 - 100° as shown in Table 1.

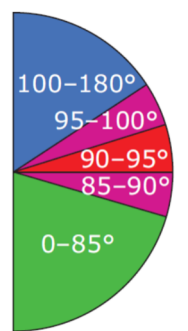


Table 1: The effect on the ability to view the night sky at various angles

Angle of light emitted (degrees)	Sky glow effect	Glare effect
100 – 180	Local	Little
95 – 100	Significant	Some
90 – 95	High	High
85 – 90	Significant	High
0 – 85	Minimal	Some

Table 1: Critical Luminaire Angles for Minimising Sky Glow - [1]

6. Any proposed luminaires will be strategically placed targetting zero or minimal upward light ratio (ULR) to ensure the proposed design solution meets the criteria of environmental zone E3, Lighting Environment classification of Medium District Brightness and Maximum Upward Light Ratio of Luminaires as indicated respectively in Tables 2 & 3.

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	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	Town/city centres with high levels of night-time activity

Table 2: Environmental Zones - [1]

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR)/%	0	0	2.5	5	15

Table 3: Maximum Values of Upward Light Ratio (ULR) of Luminaires - [1]

7. Glare will be kept to a minimum by ensuring that the main beam angle of all the luminaires directed towards any potential observer is not more than 70 degrees as indicated in Figure 1.

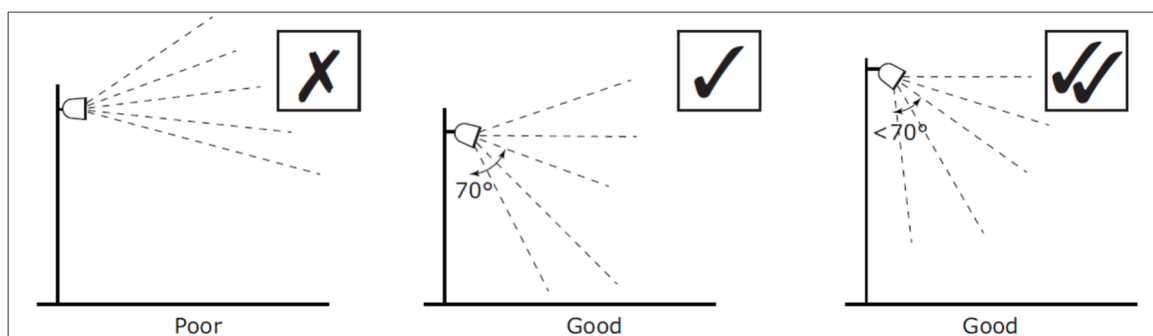


Figure 1: Luminaire Aiming Angles - [1]

In addition, the designed mounting heights and chosen luminaires will ensure that greater spacing between luminaires is achieved thus reducing the number of overall lighting points and also reducing the spill and glare as indicated in Figures 2 and 3, whilst remaining considerate of the surrounding buildings and areas.

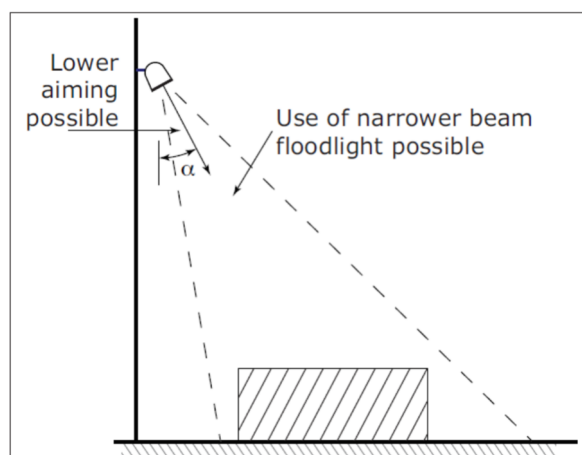


Figure 2: Higher Mounting Height – Less Spill and Glare - [1]

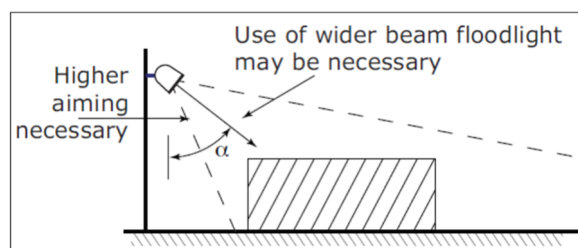


Figure 3: Lower Mounting Height – More Spill and Glare - [1]

8. Lighting pollution on adjacent properties will be kept to a minimum and in accordance with the respective environmental zone category indicated Table 4. This will be performed using a mixture of rear spill guards and occupancy control dimming.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E _v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

Table 4:

Maximum Values of Vertical Illumination on Properties – [1]

4.0 DESIGN STATISTICS

1. The following table details the design statistics will be targeted within the various areas of the development.

Description	Average (Lux)	Minimum (Lux)	Uniformity Min / Avg
Access Road	20	8	0.40
Building Entrance	50	20	0.40
Building Perimeter Pedestrian Only Areas	10	4	0.40
Car Parking	20	8	0.40
Gatehouse	50	20	0.40
Loading Bays	50	20	0.40
Service Yard	20	8	0.40

5.0 CONCLUSION

1. All external lighting shall be controlled by photocell and time clock.
2. The total lighting solution will be carefully generated to ensure the immediate environment has been protected.
3. The illumination that would normally be free flowing from site boundaries will be restricted and further designed to mitigate any potential impact to properties adjacent to the proposed site.
4. Careful consideration will also be taken to ensure no loss of amenity due to glare through shielding of the lamps, choice of luminaires and efficient mounting heights.
5. It is considered that further details of the external lighting scheme, which accords with the strategy set out here, can be secured by an appropriately worded planning condition on any planning permission for the proposed development.

6.0 REFERENCES

[1] – 2021/01 - Institute of Lighting Professionals – GN01-21 Guidance Note for the reduction of obtrusive light.