

Technical Note

Project Title	Land to the West of Rodney Street, Manchester		
Subject	External Lighting Assessment	Date	18/05/2022
Author	AJJ/DMS	Our Ref	RODSTA-MET-XX-XX-RP-E-9102-S2-P01_External Lighting Assessment

1 Introduction

Client – Wates Construction Ltd.

Address – Land to the west of Rodney Street, Manchester, M4 6JJ

Project – This City residential development, Ancoats, Manchester

This City is a new kind of housing company, owned and run by Manchester City Council. They are a new venture that will develop high quality, low carbon housing for all Mancunians. The new homes will be a mix of market housing and homes designated for Manchester Living Rent (to be rented at or below Local Housing Allowance levels). Market housing will subsidise the provision of the Manchester Living Rent properties.

Application Description of Development – Erection of two residential apartment buildings (Use Class C3), one of 8 storeys (68 apartments) and one of 5 storeys (50 apartments), to form a total of 118 residential apartments; and erection of 10, 3 storey townhouses (Use Class C3); together with car and cycle parking provision, hard and soft landscaping including public realm, access, substation and other associated works

Method Consulting have been appointed to assess the external lighting strategy, which we have completed using computer modelling software to demonstrate compliance with:

- ILP GN01
- BS 5489 & BS EN 12464

2 Assessment

2.1 General

In completing the assessment, we have liaised with the design team to ensure that the design is aesthetically pleasing as well as technically suitable.

The lighting strategy includes a mixture of bollards, columns, wall mounted bulkheads and wall mounted downlighters as defined on drawing RODSTA-MET-ZZ-00-DR-E-6350. The fittings are from Whitecroft Lighting.

The two main technical considerations in this assessment are that there is sufficient illuminance of the two car parks and that obtrusive light to the surrounding environment is limited. The layouts are shown in Section 3.

Table 1, extracted from ILP GN01:2011, suggests different limits for obtrusive light depending on the type of area being assessed. It is considered that this development is an 'E3' (Suburban) zone.

ILP GN01:2021: Table 1 - Obtrusive Light Limitations for Exterior Light Installations							
Zone	Surrounding	Sky Glow ULR	Light Intrusion (lx)		Luminaire Intensity (cd)		Building Luminance Pre-curfew
		Max %	Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L (cd/m2)
E0	Protected	0	0	0	0	0	0
E1	Natural	0	2	0	2500	0	0
E2	Rural	2.5	5	1	7500	500	5
E3	Suburban	5	10	2	10000	1000	10
E4	Urban	15	25	5	25000	2500	25
Design Values (Worse Case)	3		2		968		-
Compliant	Yes		Yes	Yes	Yes	Yes	n/a

Table 1 ILP guidance on obtrusive light levels

ULR values are kept well below limits by using suitable fittings as shown in the modelling output (<3%). Light intrusion to nearby dwellings that border the eastern, southern and northern perimeters of the site has been modelled and does not surpass the maximum limit during pre-

curfew hours. The post curfew light intrusion levels also do not surpass the limits shown in the table above and therefore there is no requirement for dimming during curfew hours.

Calculation points are positioned at various locations around the site, predominantly at properties closest to the site, to test luminous intensity and demonstrate that values never exceed 10000 cd. Lighting will be timeclock and photocell controlled to turn off when curfew hours apply or when ambient lighting levels alone are sufficient. Building luminance, in the case of ILP Guidance, pertains to directly lighting buildings as a feature, which is not proposed for this development where obtrusive lighting may be problematic, or for use as performance lighting.

Compliance is therefore demonstrated to the E3 benchmark using modelling software Dialux Evo and Relux with luminaire modelling files directly from the lighting manufacturer.

2.2 Car Parks

Lighting illuminance levels have been designed in line with the guidance in BS 5489, BS EN 12464 and the SLL Code for Lighting as detailed in Table 2 below.

BRITISH STANDARD

BS 5489-1:2013

The appropriate lighting level should be selected from Table 5, taking into account the type and location of the car park, and should be provided and maintained through all the night-time hours of use.

NOTE 1 A different level may be selected at periods of night when the usage is significantly different to normal usage.

NOTE 2 Table 5 is extrapolated from BS EN 12464-2:2007, Table 5.9.

Table 5 Maintained lighting levels for outdoor car parks

Type of area and usage	$\bar{E}$ lx	U_o
Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks	5	0.25
Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes	10	0.25
Heavy traffic, e.g. parking areas of schools, churches, major sports and multipurpose sports and building complexes	20	0.25

Table 2 BS EN 5489-1 Illumination guidance values

The guidance figures for Light Traffic are demonstrated to be met, with average illumination of 21.1lx and 38.7lx in each car park respectively and a uniformity of 0.25 and 0.28 respectively.

The car park areas have also been modelled against the SLL Code for Lighting as shown in the table below:

PARKING AREA NORTH				
	MIN. AVERAGE ILLUMINANCE	MIN. UNIFORMITY	MAX. GLARE RATING	MIN. COLOUR RENDERING
	lx			
SLL CODE FOR LIGHTING GUIDANCE (LIGHT TRAFFIC)	5	0.25	55	20
DESIGN VALUES (WORST CASE)	21.1	0.25	>90	>70
COMPLIANT	Y	Y	N	Y

PARKING AREA SOUTH WEST				
	MIN. AVERAGE ILLUMINANCE	MIN. UNIFORMITY	MAX. GLARE RATING	MIN. COLOUR RENDERING
	lx			
SLL CODE FOR LIGHTING GUIDANCE (LIGHT TRAFFIC)	5	0.25	55	20
DESIGN VALUES (WORST CASE)	38.7	0.28	>90	>70
COMPLIANT	Y	Y	N	Y

The above demonstrates that the proposed lighting scheme for both car parks satisfies the majority of criteria. The requirement for maximum glare rating is not satisfied according to our simulations. However, all luminaires specified in the scheme are compliant with class G6 glare requirements (the most stringent) as outlined in BS EN 13201-2. Thus, we are confident that the glare rating will not present an issue in this scheme.

3 **Appendix - Proposed Layout**

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL ITEMS OF EQUIPMENT SHALL BE INSTALLED AS TO THE MANUFACTURER'S RECOMMENDATIONS.
3. ALL INFORMATION AND LAYOUTS DETAILED ON THIS DRAWING ARE SUBJECT TO SITE DIMENSION CHECKS.
4. TYPE AND LOCATION OF EXTERNAL LIGHT FITTINGS IS APPROXIMATE SUBJECT TO DESIGN DEVELOPMENT.
5. ALL LIGHTING WILL BE SWITCHED VIA PHOTOCELL AND 5 + 2 DAY TIMELOCK WITH LOCAL MANUAL OVERRIDE
6. PREDICTED CONTOUR LUX PLOTS HAVE BEEN PRODUCED AT GROUND LEVEL USING A MAINTENANCE FACTOR OF 1 FOR ALL LUMINAIRES.



UNDER-CROFT
CAR PARK

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Design Values (Worse Case)		3	2		968		-
Compliant	Yes	Yes	Yes	Yes	Yes	Yes	n/a

The above design values have been applied at the closest point within the proposed residential development located on the southern side of Block B. Building illuminance is not considered in relation to the proposals - building illuminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires

