TECHNICAL DESIGN NOTE

Project name	Harlequins Centre		
Design note title	External Light Impact Assessment		
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1. INTRODUCTION

This report details the results produced from lighting simulation software and the types of luminaires used to light the external areas of the proposed new Harlequins Centre, Exeter. The development shall comprise a Co-Living (Sui Generis) accommodation block and a hotel (Class C1) including bar and restaurant, following demolition of existing shopping centre and pedestrian bridge, change of use of upper floors of 21-22 Queen Street to Co-Living (Sui Generis), and all associated works including parking, landscaping, amenity areas, public realm improvements, new pedestrian bridge and provision of heritage interpretation kiosk. (Revised).

The requirements set out in the 'Lighting Guide 6: The exterior environment' was used when carrying out this assessment along with consultations with the appointed Architect and Ecologist.

Figure 1.1: Illustrative image of the proposed development

2. OUTLINE LIGHTING DESIGN

This lighting assessment is based on varied luminaire types. Functional lighting derives predominantly from bollard and building mounted luminaires. All proposed luminaires utilise LED lamp technology to greatly assist with the control of light spill. Ground mounted luminaires have been strategically located to provide façade lighting and illuminate points of interest

The lighting controls will be via photocell with manual and timer off over-rides.

The following design criteria has been targeted.

Design Criteria			
#	Name	Average (Lux)	Uniformity (Uo)
1	Pedestrian Walkway	5 Lux	0.25
2	Road to underground parking	10 Lux	0.25
3	Urban oasis garden	20 Lux	0.25
4	Court yard	20 Lux	0.25
5	Existing ramp	50 Lux	0.25
6	Stairs/Steps	50 Lux	0.25
7	New Public Footbridge (Internal)	150 Lux	0.5

Table 1: Design Criteria

3. OBSTRUSIVE LIGHT ASSESSMENT

In order to carry out our obtrusive lighting assessment, lighting software was used to calculate the worst-case scenario for obtrusive light spill.

Main considerations are light spill into a proposed flight path for bats to the rear of the development, proposed new bat boxes on the South West elevation of block 2 and residential properties to the rear of the proposed development.

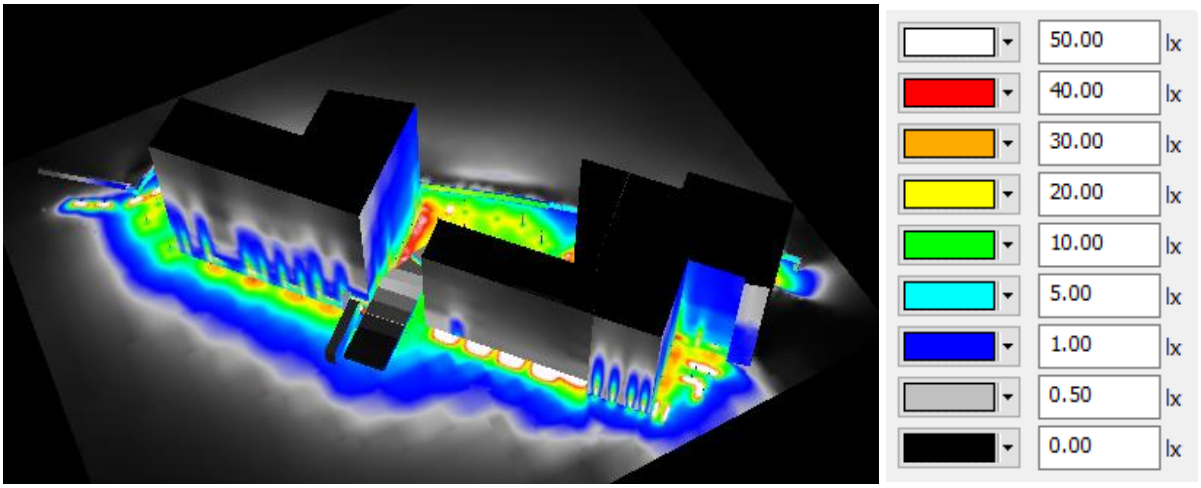

Figure 1: Indicative lighting distribution render

4. ISOLINE PLOT

The lighting calculation software produced an iso-line plot which provides a thorough breakdown of the different lux levels produced around the proposed development. It can be observed that the light spill does not encroach beyond the roman wall to the rear of the development.

Figure 2: Isoline Plot

Key	
Isoline	Lux Level
RED	0.5 Lux
BLUE	1 Lux
ORANGE	5 Lux
GREEN	10 Lux
MAGENTA	20 Lux
CYAN	50 Lux

Table 2: Isoline Key Table

5. CONCLUSION

The light assessment confirms that the obtrusive light generated are within the guidelines set out in the Guidance note GN01:2011 - Reduction of Obtrusive Light and results in no adverse effects to the surrounding area.

Based on Table 1 Environmental Zones, the location of the proposed works has an E3 classification which is small town centre or suburban type areas. The lighting software results confirms full compliance with the requirements of an E3 Environmental Zone as shown on Table 2 below.

Table 1 – Environmental Zones			
Zone	**Surrounding**	**Lighting Environment**	**Examples**
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Table 3: Environmental Zones

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers						
Environmental Zone	Sky Glow ULR [Max %][(1)]	Light Intrusion (into Windows) E_v [lux] [(2)]		Luminaire Intensity I [candelas] [(3)]		Building Luminance Pre-curfew [(4)]
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m^2]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

Table 4: Obtrusive light limitations.