



External Lighting Report

12-18 Crown Street

Reading, Berkshire RG1 2SE

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1.0 EXECUTIVE SUMMARY

This report shows how the proposed external lighting scheme meets the requirements of planning condition 14 for external lighting.

It is proposed that the existing lighting scheme is removed and replaced with new lighting. This is so that there is no light spillage outside the boundary.

The proposed lighting levels of the new scheme are within the parameters set out by the planning condition.

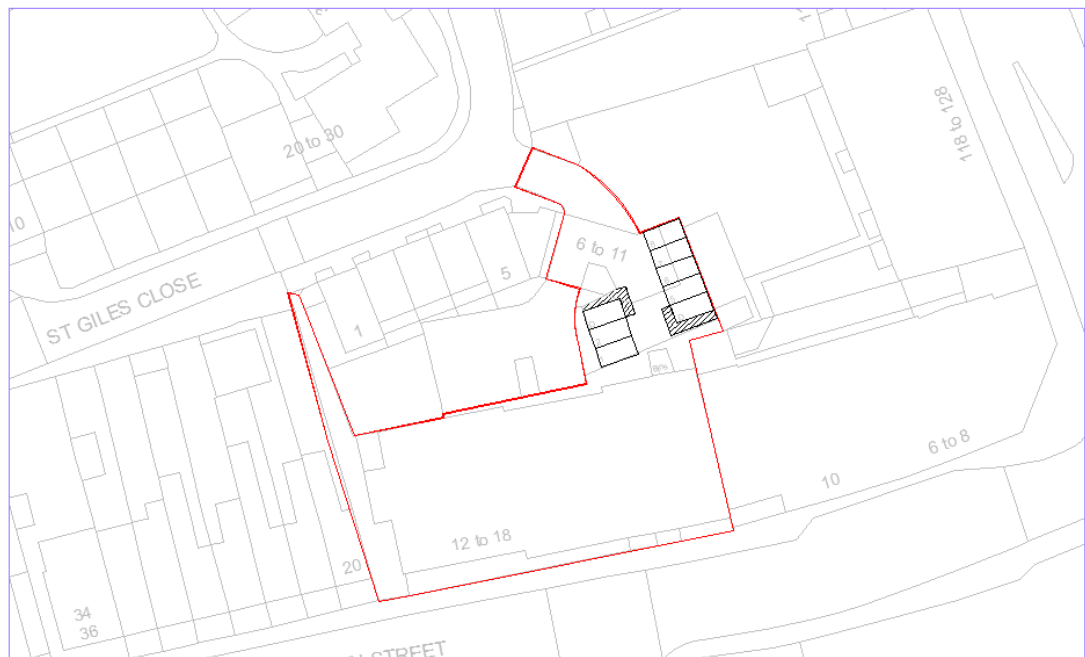
Lighting controls including photocells and dimming to be utilised to ensure that lighting levels remain within acceptable levels.

Drawings and calculations are included in the report as evidence of compliance.

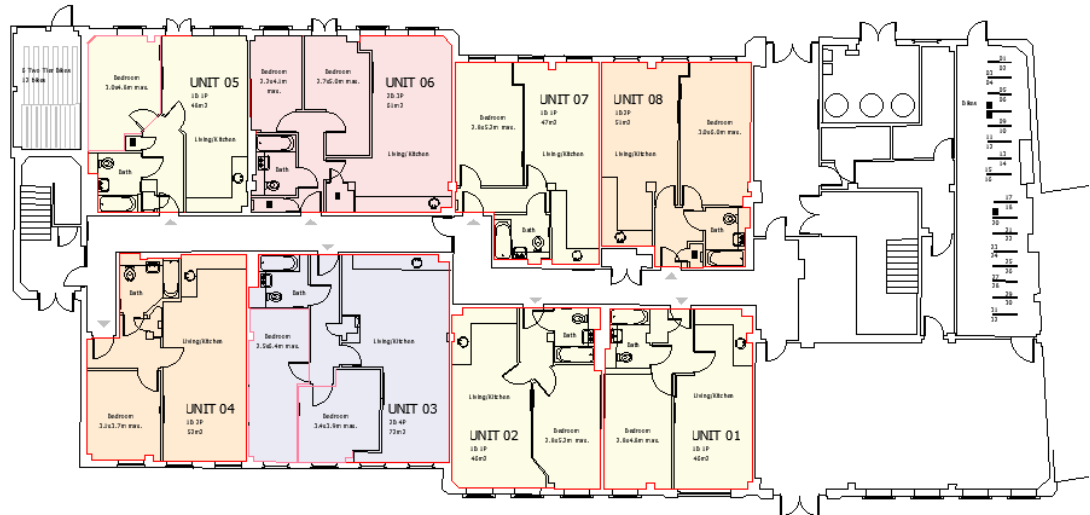
2.0 INTRODUCTION

The project comprises the conversion of an existing commercial building to provide 44 new dwellings.

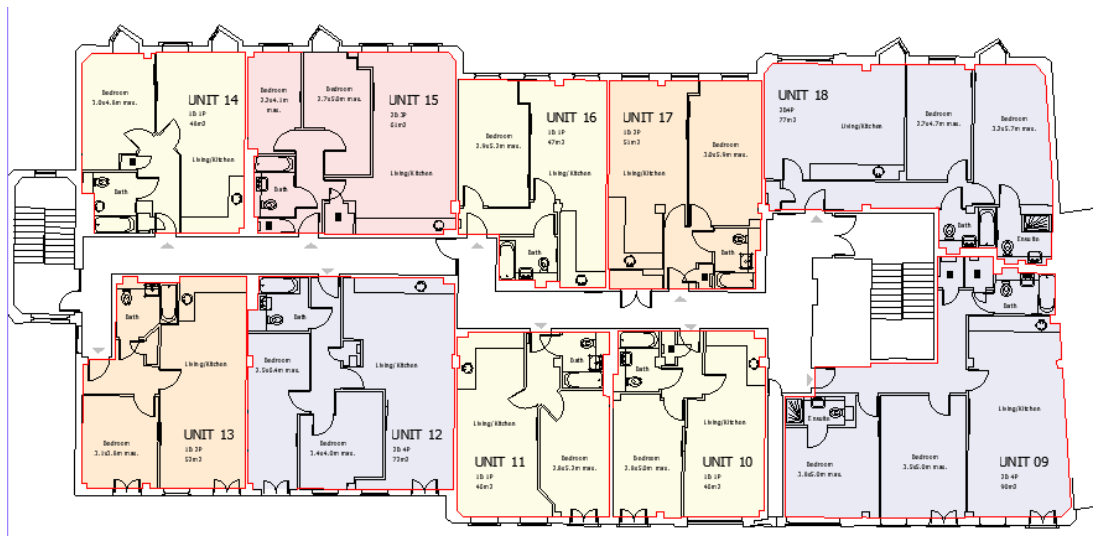
2.1 Site Plan



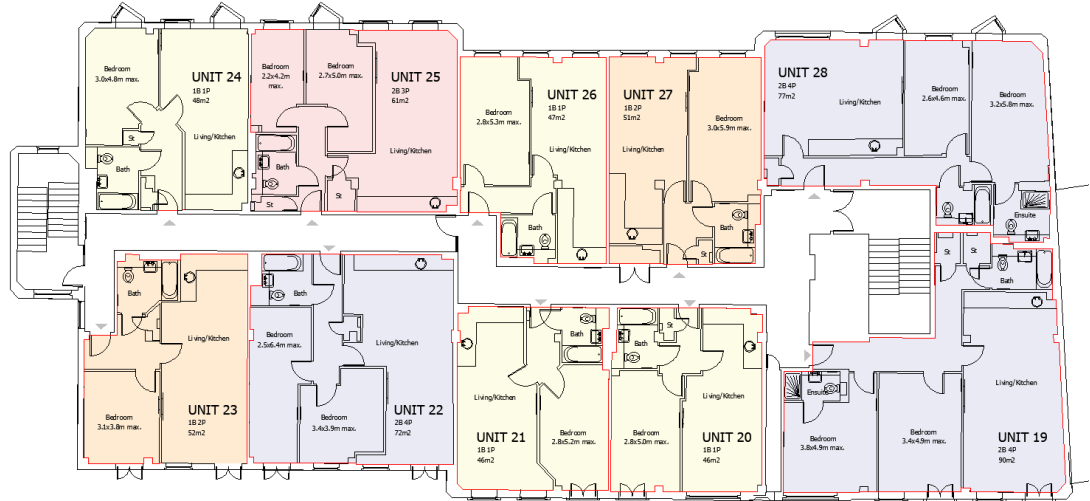
2.2 Ground Floor Plan



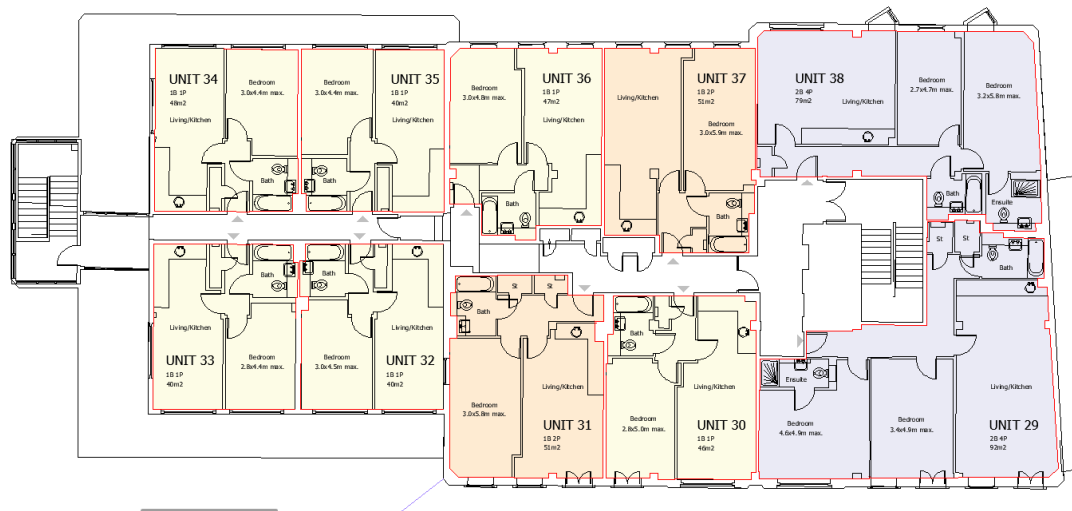
2.3 First Floor Plan



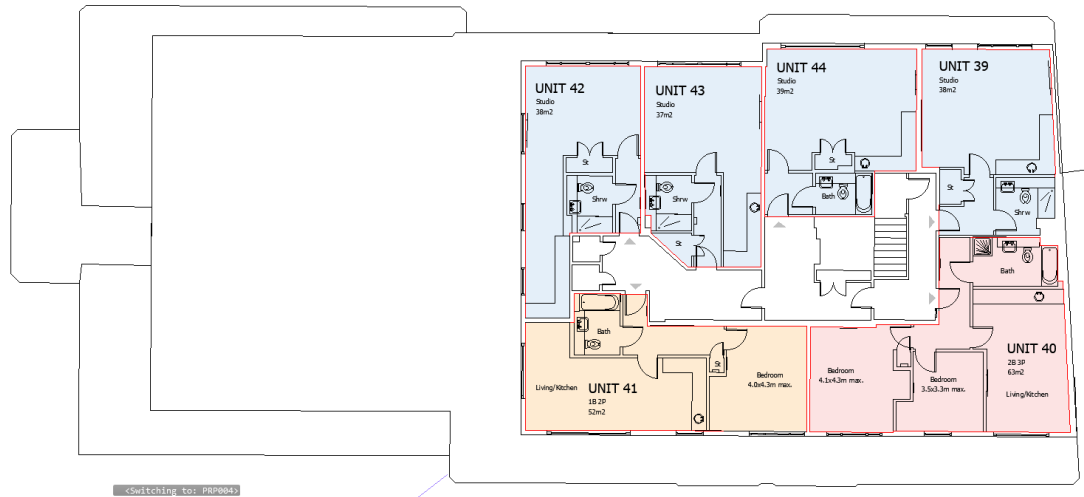
2.4 Second Floor Plan



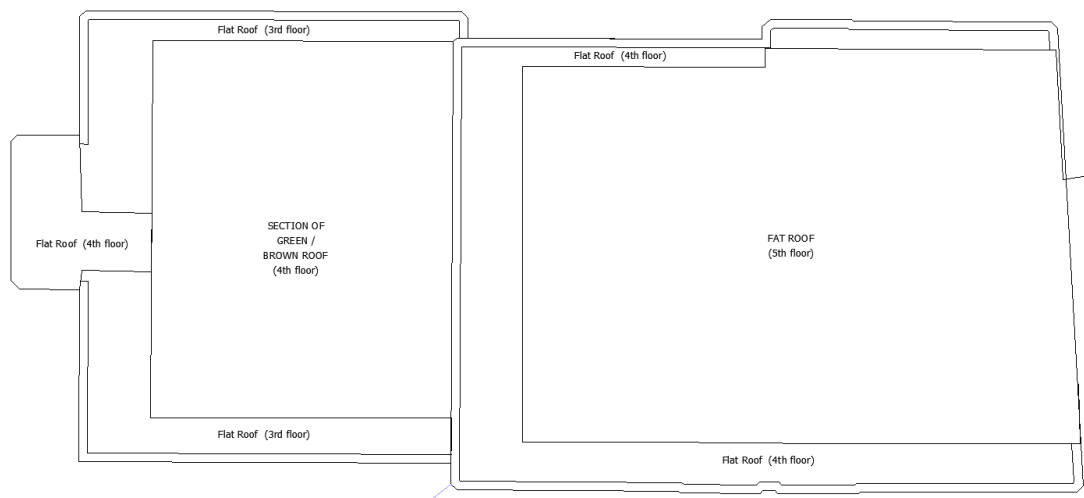
2.5 Third Floor Plan



2.6 Fourth Floor Plan



2.7 Roof Floor Plan



3.0 PLANNING CONDITION

Planning Condition 14 states:

Full details of all external lighting to be installed within the development shall be submitted to and approved in writing by the Local Planning Authority prior to first occupation. The details shall include a plan indicating the locations of the lights, specifications, height, luminance; lens shape/beam pattern and orientation, any hoods/shades, and an isolux contour map to show light spill levels (down to 2 lux if operating between 23:00 and 07:00, or down to 10 lux if operating only between 07:00 and 23:00) and showing neighbouring buildings. The details shall demonstrate that

light levels will not exceed the relevant guidance lux levels specified in the Institute of Lighting Professionals: Guidance Notes for the Reduction of Obtrusive Light GN01:2011 and shall also demonstrate how glare will be controlled. The approved scheme shall thereafter be installed before first occupation of the buildings or use commenced and the external lighting shall thereafter be maintained and operated in accordance with the approved details. No other lighting shall be installed externally within the site at any time.

4.0 EXTERNAL LIGHTING CALCULATION PARAMETERS

The site and buildings have been modelled with calculation values:

Reflectance (External) 0.5 0.2

Maintenance factor 0.9 for external project unless indicated otherwise.

4.1 Existing Lighting Scheme

The existing lighting scheme comprises wall mounted light fittings. The light is directed upwards and downwards.

4.2 Zero Lighting Scheme

A scheme with no lighting would have no lighting directed outside the site boundary.

This option has been rejected as some level of lighting is required for safety and security reasons.

4.3 New Lighting Scheme

A completely new lighting scheme is also an option – based on lighting designed to illuminate the site and minimise spillage outside the boundary line.

This is the proposed option.

5.0 LUMINAIRE SELECTION

The following luminaires have been selected for the external lighting. The luminaires used and specified for the project are from Performance in lighting:

GEWISS

QUASAR 30 TECH EM/3P

PART NUMBER 304196



Contact: Will Jarman

Lighting Designer

will.jarman@gewiss.com

GEWISS UK LTD

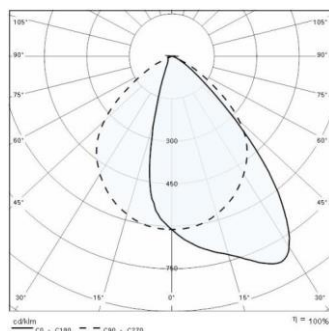
Unity House, Compass Point Business Park, 9 Stocks Bridge Way, St. Ives,
Cambridgeshire, PE27 5JL, United Kingdom

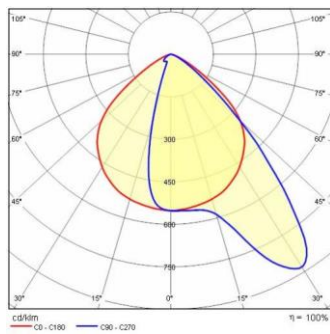
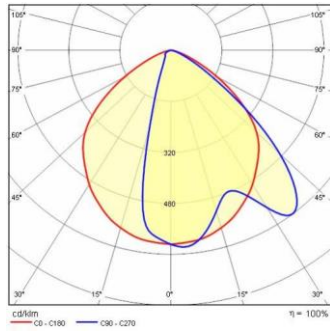
T. +44 1954 712 757

5.1 Product Data

Product data			
ETIM Group:		EG000027	
ETIM Class:		EC0028g2	
General information			
Lampholder:		LED	
Lightsource lumen output (lm):		2584	
Luminaire wattage (W):		20 W	
CRI:		80	
Colour / Finishing:		AN-96 / Anthracite gray / Textured	
IK-J-xxIP:		IK07 2J xx5	
Optic:		A30/M - Asymmetric Medium	
Overall length (mm):		300	
Overall height (mm):		102	
Light source:		LED	
Luminaire lumen output (lm):		1557	
Luminous efficacy (lm/W):		78	
Colour temperature (K):		3000	
IP degree of protection:		IP65	
Protection class:		I	
Net weight (kg):		2.459	
Overall width (mm):		100	
Mechanical features			
Shape:		Rectangular	
Diffuser material:		Glass	
Housing material:		Aluminium	
Electrical features			
Voltage type:		AC	
Input frequency (Hz):		50/60	
Inrush current (A/μs):		5 / 70	
C16 2.5 mm²:		66	
B16 2.5 mm²:		44	
Input voltage (V AC):		220/240	
Power factor / COS Φ:		>0.9	
C10 1.5 mm²:		41	
B10 1.5 mm²:		27	
Installation			
Application area:		Outdoor	
Min. ambient temperature (°C):		0	
Mounting type:		Wall surface	
Max. ambient temperature (°C):		25	
Light features			
MacAdam:		3	
Lumen maintenance:		L80B10@50000h	
Distribution of light emission:		Direct	
Zero light pollution (ULR = 0%):			

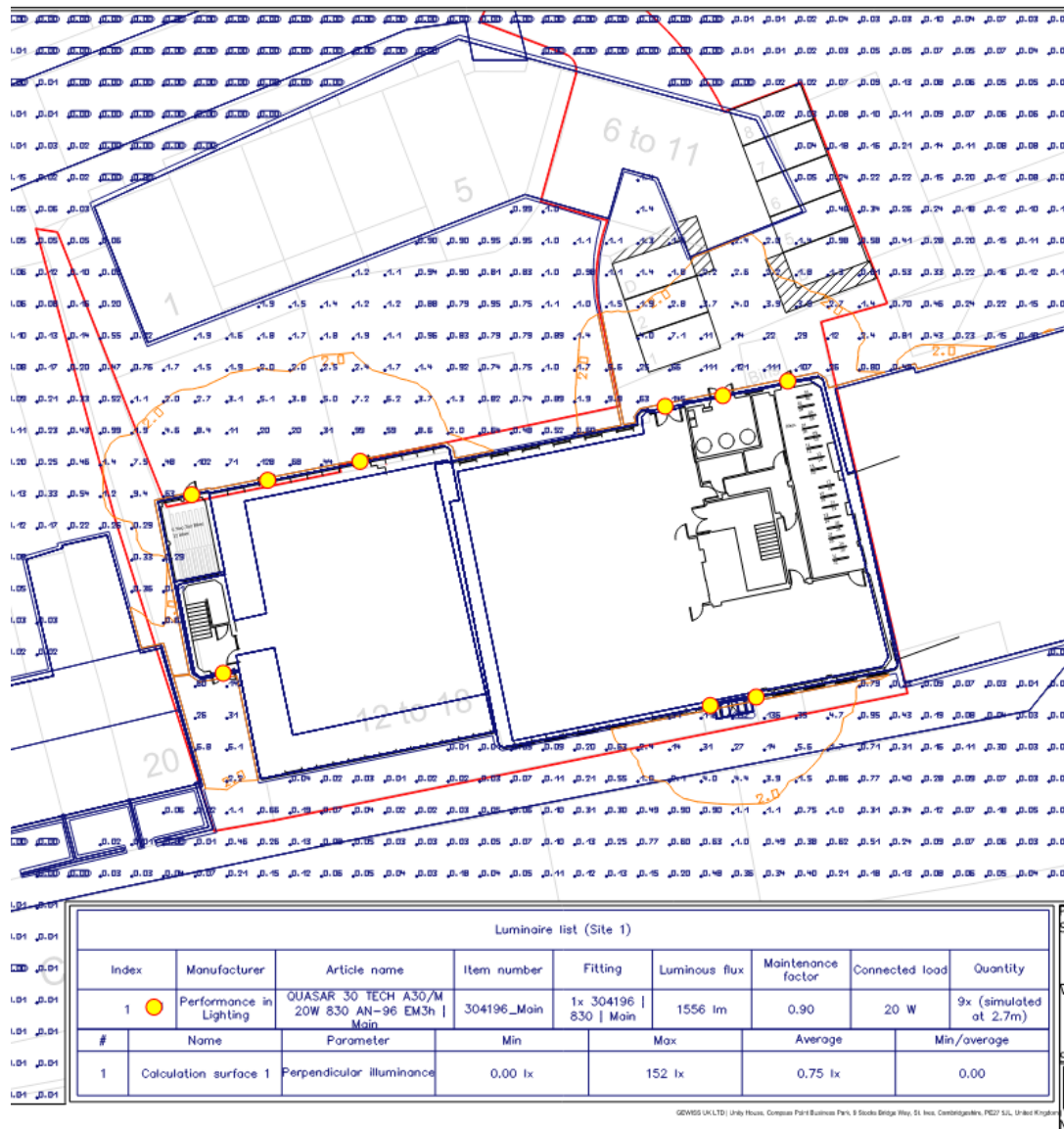
5.2 Photometric Data





All above Luminaires shall be fed via photocell (dusk to dawn) and time clock (07:00 to 23:00) for maintaining the security of the site/building during night-time hours.

6.0 EXTERNAL LIGHTING PLAN



6.1 Controls

- Photocell so lighting is off during daylight hours
- 100% output between 07:00 and 23:00
- Reduced to 20% output between 23:00 and 07:00

7.0 LUX PLOTS AND CALCULATIONS

The following section contains the full light spill drawing and a few 3D views showing the existing lighting installation.

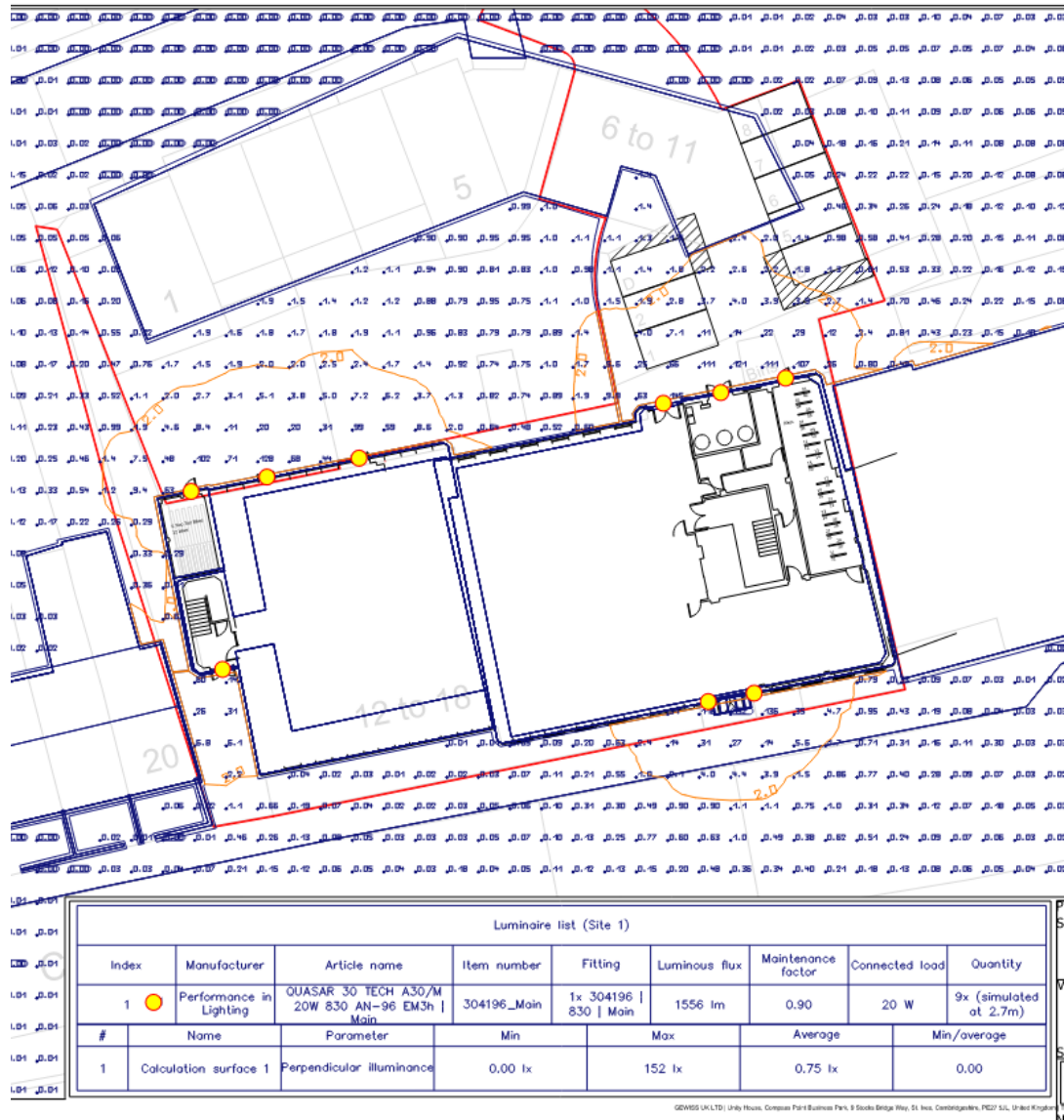
Four cases have been considered:

- Light fittings at 100% power – 1556 lumens
- Light fittings at 20% power – 311 lumens
- Light fittings at 10% power – 156 lumens
- Light fittings at 5% power – 78 lumens

The 1 lux contour has been highlighted since this is the minimum light level required for emergency lighting.

7.1 Full lux plot

Full lux plot showing point light levels and 2 lux boundary.



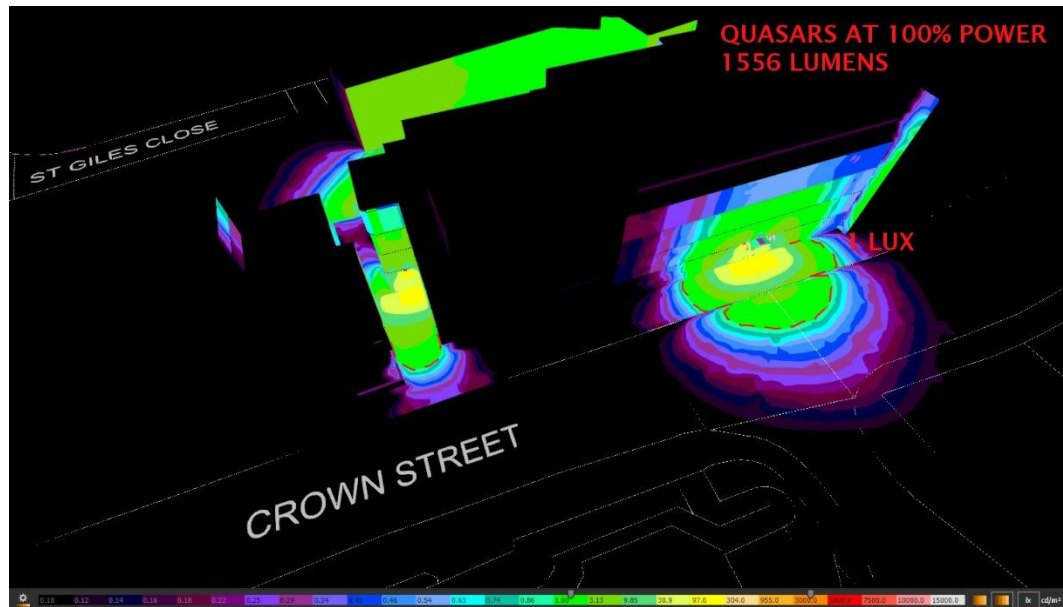
This clearly shows that:

The 2 lux lighting contour is well away from the adjacent dwellings. The proposed lighting scheme is suitable for use between 07:00 and 23:00.

The 10 lux lighting level contour is within acceptable limits when the light output is at 20% power. The lighting scheme is suitable for use at all times.

7.2 Detail on Crown Street boundary

Light fittings at 100% power – 1556 lumens:



This shows that the 2 lux and 10 lux contours extend into the street but do not affect the surrounding dwellings.

Light fittings at 20% power – 311 lumens:

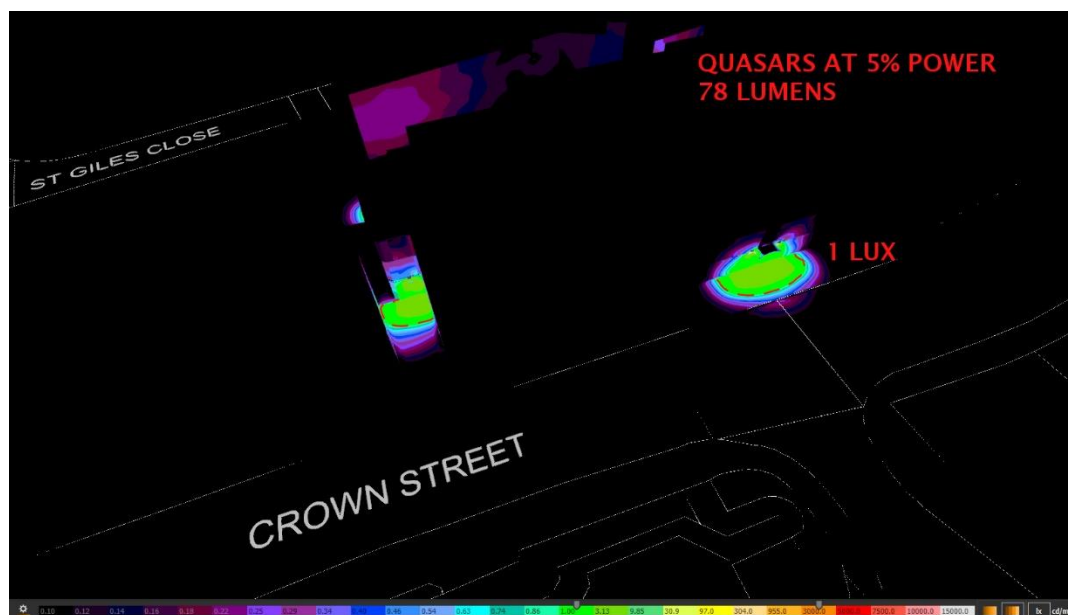


Light fittings on 20% power output means that the 1 lux contour is contained within the site boundary

Light fittings at 10% power – 156 lumens:



Light fittings at 5% power – 78 lumens:



7.3 Detail at rear of building

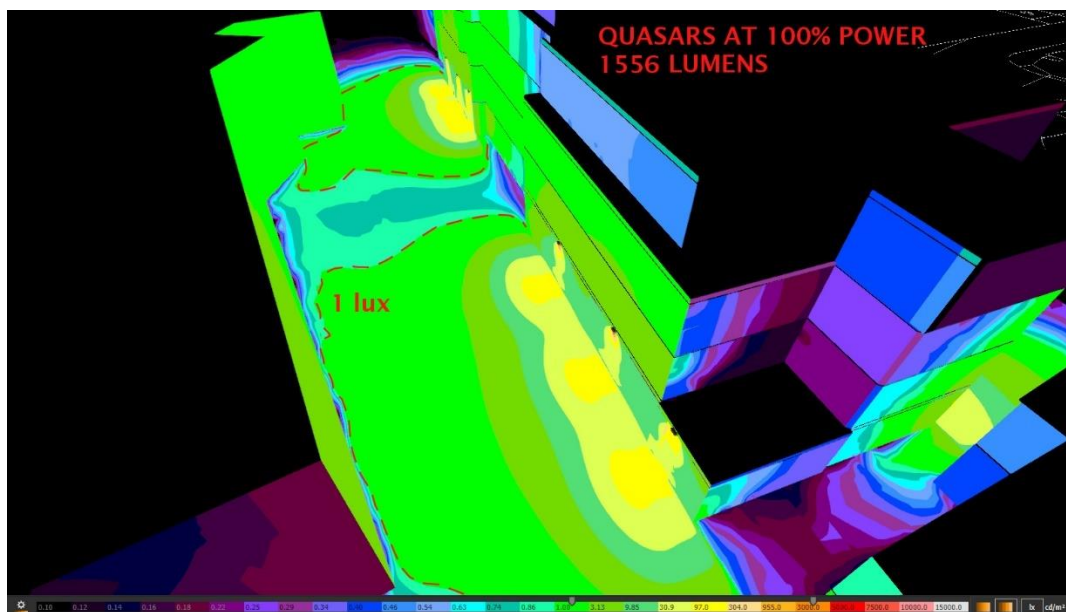
Around the rear of the building, the red 'boundary' line traces along the wall of the back of the building, especially in the area with the 'left hand side' cycle store and French windows.

So it is impossible to limit spill to 2 lux along this line with downward facing wall lights. (In fact the red line seems to trace under the foundations of the building and underneath it....)

However light spill does decay to around 1.9 lux to 0.99 lux along the walls of dwellings 1-5 at the top of this area.

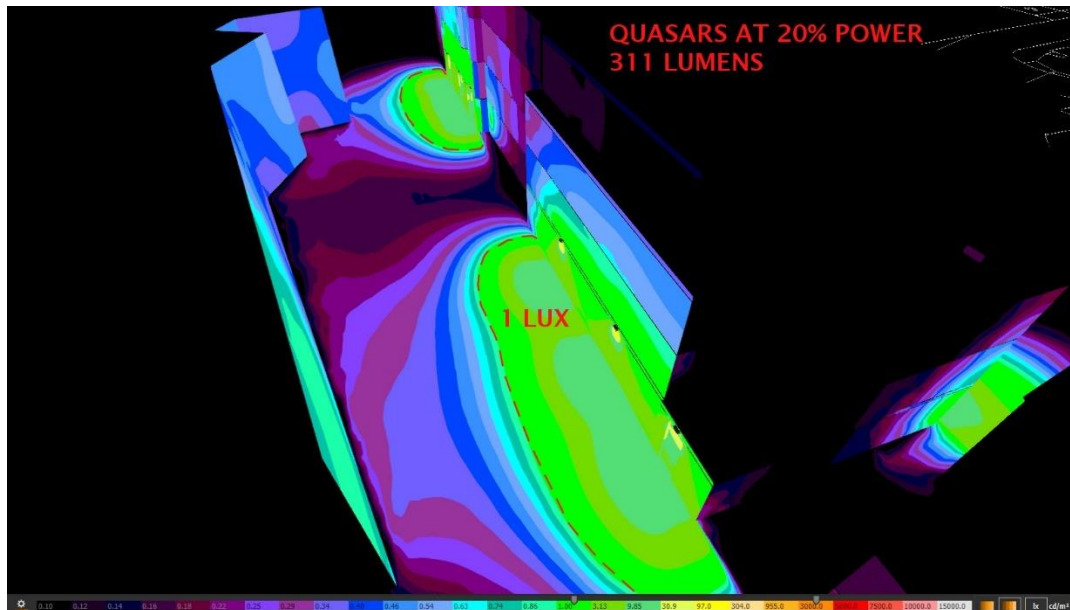
Light spill around the bin store and the right hand side bike store is less of an issue as the red boundary line reaches out here to include the parking spaces.

Light fittings at 100% power – 1556 lumens:

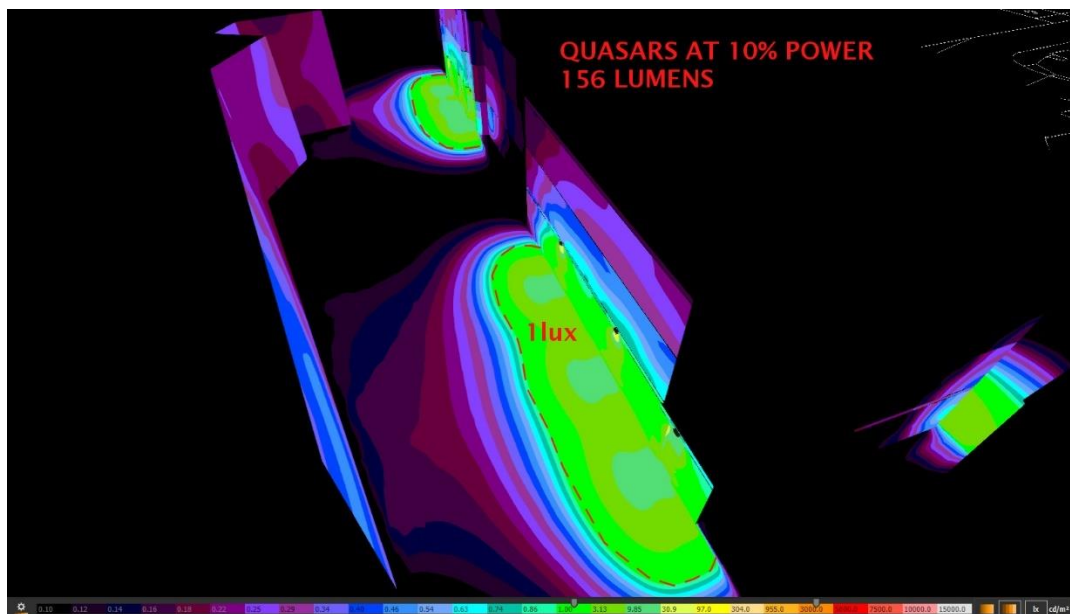


This shows that at full output the proposed lighting

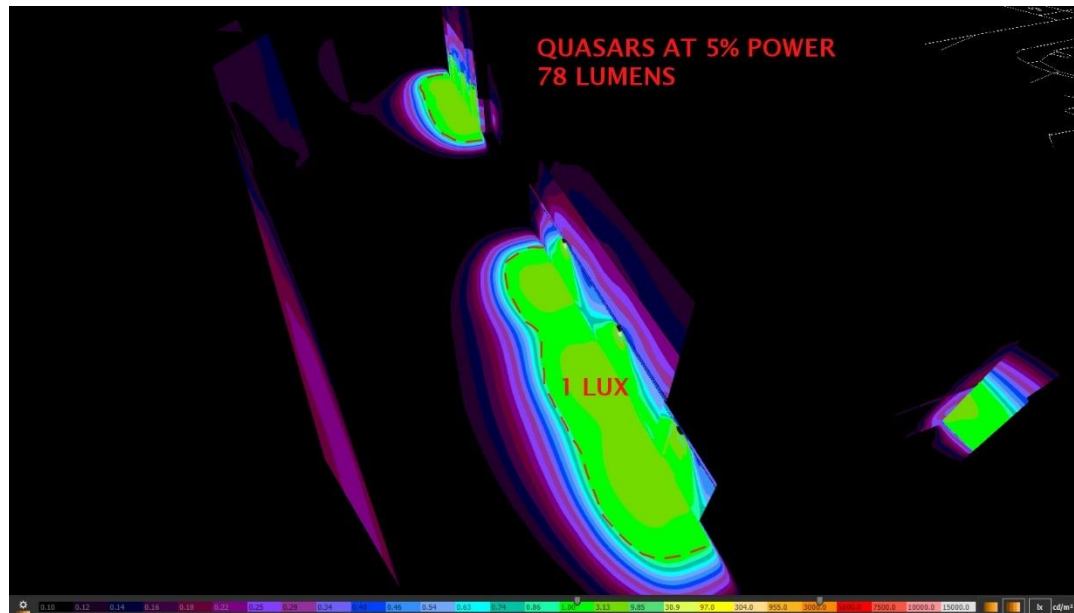
Light fittings at 20% power – 311 lumens:



Light fittings at 10% power – 156 lumens:

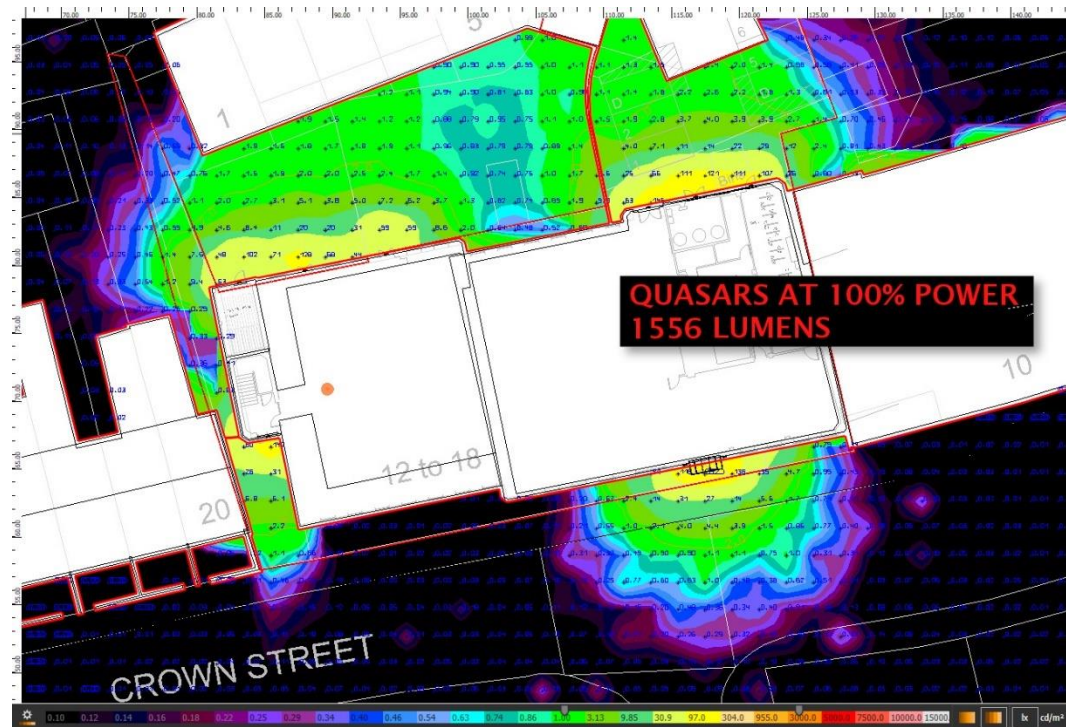


Light fittings at 5% power – 78 lumens:



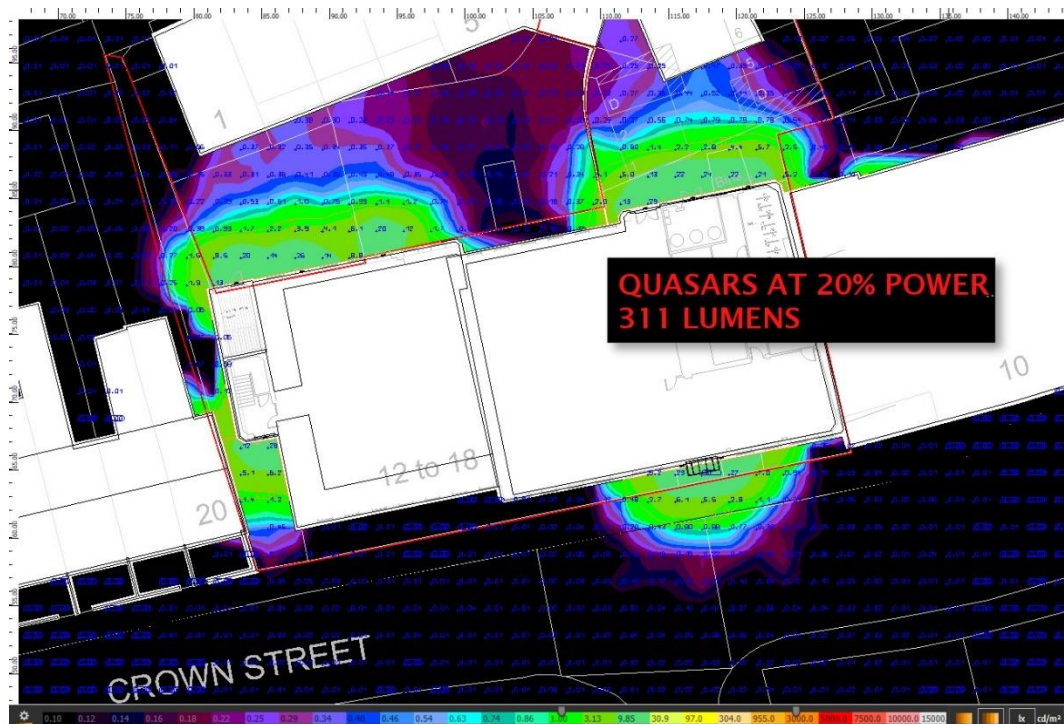
7.4 Plan Detail

Light fittings at 100% power – 1556 lumens:

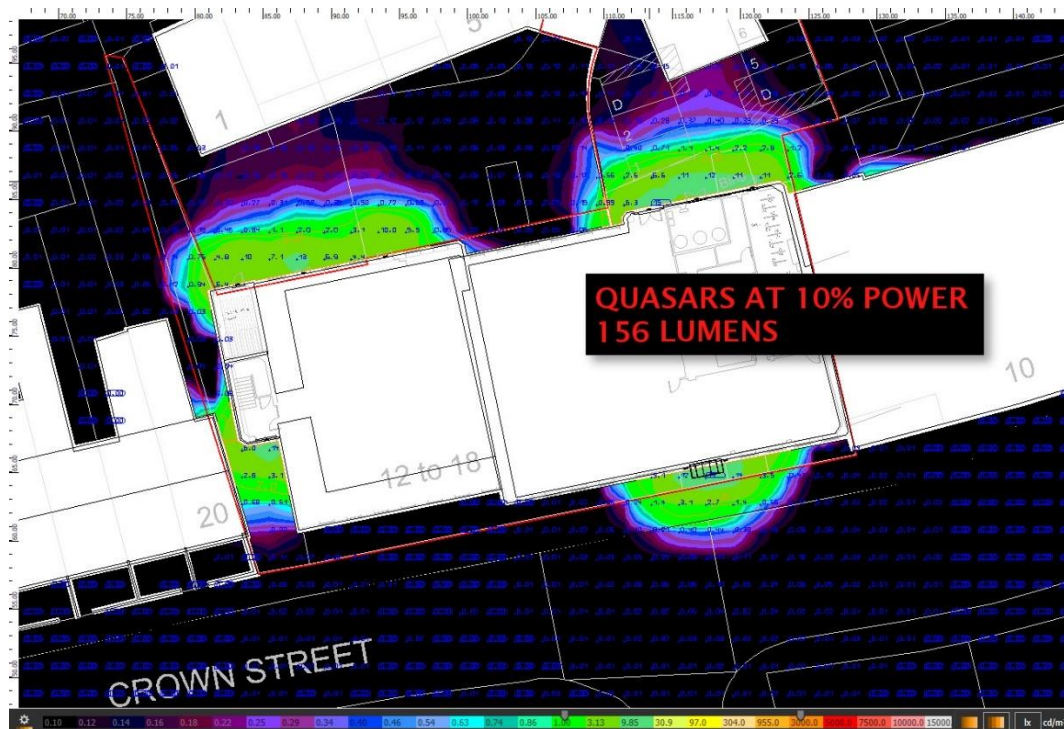


The plan view shows clearest that the 2 lux and 10 lux contours are not affecting any of the adjacent buildings.

Light fittings at 20% power – 311 lumens:



Light fittings at 10% power – 156 lumens:



Light fittings at 5% power – 78 lumens:



Light fittings at their lowest output, 2 lux and 10 lux contours are a significant distance from the adjacent buildings.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Existing Lighting Scheme

The existing lighting scheme exceeds the limits set out by planning condition 14. Therefore the existing lighting should be removed.

8.2 Zero Lighting Scheme

A scheme with no lighting would meet the requirements of planning condition 14. This is the recommended option.

This option has been rejected as some level of lighting is required for safety and security reasons.

8.3 New Lighting Scheme

The new lighting scheme is designed to provide amenity and safety lighting in a way that is compliant with planning condition 14.

This would include wall mounted downlights

Controls to ensure that lighting levels are within acceptable limits