MAX FORDHAM

Swords Cultural Quarter

Site Lighting Strategy for Planning

Rev 4

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ISSUE HISTORY

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1	04/04/22	First Issue
2	12/04/22	Issued for Planning
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4	07/07/22	PLANNING

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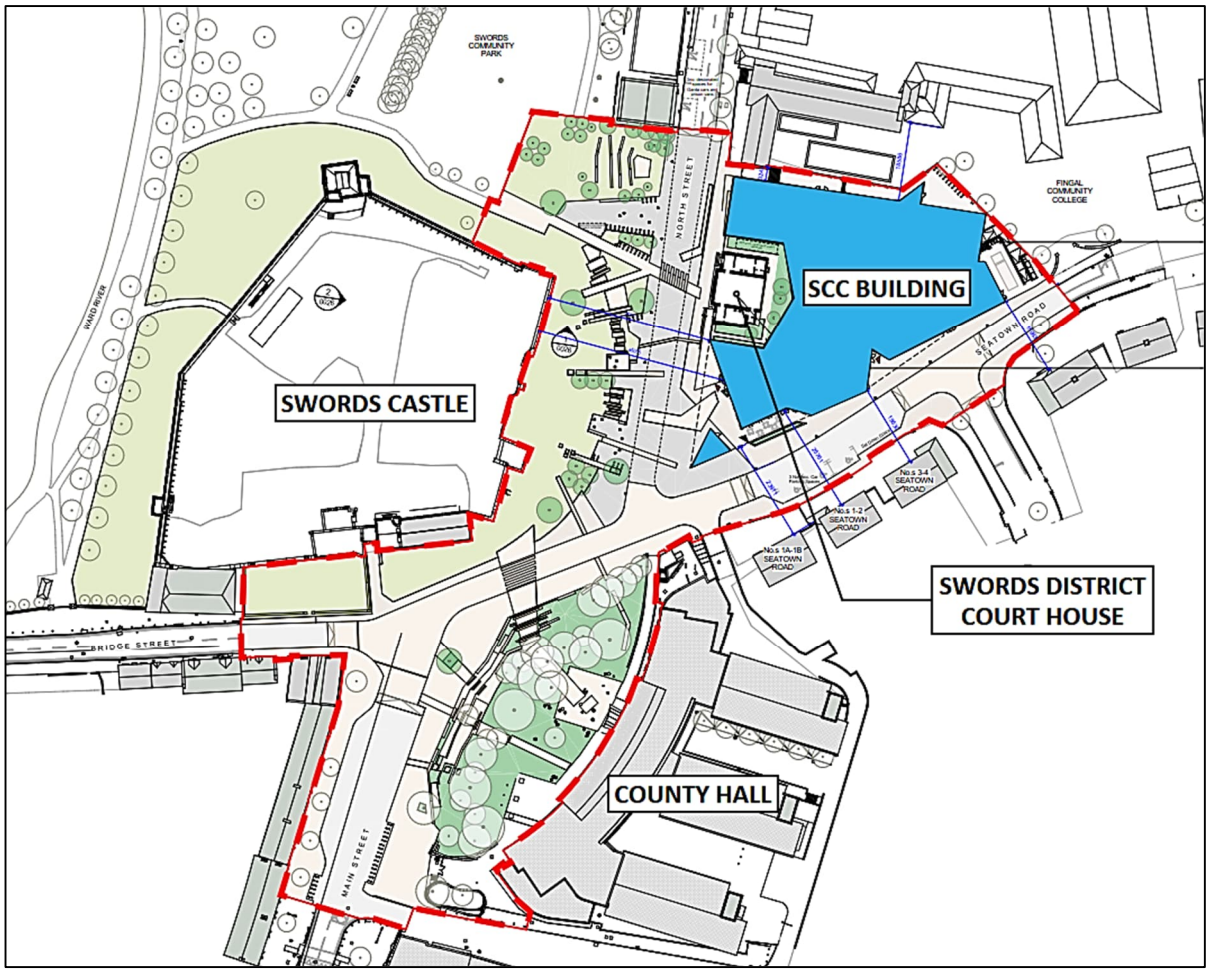
1.0 PROJECT SUMMARY

This report presents the external lighting strategy for the proposed Swords Cultural Quarter, and the measures that are being taken to reduce night-time light pollution, in support of the Planning Submission.

The project will involve the design and delivery of the construction of the Swords Cultural Centre (SCC) and implementation of a Public Realm project.

The Swords Cultural Centre (SCC) Building
The SCC building is to be located on the site of the current FCC executive carpark and St Michaels House centre. The site for the Swords Cultural Quarter also contains the Swords District Court House and is bordered by Main Street, Sea Point Road and the Fingal Community College. It is anticipated that the proposed building will have a GIA of 5,686m^2 and is indicated in the image below.

The Public Realm (Civic Space)
The public space to be redeveloped is identified by the red-line boundary in the image below. It includes the Main Street, North Street, Bridge Street and Seatown Road junction, along with Main Street outside County Hall, North Street and Seapoint Road outside the SCC. The public realm covers an area of circa 13,200m^2.



Outline plan of the Swords Cultural Quarter

There will be external lighting provided for the main pathways, secondary pathways, bike storage areas, elements of landscaping, building entrances (both main entrance and plant entrances) and all areas covered by the CCTV system.

It is proposed that the areas within the Swords Cultural Quarter site are illuminated to the levels shown in the table below;

Area	Average Illuminance	Uniformity (U_0)
Primary Pathways	10 lux	0.2
Secondary Pathways	5 lux	0.2
Building Entrances	20 lux	0.4
Areas Covered by Colour CCTV	15 lux	0.4
Decorative Lighting For Landscaping	0-50 lux (dependent on area)	N/A

Both light pollution and the impact on the surrounding areas will be minimised by the selection and placement of fittings and by limiting the hours of operation to those when external lighting is necessary for the operation of the building.

The proposed lighting installation considers a number of guides, as well as the local planning policy guidelines. Sources consulted include the Institution of Lighting Professionals, CIBSE (SLL) and Secure By Design.

2.0 DESIGN STANDARDS

The lighting is being designed to comply with the CIE 150:2003 Guide On The Limitation Of The Effects Of Obtrusive Light From Outdoor Lighting Installations and ILP Guidance Notes For The Reduction Of Obtrusive Light GN01:2011. The lighting scheme has been designed to fall within the limits stipulated by this environmental zone classification.

For each area of the installation, measures are proposed to comply with the standards required for GN01:2011 Environmental Zone E (E3), corresponding to medium district brightness areas such as small town centres or suburban locations.

Table 2.1 Environmental Zones, *ILP GN01:2011*.

Zone	Surroundings	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
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

For each zone, a set of criteria is given for external lighting installations. Table 2.2 presents the lighting limits set in both CIE 150:2003 and ILP GN01:2011.

Table 2.2 Obtrusive light limitations for exterior lighting installations in E3, *ILP GN01:2011*.

Zone	Sky Glow ULR (Max %)	Light Intrusion (into windows) Ev [lux]		Luminaire intensity I (candelas)		Building Luminance Pre-curfew Average, L (cd/m^2)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E0	0	0	0	0	0	0
E1	0	2	0	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

ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux that goes directly into the sky.
Ev = Vertical Illuminance in Lux – measured flat on the glazing at the centre of the window.
I = Light Intensity in Candelas (cd)
L = Luminance in Candelas per Square Metre (cd/m²)
Curfew = the time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of lighting applied by the local planning authority. If not otherwise stated – 23:00hrs is suggested.

The road lighting to Seatown Road and North Street are proposed to comply with the requirements for Class P3 Road Classifications as given in BS EN 13201 - 2: 2003 Road lighting Performance requirements. The P classes are intended for pedestrians and pedal cyclists on footways, cycleways, emergency lanes and other road areas lying separately or along the carriageway of a traffic route, and for residential roads, pedestrian streets, parking places, schoolyards, etc.

Table 2.3 P Lighting Classes, *BS EN 13201 - 2: 2003 Road lighting Performance.*

Class	Horizontal Illuminance		Additional requirements if facial recognition is necessary	
	Minimum maintained lx	Maintained lx	Minimum maintained lx	Maintained lx
P1	15	0	5	5
P2	10	0	3	2
P3	7.5	1	2.5	1.5
P4	5	2	1.5	1
P5	3	5	1	0.6
P6	2		0.6	0.2
P7	Performance not determined			
To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5times the minimum maintained value indicated for the class.				

LOCAL ECOLOGY

All species of bat and their roosting sites are protected under national and international law, making it unlawful to intentionally disturb, injure or kill bats or disturb their habitat. The key legislation related to the protection and restoration of bat populations is the Wildlife Act (1976) and the EU Habitats Directive, which has been transposed to Irish law with the European Communities (Birds and Natural Habitats) Regulations 2011.

The Ecologist's report states that no evidence of bats roosting, current or historic, was recorded during daytime visual inspections for the current study, but a previous recorded exists for the use of the 'Knight and Squires Chamber' by a hibernating Brown Long-eared Bat in 2015.

The site lighting will be designed to mitigate the effect of lighting on bat roosts. This includes the use of low UV output, directional directional light fittings with minimal upward light spill.

BREEAM REQUIREMENTS

The lighting scheme will be designed to meet the requirements of the following BREEAM credits;

<u>POL05 – Reduction of Night-time Light Pollution</u>

External lighting design compliant with ILE guidance for the reduction of night-time pollution and is automatically switched off between 2300 and 0700.

<u>HEA01 – Internal and External Lighting Levels, Zoning and Control</u>

Internal and External lighting provides luminance levels in accordance with the SLL Code for Lighting 2012. External lighting provided specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity.

<u>ENE03 – External Lighting</u>

Energy efficient external light fittings specified for external areas of the development and are only on when required. An average of no less than 60 luminaire lumens per circuit Watt and automatic out of hours shut off with presence detection in areas of intermittent pedestrian traffic.

3.0 SCHEME PROPOSALS

Drawing *SCQ-ZZ-L00-DR-MXF-EE-31600 External Lighting Strategy* presents the proposed External Lighting Levels arranged by zones. Lighting levels for each of the zones are noted, although the decorative lighting for the Public Realm and the external planting is to be determined during the detailed design stage.

Schedule *SCQ-ZZ-XXX-SH-MXF-EE-31000 Schedule of External Light Fittings* lists the proposed fittings for each area. The external fittings have been selected to minimise their up-light component and primarily provide downlight close to the task area (for example floor level on the pathways). This approach minimises the sky glow from the installation.

4.0 CONTROLS

It is proposed that all external light fittings are controlled by a roof mounted daylight sensor. The photocell is to be mounted externally on the roof of the building in an unobscured location. The external lighting will only be brought on when the measured natural light level falls below a set value.

Some low-level security lighting will most likely stay on after hours to allow 24-hour CCTV recording around the building perimeter and main entrances.