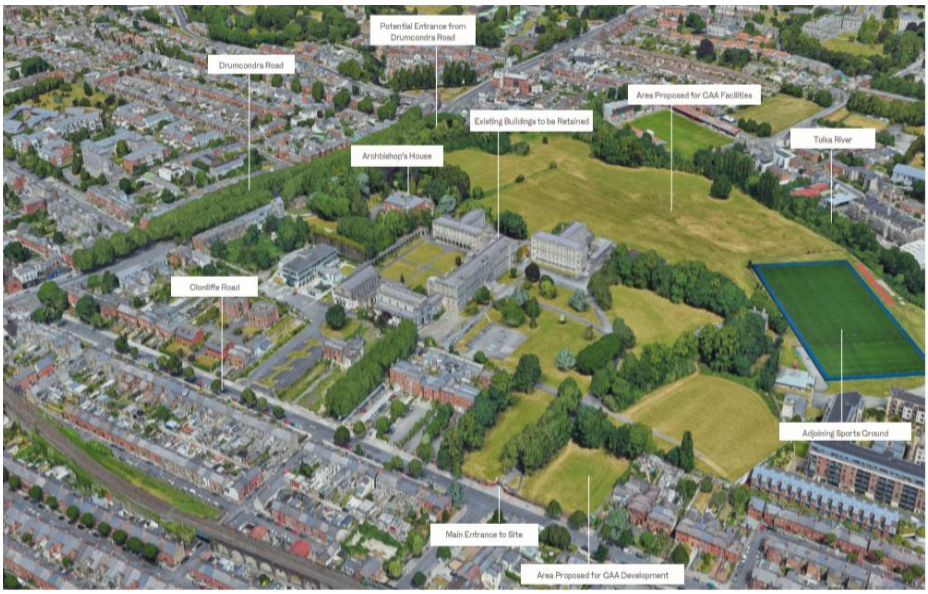

CLONLIFFE – EXTERNAL LIGHTING REPORT

Prepared for: Hines
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Project Reference: H634
Document Reference: H634-OCS-XX-RP-E-0002

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S2	P03	13.05.21	DRP	ST/JS	Issued for final comments
S2	P04	09.07.21	DRP	ST/JS	Issued for planning

CONTENT

1 INTRODUCTION

The following report outlines the proposed external lighting for the proposed residential development of Clonliffe Lands. The below image shows the current masterplan which will be developed and updated as the scheme gets into detail design.

Fig 01 – Masterplan site layout

The proposed development will be a strategic housing development and retail block in a 4 phase strategy, Phase 1, 2, 3A and 3B.

The final development will consist of 1614 new high density residential units along with the converted seminary building. This will consist of new build residential blocks, along with the listed seminary building converted into apartments. This is in addition to retail, civic, pedestrian and childcare facility spaces.

The site is located circa 1.5kilometers north of Dublin City Centre.

2 PROPOSED DEVELOPMENT

The development will consist of the construction of a Build To Rent residential development set out in 12 no. blocks, ranging in height from 2 to 18 storeys, to accommodate 1614 no. apartments including a retail unit, a café unit, a crèche, and residential tenant amenity spaces. The development will include a single level basement under Blocks B2, B3 & C1, a single level basement under Block D2 and a podium level and single level basement under Block A1 to accommodate car parking spaces, bicycle parking, storage, services and plant areas. To facilitate the proposed development the scheme will involve the demolition of a number of existing structures on the site.

The proposed development sits as part of a wider Site Masterplan for the entire Holy Cross College lands which includes a permitted hotel development and future proposed GAA pitches and clubhouse.

The site contains a number of Protected Structures including The Seminary Building, Holy Cross Chapel, South Link Building, The Assembly Hall and The Ambulatory. The application proposes the renovation and extension of the Seminary Building to accommodate residential units and the renovation of the existing Holy Cross Chapel and Assembly Hall buildings for use as residential tenant amenity. The wider Holy Cross College lands also includes Protected Structures including The Red House and the Archbishop's House (no works are proposed to these Structures).

The residential buildings are arranged around a number of proposed public open spaces and routes throughout the site with extensive landscaping and tree planting proposed. Communal amenity spaces will be located adjacent to residential buildings and at roof level throughout the scheme. To facilitate the proposed development the scheme will involve the removal of some existing trees on the site.

The site is proposed to be accessed by vehicles, cyclists and pedestrians from a widened entrance on Clonliffe Road, at the junction with Jones's Road and through the opening up of an unused access point on Drumcondra Road Lower at the junction with Hollybank Rd. An additional cyclist and pedestrian access is proposed through an existing access point on Holy Cross Avenue. Access from the Clonliffe Road entrance will also facilitate vehicular access to future proposed GAA pitches and clubhouse to the north of the site and to a permitted hotel on Clonliffe Road.

The proposed application includes all site landscaping works, green roofs, boundary treatments, PV panels at roof level, ESB Substations, lighting, servicing and utilities, signage, and associated and ancillary works, including site development works above and below ground.

3 EXTERNAL LIGHTING

3.1 Design Standards

The external lighting has been designed in the best possible way for visual comfort, biodiversity and suitability, and shall be specified in accordance with the appropriate maintained illuminance levels recommended by and will adheres to the following documents:-

- CIBSE Lighting Guides LG6: The Outdoor Environment
- BS 5489 Code of Practice for the Design of Road Lighting. Lighting of Roads and public amenity areas.
- IS/BS EN 13201-2 Road lighting. Performance requirements
- Local County Council Public Lighting Specifications
- TGD Part M 2010 Access and Use
- BS8300-1:2018 –Design of an accessible and inclusive built environment-Part 1 External environment-Code of practice
- BS EN 12464-2 Outdoor work places
- WELL
- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018).
- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011

In addition to above general external lighting, New and refurbished buildings usually require a Disability Access Certificate (DAC) as part of the building compliance. The DAC requirements for each development are set out by the DAC Consultant (normally the Fire consultant or Architect).The DAC requirements for external lighting are usually referenced to the TGD Part M 2010 Access and Use document,

The TGD Part M outlines the lighting requirements for external lighting on slopes and ramps are detailed in section 3.4

Generally Lighting design shall ensure that:

- all night-time lighting is concentrated in the appropriate areas
- upward lighting is minimised
- light pollution is minimised
- energy consumption is minimised

3.2 Strategy Statement

The illumination of the proposed development provides opportunities for architectural enhancement whilst ensuring compliance with security, safety and current planning and best practice guidelines for architectural lighting. This section discusses the planning condition context, identifies the potential environmental impacts of artificial lighting such as light pollution, biodiversity impacts and the proximity to residential dwellings, and suggests ways to mitigate these impacts through a strategic approach to lighting design.

3.3 Biodiversity Strategy

Increasing local biodiversity and ecology with native tree planting and wildlife habitat creation is a priority for the development. It is widely recognised that artificial lighting can have detrimental

effects on nocturnal animals, therefore, the development lighting strategy shall consider the following:-

- **Do not over light** - Where relevant guidance gives a range of illumination levels the lowest one which is appropriate shall be utilised.
- **Luminance distribution** - The spread of light shall be kept near to or below the horizontal where possible.
- **Minimise UV light** - Selected luminaires shall emit minimal UV light. This can be achieved by selecting LED luminaires.
- **Colour temperature of lamps** - All light sources shall be 4000K maximum (warm white spectrum to reduce blue lighting component.
- **Lighting controls** – Consideration shall be made for when lighting is operational to reduce detrimental impacts on nocturnal animals. Motion-activated sensor lighting shall be employed where practicable. Such lighting shall have a short "activated time" to ensure that it is responding to human activity rather than bats, birds or passing foxes and to return to darkness quickly. Human presence would continue to re-trigger the lights while occasional bat entry would be less likely to do so.
- **Luminaires** shall feature peak wavelengths higher than 550 nm.
- **Lighting** shall be for safety and mobility and not for ornamental purposes. Light falling upon any areas of benefit to bats such as the wood to the rear of the site must not exceed 3 lux to ensure that light intolerant individuals and species are not prevented from feeding and commuting.

3.4 Lighting Classes

The appropriate lighting classes shall be in accordance with BS EN 13201-2: 2015 (Table 1) as detailed below:-

Table 1: illumination level

Class	Horizontal Illuminance	
	Maintained average illuminance (lx) *	Minimum maintained illuminance (lx)
P1	15	3
P2	10	2
P3	7.5	1.5
P4	5	1
P5	3	0.6
P6	2	0.6
P7	Not determined	Not determined
* -	To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5 times the minimum value indicated for the class.	

The overall uniformity (Uo) are to be calculated and measured in according to EN 13201-3 and EN 13201-4.

Approach to buildings other than dwellings:

(g)The access route should be clearly identifiable and well lit. Where this is provided by artificial light it should achieve a **minimum luminance** of 20 lux on level and gently sloped access

routes, with a **minimum luminance** of 100 lux on ramps or steps, measured at ramp, tread and landing level.

3.5 Light Pollution

Light pollution is excessive, misdirected, or obtrusive artificial light that is not used to perform a functional task. In many cases, light pollution can be defined as a glare source, where a lamp itself is visible, or simply as light trespass, where unwanted light enters adjacent properties. It also contributes to the 'sky glow' or brightening of the night time sky.

The Institution of Lighting Professionals (ILP) outline types of obstructive light as follows:-

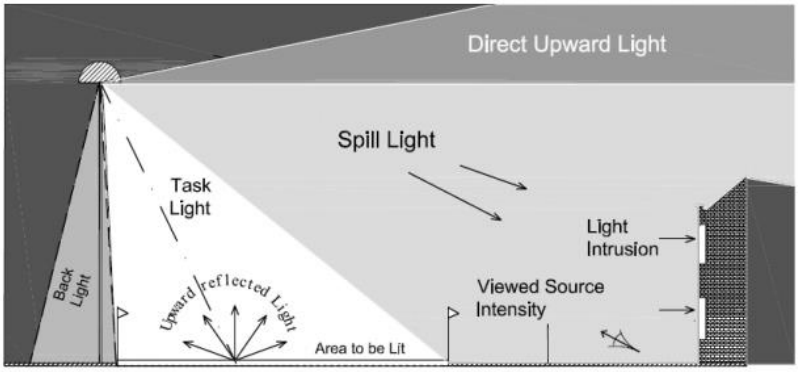
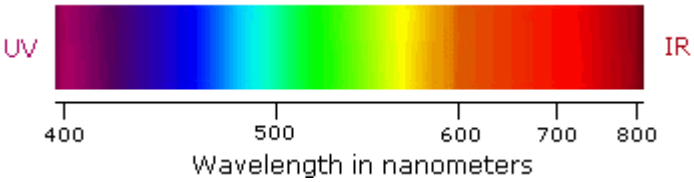


Figure 2 – Extract from ILP Guidance Notes – Types of Obstructive Light

Light Sources

Night time visual tasks are only dependant on light radiated within the visual spectrum. It is recognised that light sources emitting ultra-violet or infra-red radiation can also have detrimental impacts on the local biodiversity. It is, therefore, proposed that luminaires shall peak between 550-600nm, therefore, not exceeding 4000 kelvin.



Luminaires

Careful consideration shall be taken when selecting the appropriate luminaires to avoid light pollution and Sky Glow. Luminaires shall be selected in order to minimise upward spread of light in accordance with the ILP Guidance Notes for the Reduction of Obtrusive Light

The ILP provide guidance on how to minimise sky glow. Ensuring that luminaires are angled below 90° as detailed below:

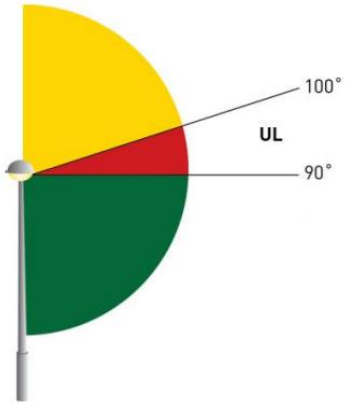


Figure 3 - Extract from ILP Guidance Notes – Critical luminaire angles for minimising sky glow

Light Intrusion (into Windows)

Given the close proximity of residential apartments to vehicular traffic routes, minimising light trespass into adjacent dwelling has been considered.

The lighting strategy shall endeavour to reduce the light intrusion into the windows in accordance with the ILP Guidance Notes for the Reduction of Obtrusive Light.

3.6 Detailed Strategy

The lighting design has been designed to complement each individual space with lux level as per below image.

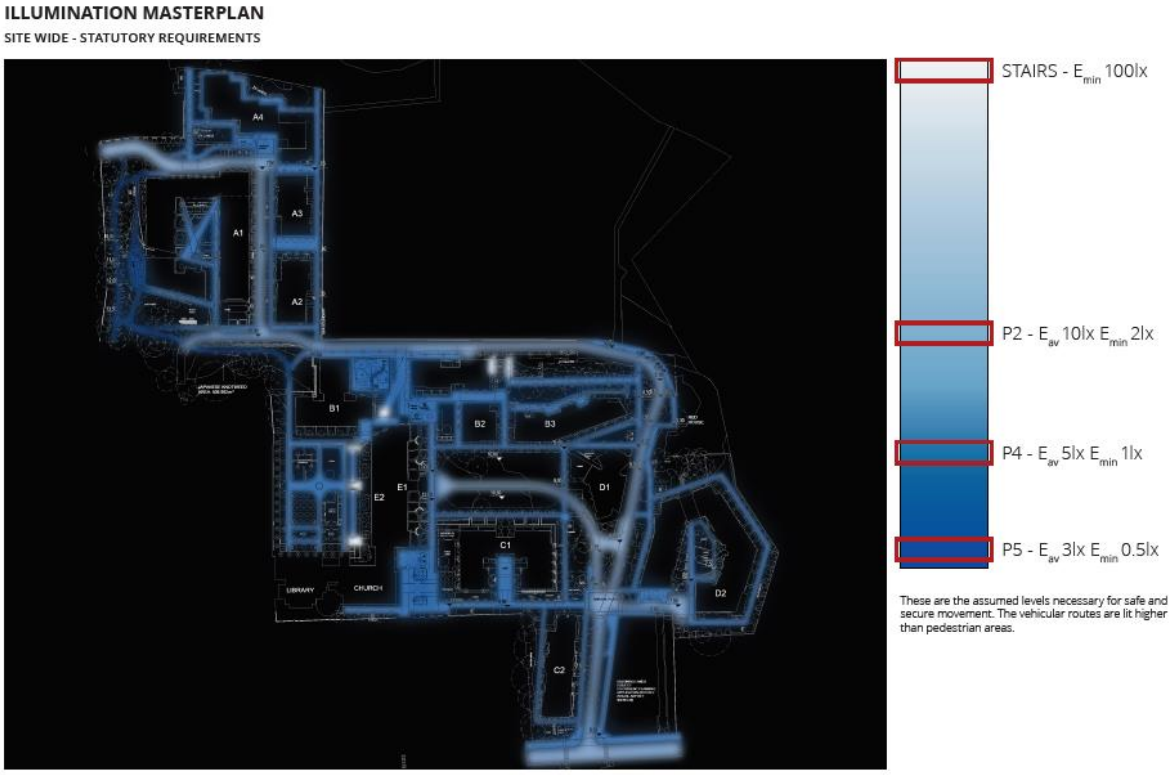


Fig 4: Illumination masterplan

Zone 1 – Primary Roads and Major Roads (not applicable to this project)

The primary road and the major roads are the roads that link all the houses within the development site. The lighting strategy for the primary roads is to provide sufficient lighting for safety of the vehicle users, cyclists and pedestrians that will be on the roads. The lighting installed in this area is designed as a column mounted at a minimum height of 6m. The zone 1 area light fittings were designed in accordance with local council guidance and recommendation.

Zone 2 – Secondary Roads and Shared Surfaces

The lighting strategy for the secondary roads and shared surfaces is to provide sufficient lighting for safety by incorporating strategically placed lighting columns at a height of 6m.

Given the close proximity of adjacent residential dwellings the luminaires have been configured in a staggered arrangement to minimise light pollution into the dwellings and to maximise the light distribution and aesthetics.

To minimise misdirected or obstructive light the lighting columns have been selected such that the beam angle can be less than 90° as recommended by the ILP.

Zone 3 – Residential Roads

The lighting strategy for the residential roads is to reduce the impact of the lighting on the residential buildings by focusing on the roads for safe driving within the vicinity of the residential houses.

Given the close proximity of residential houses to vehicular traffic routes, minimising light trespass into adjacent dwelling has been considered and the streetlights in these areas will be placed on lighting column at a height of 6m.

The lighting strategy shall endeavour to reduce the light intrusion into the windows in accordance with the ILP Guidance Notes for the Reduction of Obtrusive Light.

Zone 4 – Pedestrian and Cycling Links

The lighting strategy for the pedestrian and cycle links is to provide sufficient lighting for safety, whilst also ensuring an attractive night-time environment to allow users to navigate the main routes safely.

External lighting columns have been situated along the main pedestrian areas to focus on the safe navigation across the main footpaths, whilst not over lighting the greenway.

All luminaires shall also be LED to ensure that UV light is minimised, and the lamps colour temperature shall not exceed 4000k which shall further assist in encouraging biodiversity.

Zone 5 – Public Open Spaces

The lighting strategy for the public open spaces is to create an area of safety and wellbeing as well as an attractive night-time environment.

The lighting strategy for the public open spaces is to strategically locate column lights around the perimeter of the spaces, matching the surrounding pedestrian areas.

The relevant lighting classes has been determined by using CEN/TR 13201-1:2014 (the following table outlines the allocated classes based on the development typology plans outlined within this section).

Table 2: lighting zones and classes

Zone Type (based on development typology plans)	Allocated Class (based on CEN/TR 13201-1:2014)
Zone 1 (Primary Roads)	P1 /P2 (not applicable to our site)
Zone 2 (Secondary Roads)	P2/P3
Zone 3 (Residential Roads)	P4
Zone 4 (Pedestrian and Cycling)	P4
Zone 5 (Public Open Spaces)	P4

To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1.5 times the minimum illuminance value indicated for the class.

3.7 Luminaires

All luminaires are to be between 2700K-4000K colour temperatures (depending on the location). The desired lighting design may also be achieved by other luminaires and the final lighting installation may use other luminaires, with modified positioning and aiming to achieve the same result. Manufacturers' stated performance characteristics are subject to change. Other changes may be agreed with DCC Road Lighting Department as the works progress on site.

4 SUMMARY

As part of the development application, this external lighting strategy report outlines the preferred lighting options, including the proposed secondary streets and shared surfaces, pedestrian and cycle links and public open spaces.

This document also described the control measures considered to ensure compliance with the following documents:-

- BS EN 12464-2 Outdoor work places
- BS 5489 Code of Practice for the Design of Road Lighting. Lighting of Roads and public amenity areas.
- BS EN 13201-2 Road lighting. Performance requirements
- CIBSE Lighting Guide 6 - The Outdoor environment
- Institute of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light.

5 APPENDIX 01 – PROPOSED LUMINAIRE SCHEDULE

BASELINE ILLUMINATION MASTERPLAN

SITE WIDE - DOT LAYOUT

4-6M PEDESTRIAN LIGHTING COLUMN

4-6M PEDESTRIAN LIGHTING COLUMN

CEILING RECESSED DOWNLIGHT

BUILDING MOUNTED DOWNLIGHT

STEP LIGHTING WALL RECESSED

The lighting equipment described above would have a CRI > 70 and CCT between 2700K and 3000K.