

# Site Lighting Report

Barrington Tower

**Project No. C975**

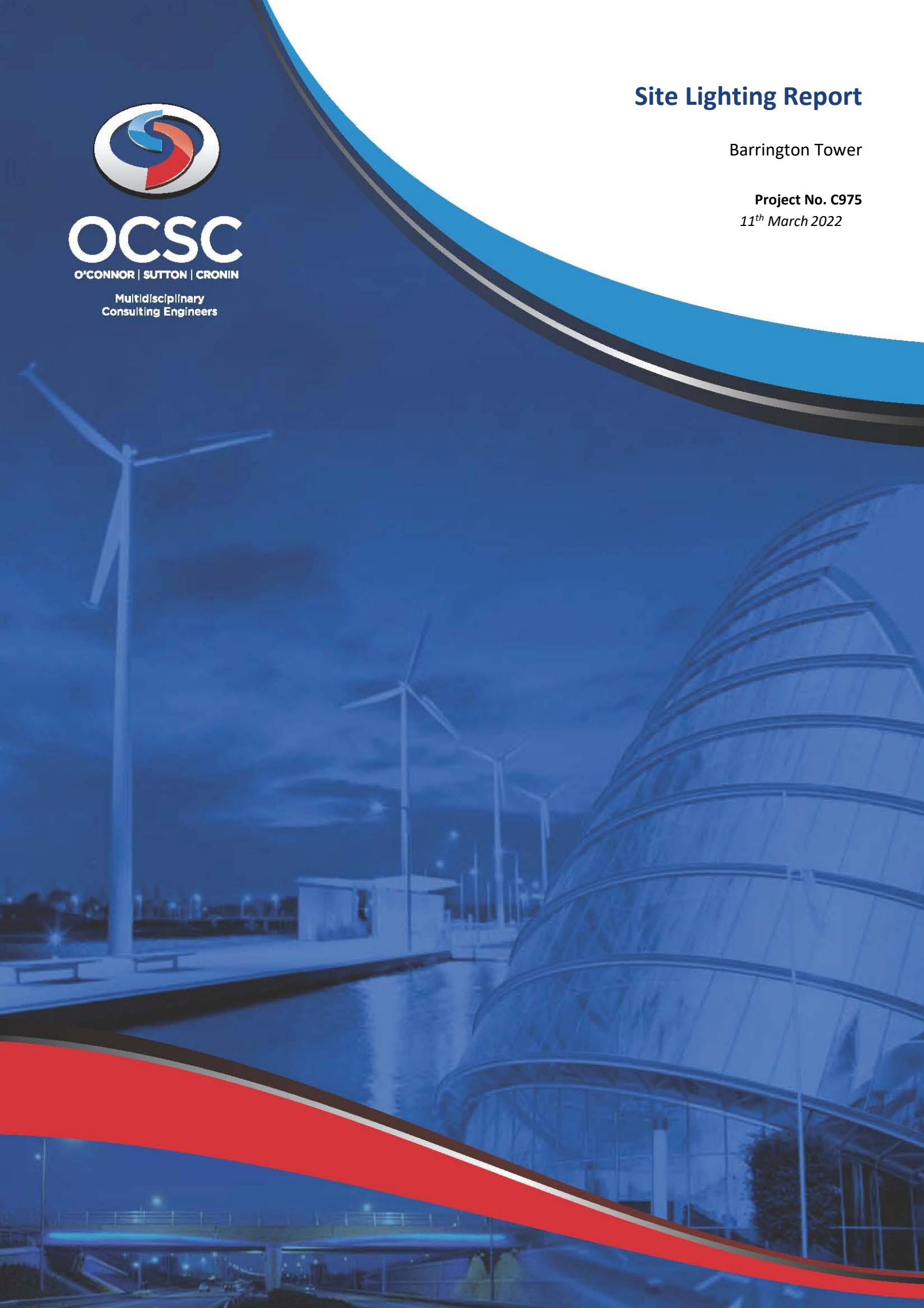
*11<sup>th</sup> March 2022*



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**01st March 2022**

## SITE LIGHTING REPORT

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## EXECUTIVE SUMMARY

We have been appointed as the Consultants to design the lighting "Barrington Tower", Brennanstown Road, Dublin 18.

The report considers the lighting design as developed by O'Connor Sutton Cronin (OCSC). The report has been developed with the following principal considerations:

- a) Lighting design criteria as set out in the CIBSE Lighting guide about obtrusive light.
- b) Lux levels in the landscape around the site properties.
- c) Provide a visually interesting environment
- d) Enhance Security
- e) Minimize light pollution and visual glare to residential neighbours, pedestrians, and neighbouring areas.
- f) Provide adequate illumination to contribute towards the safe use of all walkways and footpaths by pedestrians within the residential development.
- g) Take account of ecological factors such as local bat populations.

The complete external lighting installation will be designed in accordance with the regulations for electrical services as ETCI National Rules for Electrical Installations ET101:2020 as well as BS5489-1:2013 Code of practice for the design of road lighting, IS EN 13201:2003 & Dun Laoghaire-Rathdown Installations in Residential and Industrial Areas.

The predicted performance of the external lighting installations has been assessed in detail using Lighting Simulation software. The Lighting Simulation software used was Lighting Reality.

## 1. INTRODUCTION

The proposed 'Build-to-Rent' (BTR) development will consist of the construction of 8 no. blocks in heights up to 10 storeys comprising 534 residential units, a creche, a retail unit, residential support facilities and residential services and amenities. The proposal also includes car and cycle parking, public and communal open spaces, landscaping, waste management areas, plant areas, substations, switch rooms, and all associated site development works and services provision.



Figure 1: Proposed Site Plan

*Figure 1.1 –Proposed Site Plan*  
(Source: Murray & Associates Drawing No. 1815\_PL\_P\_01)

## 2. LIGHTING DESIGN CRITERIA

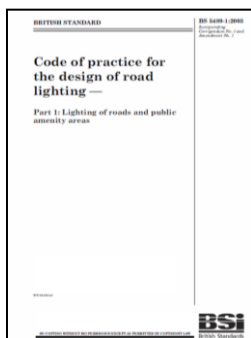
The landscape lighting installation is designed in accordance with CIBSE Lighting Design Guide.

Special consideration was given regarding Obtrusive light and to overspill (intrusive light and light into windows) as set out in table 3 of the CIBSE lighting guide.

**Recommended limits – Table 3**

| Environmental Zone                            | Skyglow ULR inst<br>(Max %) | Light trespass (into<br>windows) Max LUX | Source intensity /<br>(kcd) max |
|---|-----------------------------|--|---------------------------------|
| E1 Dark Landscapes                            | 0                           | 2  | 2.5                             |
| E2 Rural, Village,<br>Dark Urban<br>Locations | 2.5                         | 5  | 7.5                             |
| E3 Urban locations,<br>small town centres     | 5                           | 10                                       | 10                              |
| E4 Town and city<br>centres                   | 15                          | 25                                       | 25                              |

The design criteria applied to the proposed external lighting installations shall be in accordance with BS 5489-1:2013<sup>1</sup>, NSAI EN I.S. 13201-2 Road Lighting Performance Requirements<sup>2</sup>, and Dun Laoghaire-Rathdown County Council: Public Lighting Installations in Residential and Industrial Areas: Guidance Document – January 2022<sup>3</sup>. The guidelines in “Bats & Lighting, Guidance Notes for Planners, engineers, architects and developers”<sup>4</sup>, issued by Bat Conservation Ireland were also taken into account in the design of lighting.



Public Lighting in Residential and Industrial Areas  
Guidance Document – January 2022



<sup>1</sup> British Standards Institution 5489-1:2013

<sup>2</sup> IS EN 13201:2015-2

<sup>3</sup> Public Lighting Installations in Residential and Industrial Areas: Guidance Document - January 2022.

<sup>4</sup> The guidelines in "Bats & Lighting, Guidance Notes for Planners, engineers, architects and developers", issued by Bat Conservation Ireland

### 3. GUIDELINES TO STREET LIGHTING DESIGN

The points below were used as guidelines in the design of the external lighting. The different lighting classifications used for the proposed development can be seen below.

#### 3.1 Proposed Development

1. Light spillage from doorways and windows should be kept to a minimum.
2. Dun Laoghaire-Rathdown County Council public lighting guidance document states that, pedestrian areas where there are no parked vehicles are to be designed to conform to required lux levels of P4 lighting classes: 5 lux.
3. Part M and BS8300 guidelines are considered for the stairs/ramps and entrances to the site.
4. CIBSE guidelines considered while installing and designing the strategy lighting for areas like roadways.
5. No white light or other lighting with a UV component will be permitted in the throughout the development to reduce the impact on Bat habitat:
  - Lighting with little or no UV will be utilised.
  - 2700K colour temperature luminaires are proposed throughout the site except in the West boundary of the site. In the West boundary which stated as BAT path in the Ecological report, in order to reduce the impact on the BAT life 2200K luminaries are proposed in that area.
  - Lighting with a narrow spectrum will be permitted to reduce impact.
  - LED lighting with a broad spectrum will not be used.
6. Minimum lux level to be used or as required by Health & Safety especially along the perimeters.
7. An Amber LED has been shown to have a reduced impact on Bats due to its narrow spectrum properties.
8. Lighting Classification
  - P1 – Roadways 8M columns
  - P4 – Pathways 4m/5m columns/ 1m Bollards
  - 30 lux for External stairways and ramps – LED profile in the Stair Rails



9. The lighting will be directional on to the development roads only with no significant spillage of light to adjoining habitats. To reduce light spillage from luminaires, lights that are designed not to emit light at angles greater than 70deg from the vertical plane will be used. Moreover, backlight shield will be used to eliminate the rear light spillage.
  - Consequently, a flat glass protector is often used to reduce light spillage. Other methods to control light spillage are:
    - a. Cowls/Shields: these can be mounted on lamps to control direction of the light.
    - b. Masking: part of the luminaries is painted to block light to control the direction of the light.
    - c. Louvres: either as internal or external slates organized in rows or at angles depending on the direction of light control.

#### **4. PROPOSED INSTALLATIONS**

The proposed development's pedestrian access routes, roadway and carpark will require illumination and shall for the purpose of this report comprise of lighting installations to Barrington as identified on the drawing 'C975-OCSC-XX-XX-SK-E-0001-S4-P04' which illustrates the design intent.

The lighting design proposed is to use high efficiency LED luminaires. A lighting design for the proposed development incorporates 8-metre-high lamp post with outreach to provide directional light output direct to the roadways, carparking area. For the Pedestrian pathways in courtyard areas between the residential block areas incorporates 5m lamp post and 1m bollards. In the west boundary, which is identified as Bat path, 4m columns are used to reduce the effect on the wildlife.

##### **4.1 Selected Luminaires for Barrington**

It is proposed to provide 8m high column-type light fittings roadways to achieve 15lux average illumination levels. Moreover, proposed 5m and 4m column light fitting and 1m bollards are selected to illuminate the pathways around the development to achieve 5 lux average. The luminaire will be installed with a DALI ballast and Eco Step Dim controller to reduce the lux level during no human presence. Fully compliant with EN 60598: CE.

We also have included LED Strips mounted on the Stair rails to achieve 30 lux for DAC requirement, fittings shown in figure 4.2.5.



Figure 4.2.1  
Luminaire fitting

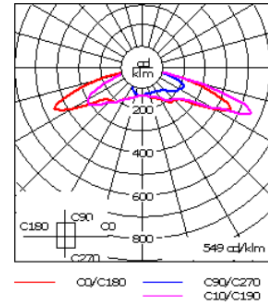


Figure 4.2.2  
Luminaire Photometric curve



Figure 4.2.3  
Luminaire Fitting

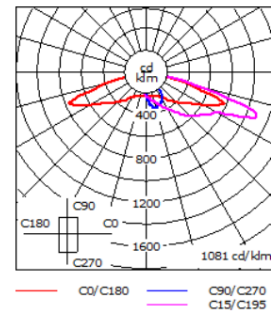


Figure 4. 2.4  
Luminaire Photometric Curve



Figure 4.2.5  
Luminaire Fitting

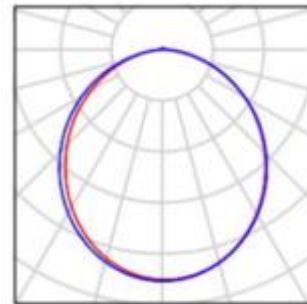


Figure 4.2.6  
Luminaire Photometric Curve

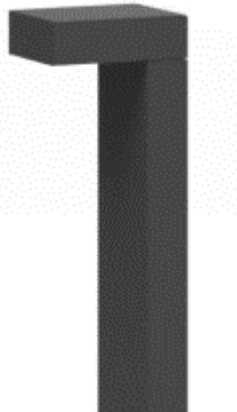


Figure 4.2.7  
Luminaire Fitting

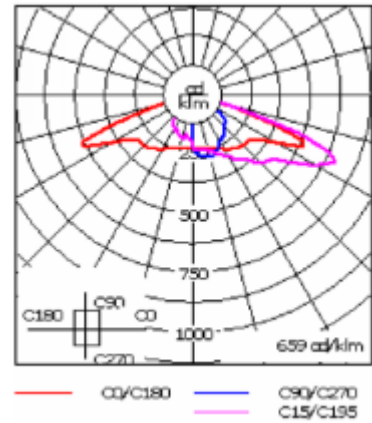


Figure 4.2.8  
Luminaire Photometric Curve



Figure 4.2.9  
Luminaire Fitting

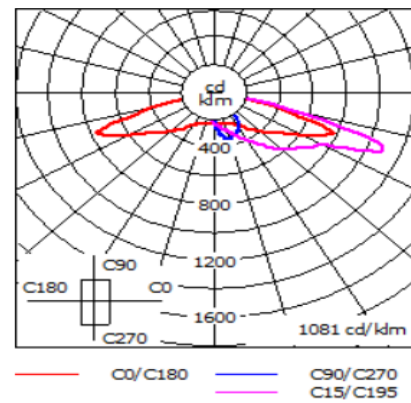


Figure 4.2.10  
Luminaire Photometric Curve

## 5. RESULTS

### 5.1 Lighting Calculation for Barrington

Figure 5.1.1 indicates the predicted illumination levels on ground for the proposed installations in the entire development respectively.

Results for the Barrington indicates indicate the following:

- The average 15 lux level maintained at main Roadway according to P1 class.
- The average 5 lux level maintained at all pathways throughout the site according to P4 class.
- The average 30 lux level maintained at external stairs and ramps according to the Part M/BS8300 guidelines.



Figure 5.1.1 –Illumination Levels (Lux) for Barrington (Lighting Reality)

## 5.2 Effects on environmental factors

The results shown in Figure 5.1.1 is design intent only. Whilst keeping the light spill to a minimum the required lux levels throughout the site will be maintained. Reduced light spill is adhered to, while ensuring lux level requirements are maintained throughout. The final layout will also consider the following factors to reduce the negative impact of lighting on neighbourhood habitat:

- The minimisation of night-time lighting emitted during both the Construction and Operational Phases of the Proposed Development (once health and safety requirements are met).
- The avoidance of direct lighting of existing or proposed treelines and hedgerows at the Site, as well as areas of planting.
- LED luminaires will be used as they have low UV output, sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Greenway/parkland lighting shall dim at night by way of motion sensor lighting. This shall keep lighting within the proposed wildlife corridor, culvert & river to an absolute minimum while these areas are unoccupied during the hours of darkness, thus maintaining the natural ecology of the site wherever possible.
- Lighting within the proposed wildlife corridor shall be triggered by interruption of a receptor fixed at a height of 1 metre. This shall prevent almost all bat activation, while maintaining activation for safe movement of pedestrians and cyclists.
- Glare shields can be utilized if required in order to minimise any unnecessary light spill onto bat routes along the stream and woodland areas.
- A lux level of 0 will be provided within 5m of the proposed site boundary to ensure that there is no spillage onto surrounding landscape.

- Metal halide lighting is not Bat friendly and it is not used in the design. LED fittings with no UV output were used throughout.

## 5. CONCLUSION

As shown in Figure 5.1.1 the illumination throughout the development meets the lighting design requirements; with an average of 5 lux for Pedestrian pathways and 15 Lux for main roadways, and 30 lux maintained at stairs and ramps as per DAC requirement.

The illumination throughout the development roadways meets the lighting design requirements of P1, P3 and P4 lighting classes. The proposed luminaires and lighting design ensures that there is no negative impact of lighting on neighbourhood habitat.

The details of the proposed lighting layout are shown on the accompanying drawing no. C975-OCSC-XX-XX-SK-E-0001-S4-P04.

## APPENDIX A

### Reference

C975-OCSC-XX-XX-SK-E-0001-S4-P04

### Drawing Title

Proposed Site Lighting Layout



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