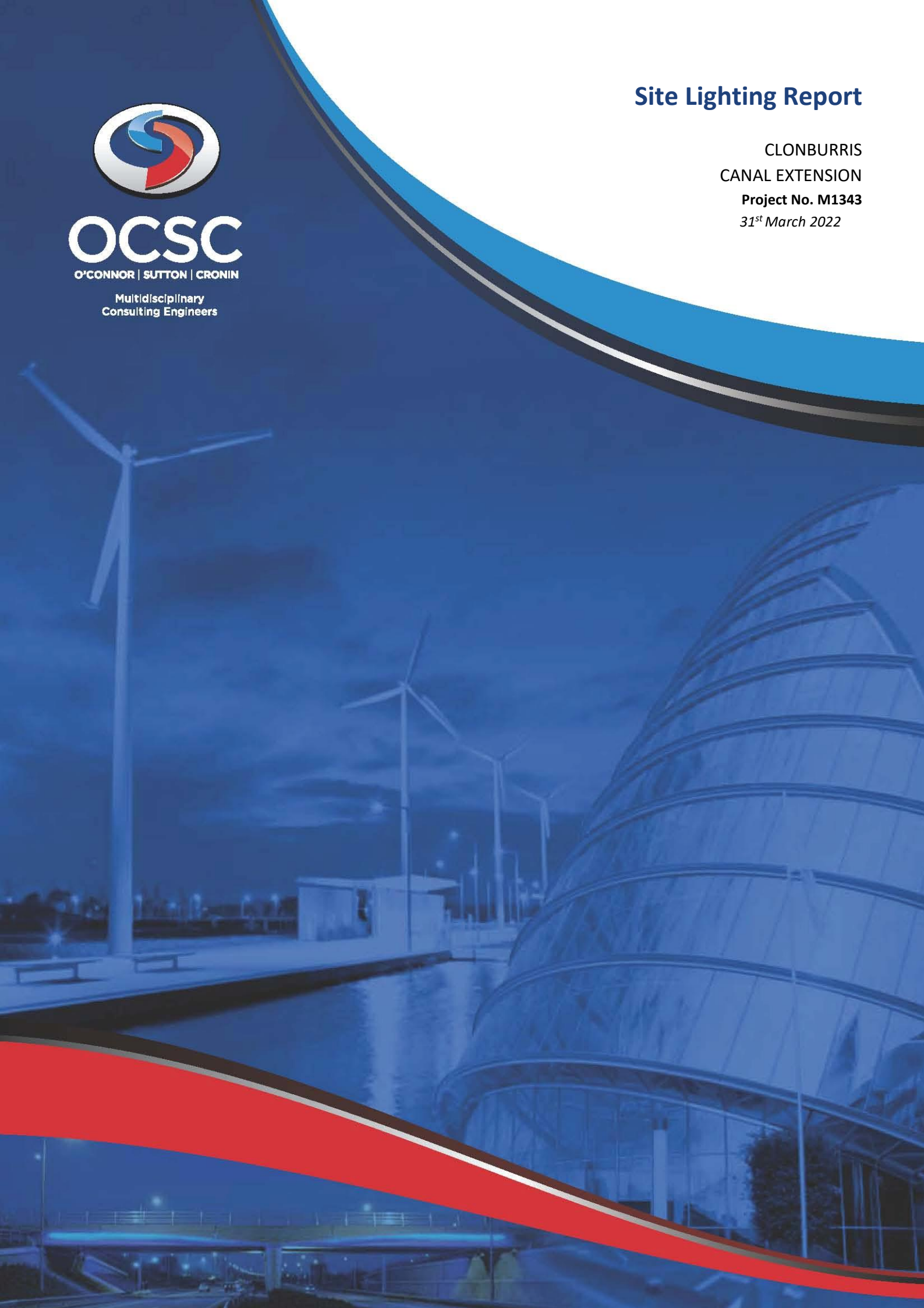


Site Lighting Report

CLONBURRIS
CANAL EXTENSION
Project No. M1343
31st March 2022



Site Lighting Report



OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

NOTICE

This document has been produced by O'Connor Sutton Cronin & Associates for its Client South Dublin County Council. It may not be used for any purpose other than that specified by any other person without the written permission of the authors.

DOCUMENT CONTROL & HISTORY

OCSC Job No.: M1343	Project Code	Originator Code	Zone Code	Level Code	File Type	Role Type	Number Series	Status/ Suitability Code	Revision
	M1343	OCSC	XX	XX	RP	E	0001	S4	P04
Rev.	Status	Authors	Checked	Authorised	Issue Date				
P04	S4	A.M.	MFC	BR	31.03.22				
P03	S4	A.M.	MFC	BR	16.03.22				
P02	S4	A.M.	MFC	BR	15.03.22				
P01	S4	A.M.	MFC	BR	23.02.22				

31st March 2022

SITE LIGHTING REPORT

INDEX	PAGE
EXECUTIVE SUMMARY	4
1. INTRODUCTION	5
2. LIGHTING DESIGN CRITERIA.....	7
3. GUIDELINES TO STREET LIGHTING DESIGN.....	8
3.1 Proposed Development	8
4. PROPOSED INSTALLATIONS.....	9
4.1 Selected Luminaires for Clonburris Canal Extension.....	9
RESULTS.....	10
5. CONCLUSION	12
APPENDIX A.....	13

EXECUTIVE SUMMARY

We have been appointed as the Consultants to design the lighting Clonburris canal extension, Clondalkin, Dublin 22.

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 & South Dublin County Council: Public Lighting Installations in Residential and Industrial Areas: Guidance Document – January 2022.

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 development consists of soft-urban design of buildings sitting in a parkland setting. The principal design elements of the proposed residential development include: 4 main blocks; each block is defined by a series of buildings with different typologies Provision of 3 public parks to the north, south and east - enhancing the existing context Landscaped local streets branch from this and permeate the development creating a balance between residential and open space.

The development will add quality to the locality through new pedestrian routes and amenity for children, adults and elderly. This will help create a sense of place and it will also be enjoyed by the neighbouring community.

The proposed development Consists of the construction of 118 no. Residential units

- 11 No. 2 storey - three-bed semi-detached and terraced houses
- 11 No. 3 storey - four-bed semi-detached and terraced houses
- 25 No. 3 storey buildings each comprising: a single storey 2-bedroom apartment at the ground level with a three-bed duplex above 5 No. 3 storey - stacked simplex units: comprising a 2-bed apartment at ground level and 2 No. 1-bedroom apartments at the first and second floor levels 4 No. 3 storey - stacked simplex units: comprising a 2-bed apartment at ground level and 2 No. 1-bedroom apartments with study at the first and second floor levels 1 No. 4 storey Apartment building (c.440 sq.m.) accommodating 19 No. Apartments, comprising; 15 No. 1 bed and 4 No. of 2 bed units.
- The proposed apartments are provided with private balconies or terraces.
- Site development and landscape works include the provision of 112 No. car parking spaces, 24 No. visitor cycle parking, ESB substation, and all associated ancillary site development works.
- Red line boundary 3.25Ha as the gross development area
- 2.5Ha as the Net development area.



Figure 1: Proposed Site Plan

Figure 1.1 –Proposed Site Plan
(Source: MC Cauley Daye O'Connell
Drawing No. 1273-MDO-XX-XX-DR-A-05 001)

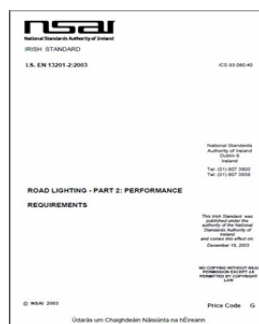
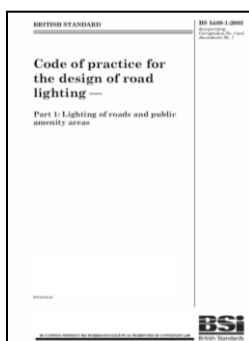
2. LIGHTING DESIGN CRITERIA

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

The design criteria applied to the proposed external lighting installations shall be in accordance with BS 5489-1:2013¹, NSAI EN I.S. 13201-2 Road Lighting Performance Requirements², and South Dublin County Council: Public Lighting Installations in Residential and Industrial Areas: Guidance Document – January 2022³. The guidelines in “Bats & Lighting, Guidance Notes for Planners, engineers, architects and developers”⁴, issued by Bat Conservation Ireland were also taken into account in the design of lighting.



¹ British Standards Institution 5489-1:2013

² IS EN 13201:2015-2

³ South Dublin County Council - General Specification for Public Lighting Design and Installation in Residential, Industrial and Commercial Developments in the South Dublin County Council Area.

⁴ 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. South Dublin 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. 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.
 - Lighting with a narrow spectrum will be permitted to reduce impact.
 - White neutral light (4000K) has been utilised in this design for areas where lighting do have impact on wildlife.
 - It is recommended that the actual overall uniformity of illuminance (U_0) be as high as reasonably practicable.
 - Warm light (3000K) has been utilised in this design in the areas considered as Bat path and other wildlife rooster area.
 - LED lighting with a broad spectrum will not be used.
4. Minimum lux level to be used or as required by Health & Safety especially along the perimeters.
5. An Amber LED has been shown to have a reduced impact on Bats due to its narrow spectrum properties.
6. Lighting Classification
 - P4 – Pathways 6m columns
7. 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.
 - 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 Clonburris Canal Extension as identified on the drawing 'M1343-OCSC-XX-XX-DR-E-0002-S4-P02' 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 lamppost 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 6m lamp post.

4.1 Selected Luminaires for Clonburris Canal Extension

It is proposed to provide 6m high column-type light fittings roadways and pedestrian pathways routes to achieve and 5lux average illumination levels respectively. This height of column was selected to comply with both private and public specifications. The luminaire will be installed with a DALI ballast for future use. Fully compliant with EN 60598: CE.



Figure 4.2.3
Luminaire Fitting

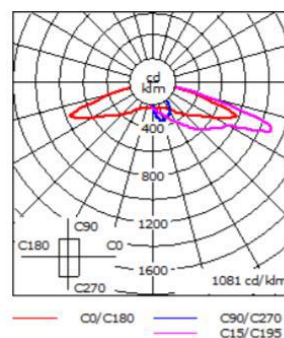


Figure 4. 2.4
Luminaire Photometric Curve

RESULTS

5.1 Lighting Calculation for Clonburris Canal Extension

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

Results for the Clonburris Canal Extension indicates indicate the following:

- The average 5 lux level maintained at all whole pathways throughout the site according to P4 class.



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 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 and minimum 1 lux and uniformity throughout the development.

The illumination throughout the development roadways meets the lighting design requirements of 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. M1343-OCSC-XX-XX-DR-E-0002-S4-P02 .

APPENDIX A

Reference

M1343-OCSC-XX-XX-DR-E-0002-S4-P02

Drawing Title

Proposed Site Lighting Layout



OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers

9 Prussia Street
Dublin 7
Ireland

T | +353 (0)1 8682000
F | +353 (0)1 8682100
W | www.ocsc.ie