

Lands at Hollystown-Kilmartin

Sites 2&3 and Local Centre



Site Lighting Report

IN2 Project. No. D2035

08th Nov 2021

Rev02

ISSUE REGISTER

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Rev 00	Planning Issue (DRAFT)	25 th Nov 2021	EKB / TJ
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1.0 INTRODUCTION

The proposed development relates to at a site of c. 25.3 ha at the townlands of Hollystown, Kilmartin, Hollywoodrath, Cruiserath, Yellow Walls, Powerstown, and Tyrrelstown, Dublin 15, which includes lands in the former Hollystown Golf Course and lands identified under the Kilmartin Local Area Plan 2013 (as extended). The lands are bound by the R121 and Hollywoodrath residential development to the east, the under construction Bellingsmore residential development to the south and north, the former Hollystown Golf Course to the north, Tyrrelstown Educate Together National School, St.Luke's National School and Tyrellston Community Centre to the west and south and the existing Tyrrelstown Local Centre to the south.

2.0 EXECUTIVE SUMMARY

The following report contains the design layout and accompanying calculations for the proposed site lighting scheme for the proposed new development.

The external lighting for this development has been designed to achieve the performance requirements as set out in the following standards:

- BS 8300:2018 Design of an accessible and inclusive built environment
- Institution of Lighting Professionals, 2021 - Guidance Notes for the Reduction of Obtrusive Light GN01-21.
- BS EN 13201-2:2015 - Road Lighting Part 2: Performance Requirements
- BS 5489-1:2020 Code of Practice for the Design of Road Lighting
- Chartered Institution of Building Services Engineers - Lighting Guide 6: The Exterior Environment
- NSAI I.S.1010:2020 National Rules for Electrical Installations
- 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).

The design criteria set out for this development is based on the lighting requirements of the BS EN 13201-2:2015, BS 5489-1:2013 and BS 8300:2018, as specified in the table below:

Area	Lighting Levels (Lux)	Uniformity (U_0)
Walkways/Footpaths	5	0.2
Access Routes	5	0.2
Pedestrian Access routes adjacent to the entrances / exits of buildings. Level and gently sloped.	100	0.4
Car Parks (Light traffic)	5	N/A
Car Parks (Medium traffic)	10 (Maximum)	N/A
Entrance Road (Main Traffic Routes)	10	0.2

Figure 2.1 - Minimum Lighting Requirements

3.0 DEVELOPMENT OVERVIEW

The proposed development will consist of the development of 548 no. residential units, consisting of 147 apartments/duplexes and 401 houses, ranging in height from 2 to 5 storeys and including retail/café unit, 2 no. crèches, 1 no. Montessori, 1 no. community hub, car and bicycle parking, open space, public realm and site infrastructure over a site area of c. 25.3 ha. On lands to the north of the application site (referred to as Hollystown Sites 2 & 3) the proposed development includes for 428 units consisting of 401 no. 2 and 3 storey houses and 27 no. apartments set out in 9 no. 3-storey blocks. On lands to the south of the application site and north of the Tyrellstown Local Centre (referred to as Kilmartin Local Centre) the proposed development includes 120 no. apartment/duplex units in 4 no. blocks ranging in height from 3 to 5 storeys. The local centre includes 2 no. crèches (including 1 standalone 2 storey crèche), 1 no. Montessori, a retail/café unit, and 1 no. community hub.



Figure 3.1 - Hollystown-Kilmartin SHD location & boundary

With regards to Hollystown Sites 2 & 3 a total of 792 no. car park spaces will be provided, comprising 761 no. resident spaces, 30 no. visitor spaces plus 1 no. disabled space. In terms of bicycle parking a total of 225 no. cycle parking spaces are provided, comprising 180 no. spaces for terraced units (located in 9 no. bike stores with 20 no. bikes in each) plus 45 no. spaces for the apartments located within the back garden (5 no. bike spaces in each garden).

With regards to Kilmartin Local Centre, a total of 138 no. car park spaces will be provided comprising 108 no. resident spaces, 5 no. creche/Montessori staff spaces, 10 no. creche/Montessori set down spaces, 6 no. visitor spaces and 9 no. public spaces on the Link Street. In terms of bicycle parking a total of 300 no. cycle parking spaces are provided comprising 230 no. long stay spaces for residents and 70 no. short stay spaces for visitors of both the residential and non-residential activity.

4.0 PROPOSED INSTALLATION

The proposed site lighting for the new development has been designed to ensure that the lighting criteria set out in each of the relevant standards listed previously are met or exceeded and that sufficient illumination is provided to ensure that key requirements such as access/egress, enhanced site security and the safe use of paths is provided. The design has been assessed to establish minimal environmental impact through glare, sky glow and obtrusive light (light spill).

It is proposed to illuminate the walkways and footpaths in the amenity and park spaces in Hollystown site 2&3, the 'Type X3' & 'Type X4' 6-meter pole mounted luminaire will be utilised. The pole mounted luminaires have an asymmetric and extra narrow light distribution to give the walkway an even light distribution. A narrow road optic (X3) was used for the design of the amenity cycleways and an extra narrow road optic (X) for the pedestrian amenity walkways.

It is proposed to illuminate the roads in the Kilmartin LC site using the 'Type X3' 6-meter pole mounted luminaires. The pole mounted luminaires have an asymmetric and narrow light distribution to give roads & carparking areas an even light distribution.

The luminaires used for the calculations are on the Fingal County Council list of approved manufacturers.

As the Hollystown site 2&3 is being taken in Charge, the lighting design has kept lighting columns 7m clear from trunks of any new or existing trees and have in general kept columns out of grassed areas as per Fingal County council Parks requirements.

There are existing 38kV ESB overhead Power transmission lines traversing the Hollystown site 2&3 and Kilmartin LC sites, due consideration has been taken in the lighting design in areas below and adjacent the ESB lines. It is proposed to install base hinged columns so the luminaires can be maintained from ground level and a mobile tower would not be required. These columns will be aligned so when lowered it is parallel or away from the lines.

The Fingal County Council guidelines recommend keeping lighting columns a minimum of the column full length plus 1m away from the closest point of the line. In the case of a 6m column including its root and the extra meter that is a minimum distance of 7.8m, this has been considered in the design.

Any lighting columns in the vicinity of the 38kV lines shall have signage installed on the column labelled 'Danger high voltage above' to warn future maintenance operators of the risk above.

Areas of the lighting scheme has been designed to take account of bats and adhere to the following lighting characteristics:

- The minimum level of appropriate/required lighting level will be provided within the developed areas;
- Light standards will be fitted with low intensity, horizontal cut-off LED light fittings employing a narrow directional light or cowled light. This will avoid the effect of light spill arising.
- Baffles shall be installed to limit light spill.
- No light spill into biodiversity areas. In particular there will be no light spill from the development over the various tree lines, open space and habitat corridors

- Light standards and associated lighting will be directed away from areas of open space;
- No floodlighting will be used in the development;
- Luminaire Light temperature shall be less than 2,700k where possible but not more than 3000k.

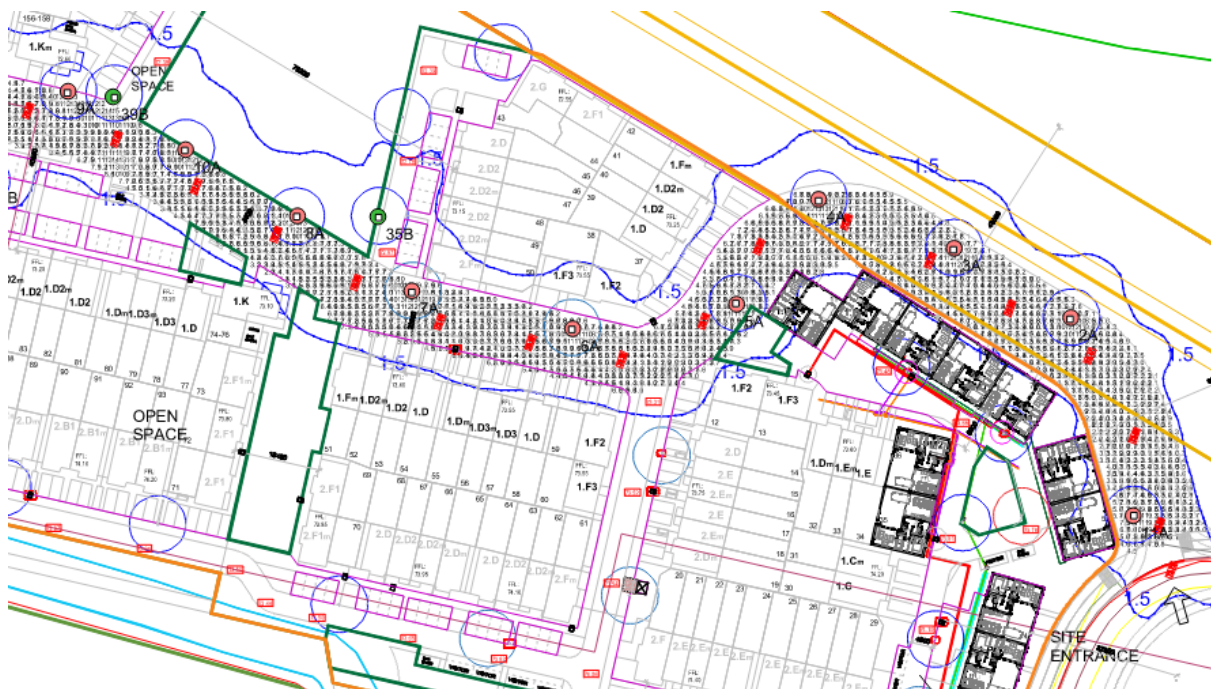
5.0 DESIGN ANALYSIS AND CALCULATION RESULTS

5.1 Public lighting & amenity areas Hollystown Site 2&3

The lighting performance at the roadways of the site has been assessed with fitting Type 'X5' on a 8-metre & Type 'X6' 6-metre (H) lighting columns as per luminaire schedule, Appendix A.

The lighting performance at the pedestrian, amenity & circulation areas has been assessed with fitting Type 'X3' & Type 'X4' 6-metre (H) lighting columns as per luminaire schedule, Appendix A.

5.1.1 Public lighting (site lighting) (Road illumination)



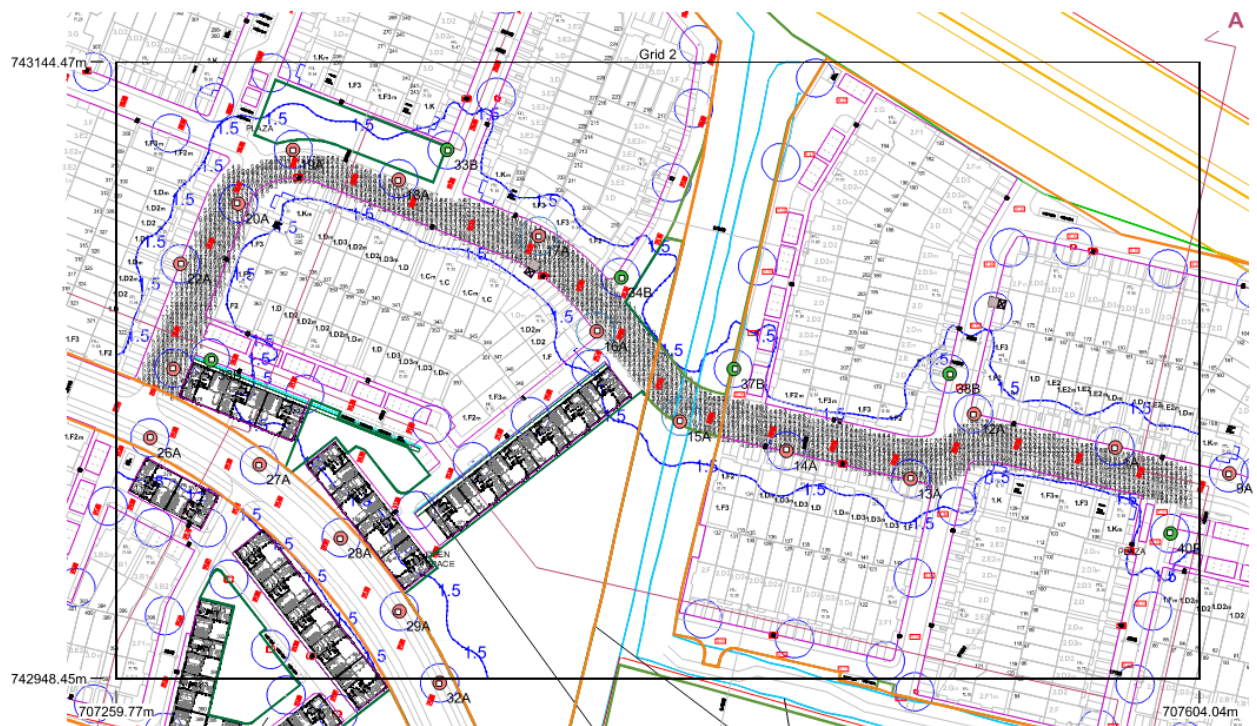


Figure 5.3 - Illumination levels at North centre of site (Lighting Reality Hollystown site 2&3)

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	5 lux	6.02 lux	PASS
U_o (Uniformity)	0.20	0.29	PASS

Figure 5.4- Analysis Results

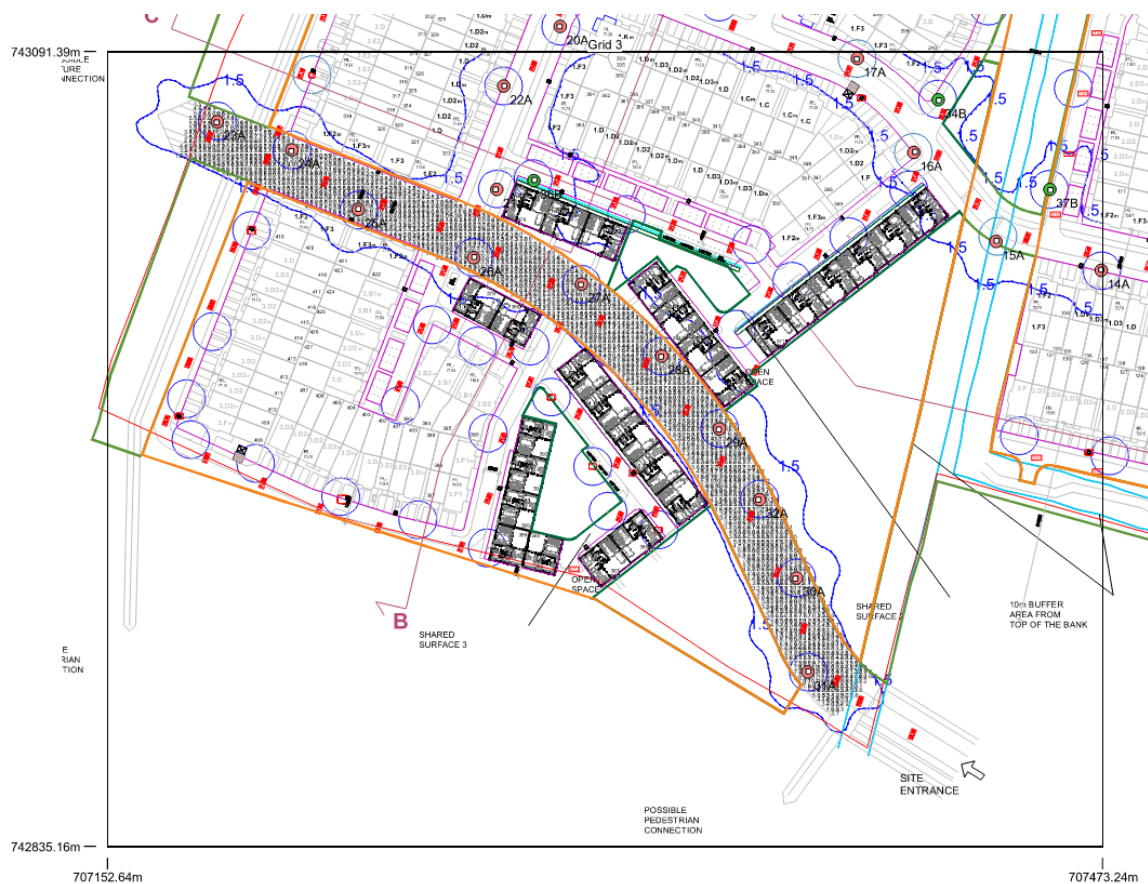


Figure 5.5 - Illumination levels at South site entrance road (Lighting Reality Hollystown)

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	5 lux	6.34 lux	PASS
U_o (Uniformity)	0.20	0.25	PASS

Figure 5.6- Analysis Results

5.1.2 Pedestrian walkway and cycleway combined

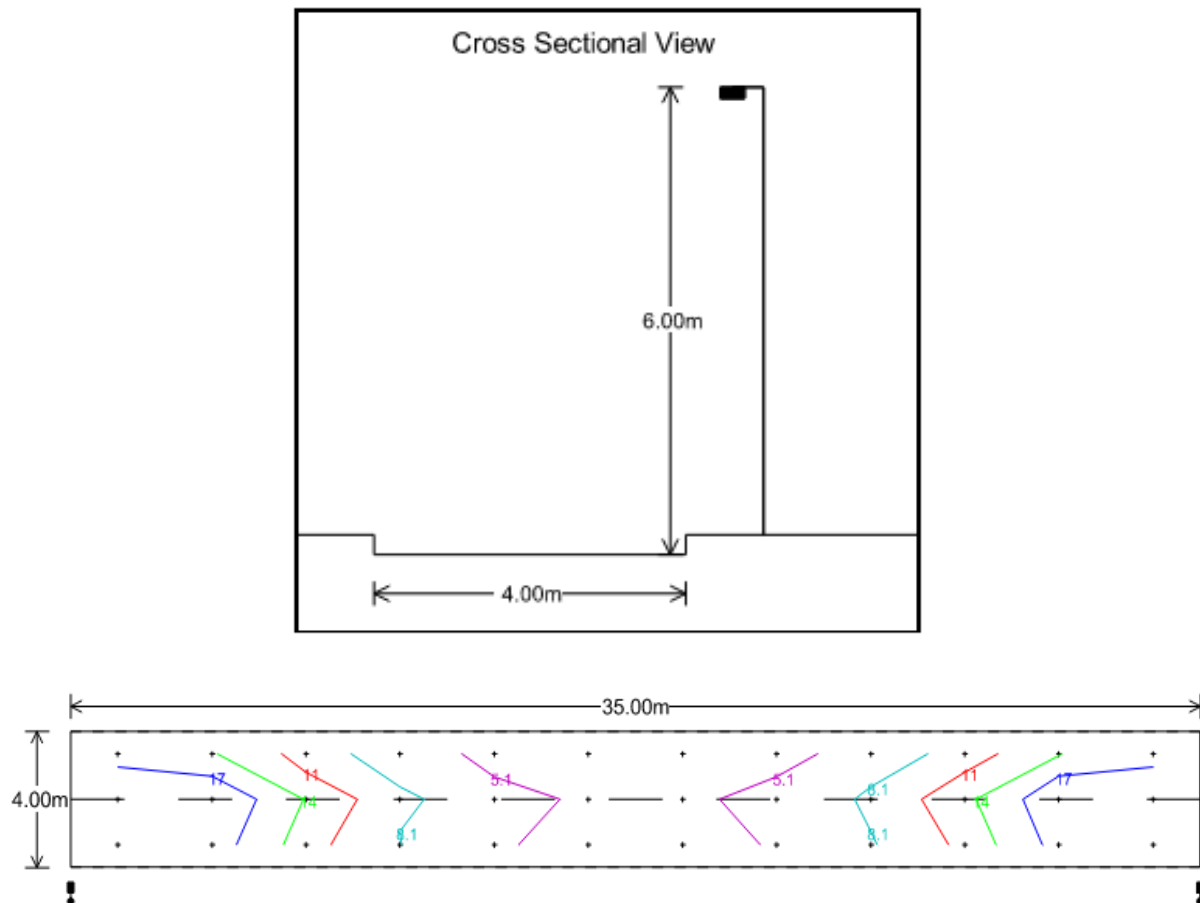


Figure 5.7- Illumination levels at amenity cycle & walkways (Lighting Reality Hollystown site 2&3)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	10 lux	10.90 lux	PASS

Figure 5.8- Analysis Results

AS per EN13201, BS5489 & BS8300 does not provide minimum recommended uniformity for amenity pedestrian walkways and cycleways.

5.1.3 Amenity walkway site wide

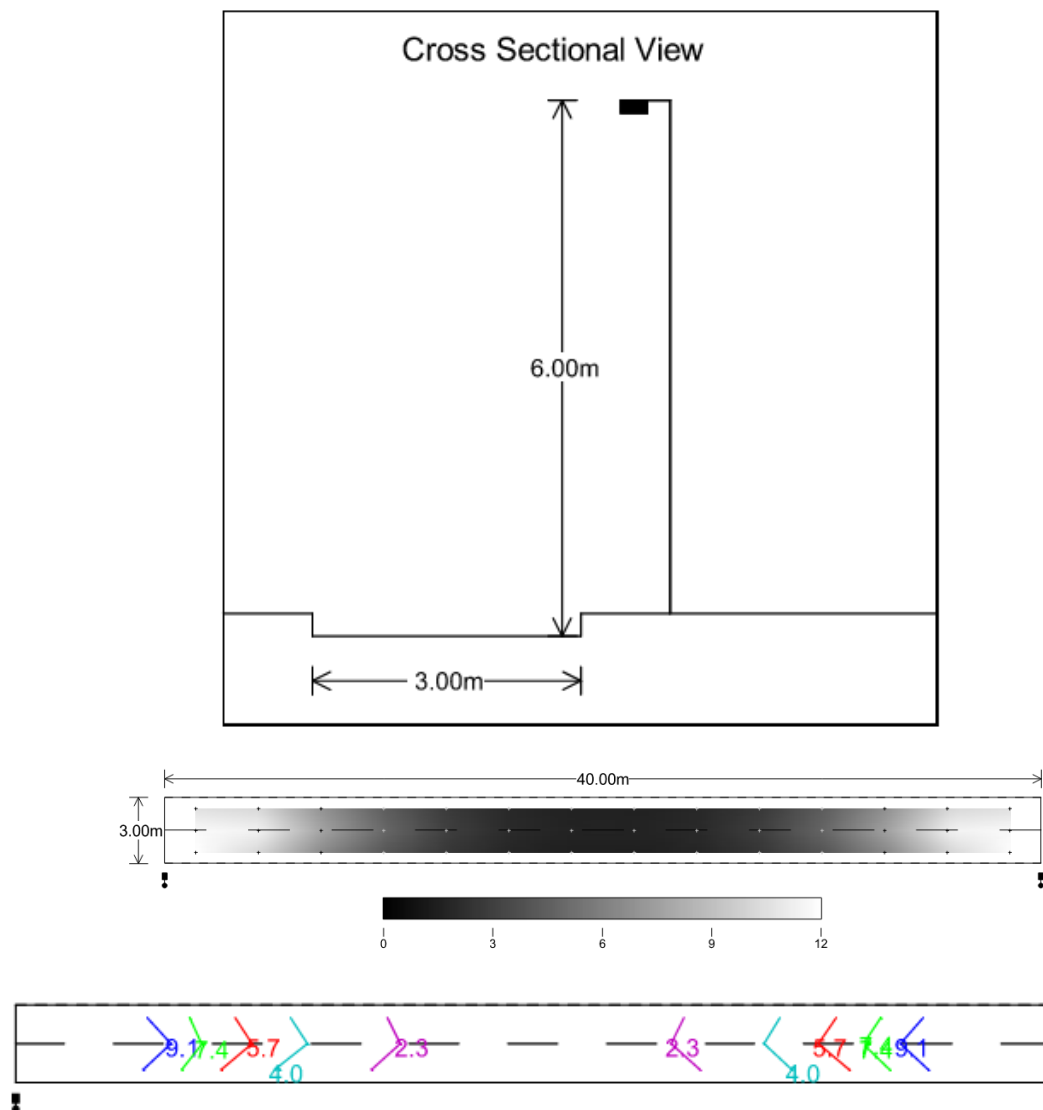


Figure 5.9 - Illumination levels on amenity walkway (Lighting Reality Hollystown site 2&3)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	5 lux	5.55 lux	PASS

Figure 5.10 - Analysis Results

AS per EN13201, BS5489 & BS8300 does not provide minimum recommended uniformity for amenity pedestrian Walkways and cycleways.

5.2 Kilmartin LC amenity & access Lighting Calculations

The lighting performance at the Roadway Areas has been assessed with fitting Type 'X3' 6-metre (H) lighting columns as per luminaire schedule, Appendix A.

5.2.1 Main residential roadway

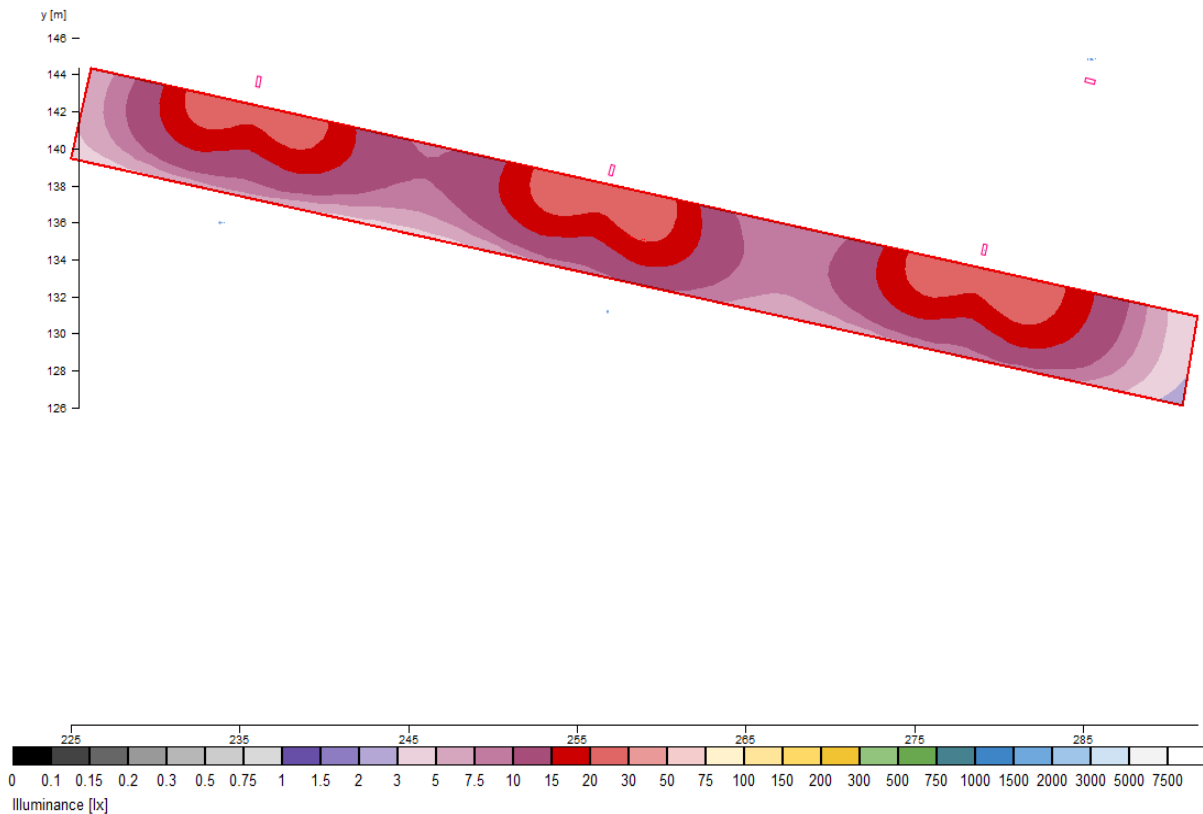


Figure 5.11 - Illumination levels at main residential roadway (Kilmartin LC)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	10 lux	14.8 lux	PASS
U_0 (Uniformity)	0.20	0.24	PASS

Figure 5.12 - Analysis Results

5.2.1 Main residential roadway (continued)

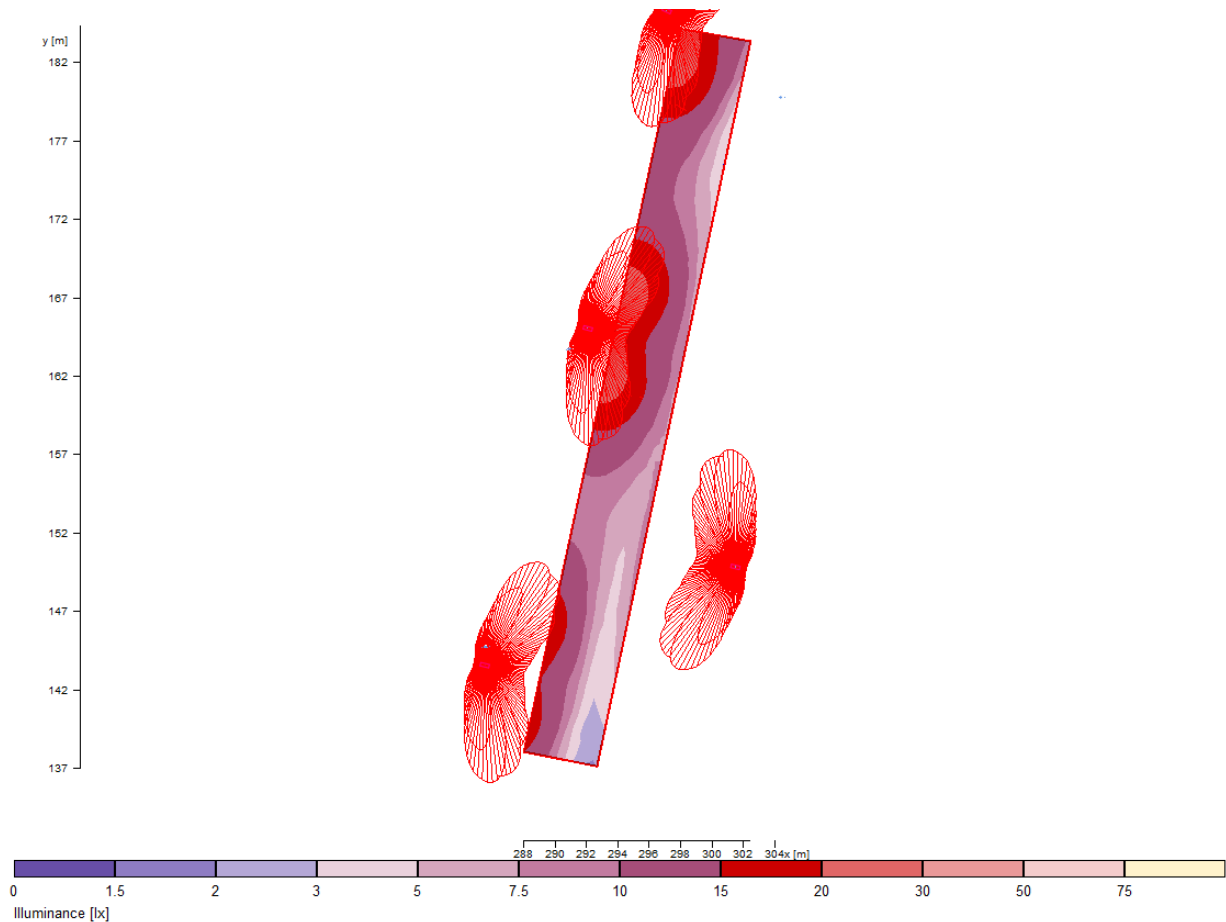


Figure 5.13 - Illumination levels at main residential roadway (Kilmartin LC Continued)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	10 lux	10.7 lux	PASS
U_0 (Uniformity)	0.20	0.21	PASS

Figure 5.14 - Analysis Results

5.2.2 Main residential roadway (Cul de sac section)

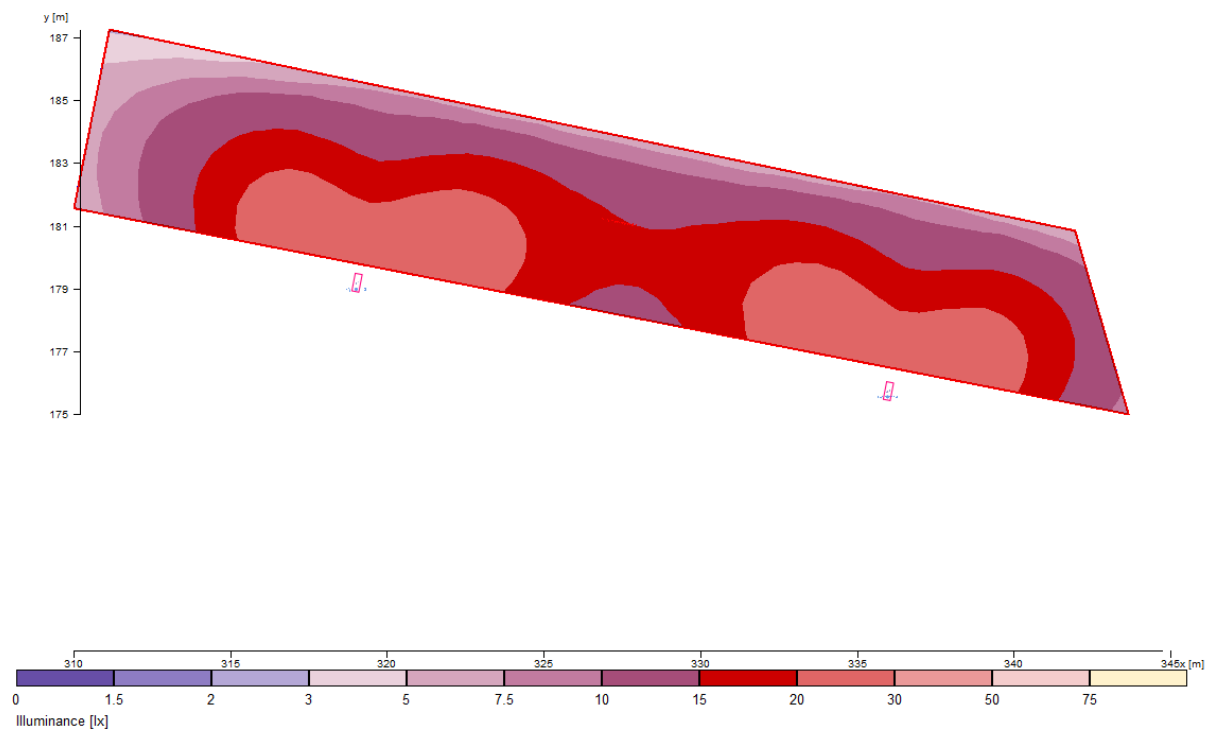


Figure 5.15 - Illumination levels at main residential roadway (Cul De Sac section Kilmartin LC)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	10 lux	14.6 lux	PASS
U_0 (Uniformity)	0.20	0.24	PASS

Figure 5.16 - Analysis Results

5.2.3 Carpark

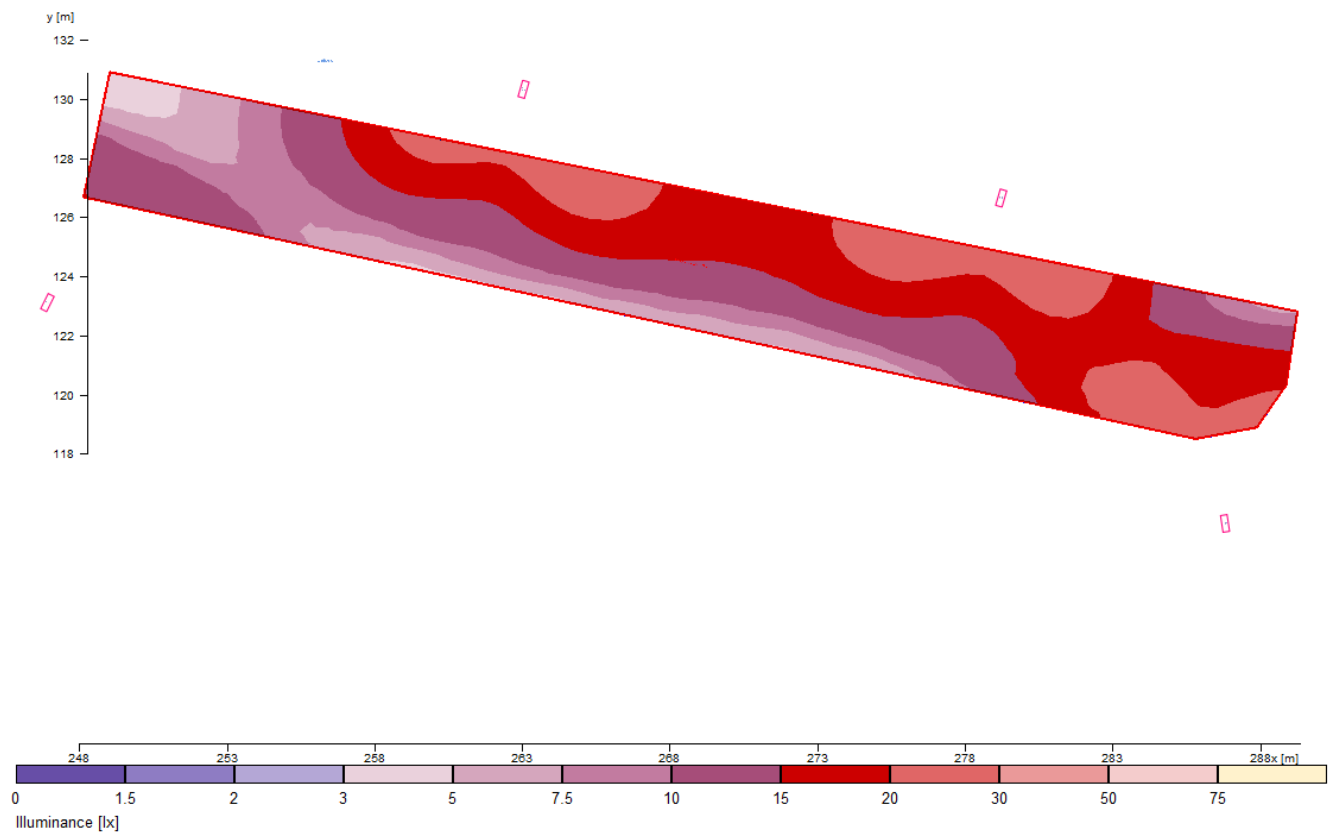


Figure 5.17 - Illumination levels in carpark areas (Kilmartin LC)

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	10 lux	14.1 lux	PASS
U_o (Uniformity)	0.25	0.25	PASS

Figure 5.18- Analysis Results

5.2.4 Shared amenity spaces.

The lighting performance in the shared amenity spaces have been assessed with fitting Type 'X8' 1 metre (H) bollard luminaire.

5.2.4.1 Shared amenity park

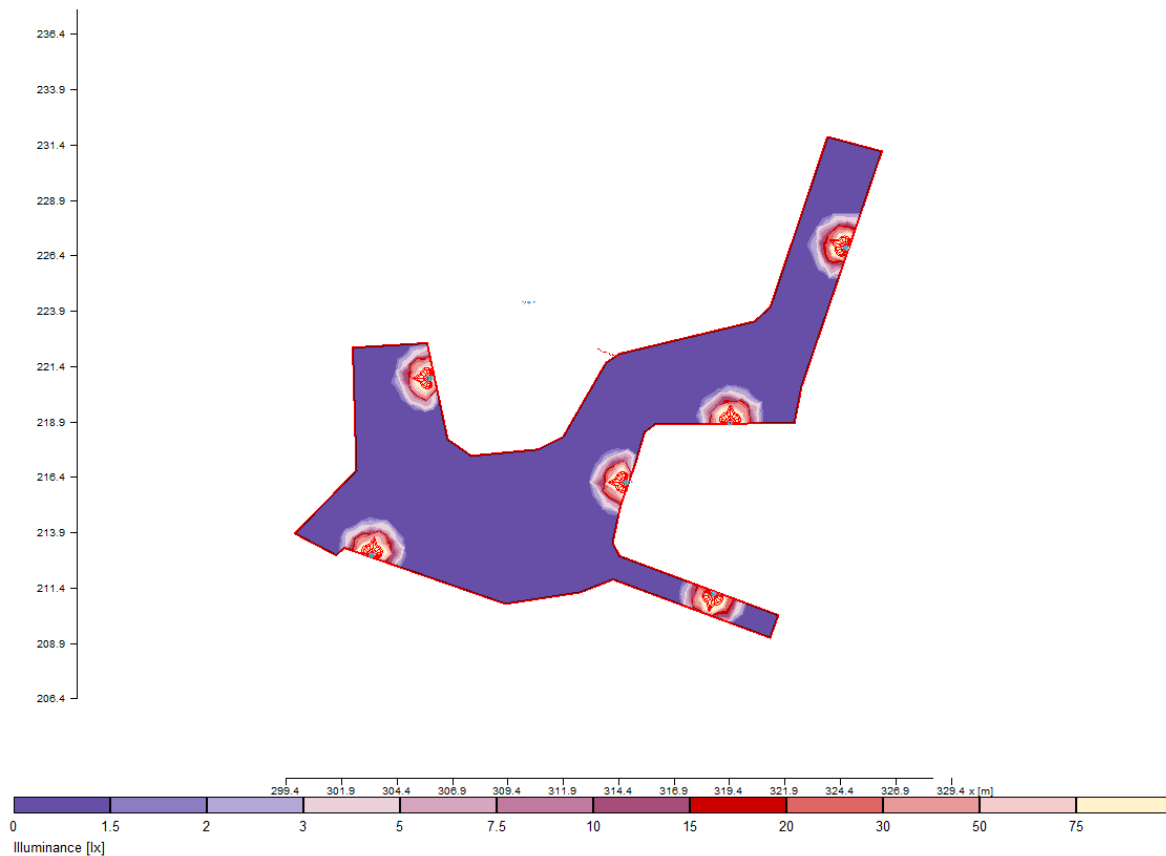


Figure 5.19 - Illumination levels in shared amenity park (Kilmartin LC)

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	5 lux	7.88	PASS

Figure 5.20- Analysis Results

AS per EN13201, BS5489 & BS8300 does not give minimum recommended uniformity for amenity pedestrian Walkways and cycleways.

5.2.5 Park walkways

The lighting performance in the Courtyard Areas have been assessed with fitting Type 'X7' mounted on 4 meter lighting columns (H) as per luminaire schedule, Appendix A.

5.2.5.1 Courtyard 2

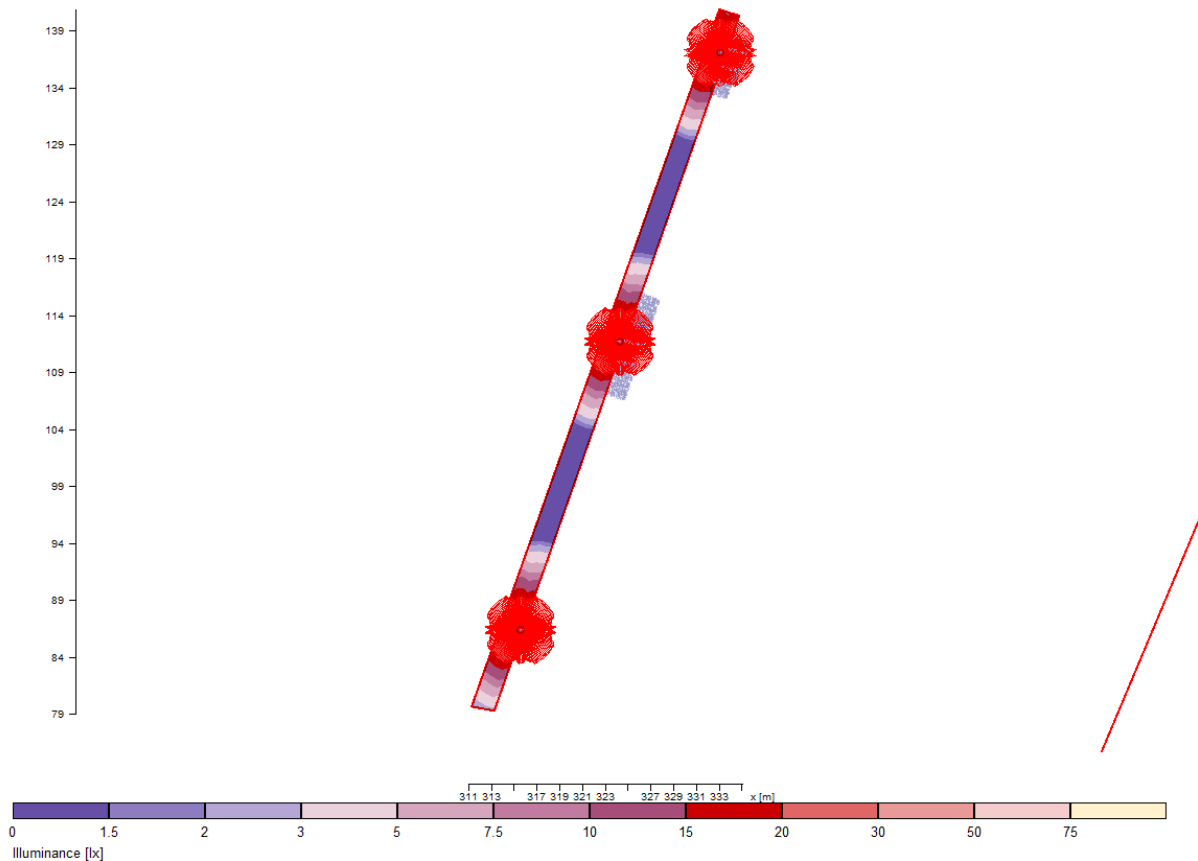


Figure 5.21 - Illumination levels to courtyard (Kilmartin LC)

Evaluation	Target	Result	
E_{AVERAGE} (maintained)	5 lux	7.88	PASS

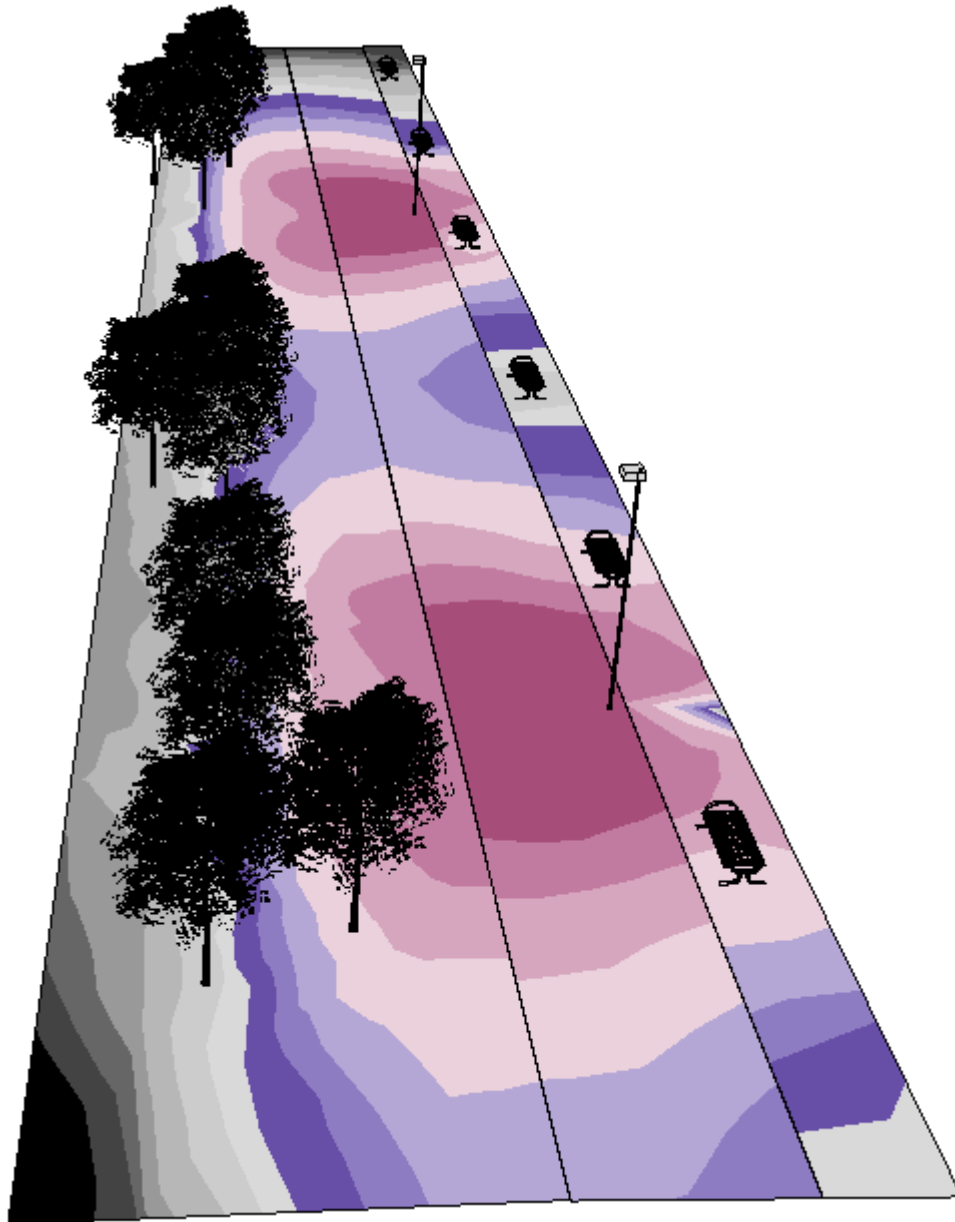
AS per EN13201, BS5489 & BS8300 does not give minimum recommended uniformity for amenity pedestrian Walkways and cycleways.

5.2.6 New public road at Kilmartin Local Centre

A new public road is under construction from the existing Tyrellstown educate together school roundabout to the existing The Ave road on the Kilmartin LC site. New public lighting is being installed to the new road as part of the current construction works.



5.3 Site lighting 3D render



*Figure 5.22 - 3D Model indicating pedestrian and cycleway Illumination Levels
(Hollystown site 2&3)*

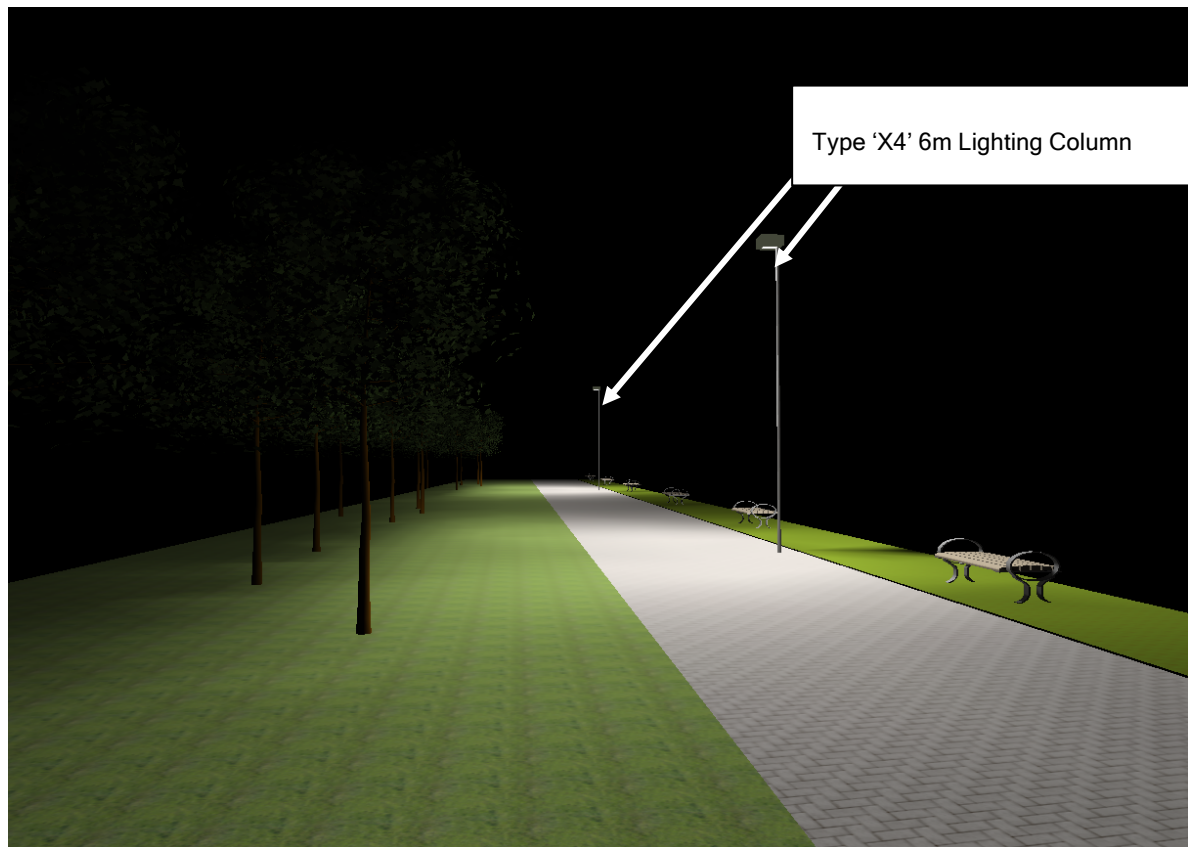


Figure 5.23 - 3D model indicating pedestrian and cycleways Illumination Levels (Hollystown site 2&3)

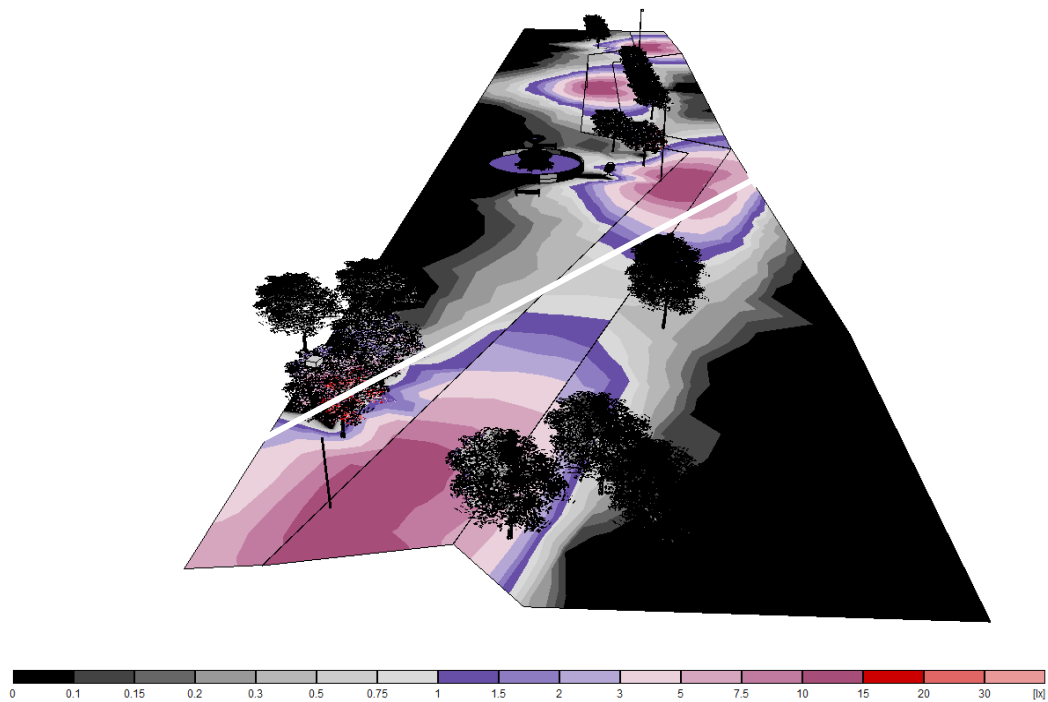


Figure 5.24 - 3D model indicating pedestrian walkway illumination levels (Hollystown site 2&3)

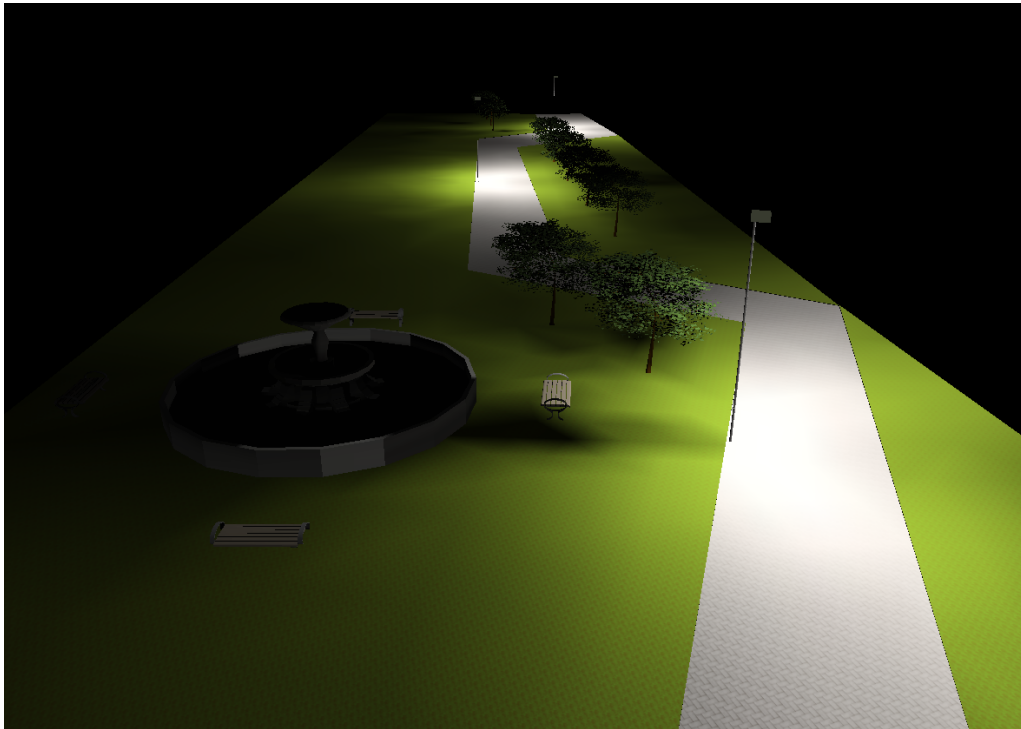


Figure 5.25 - 3D model indicating pedestrian walkway illumination levels (Hollystown site 2&3)

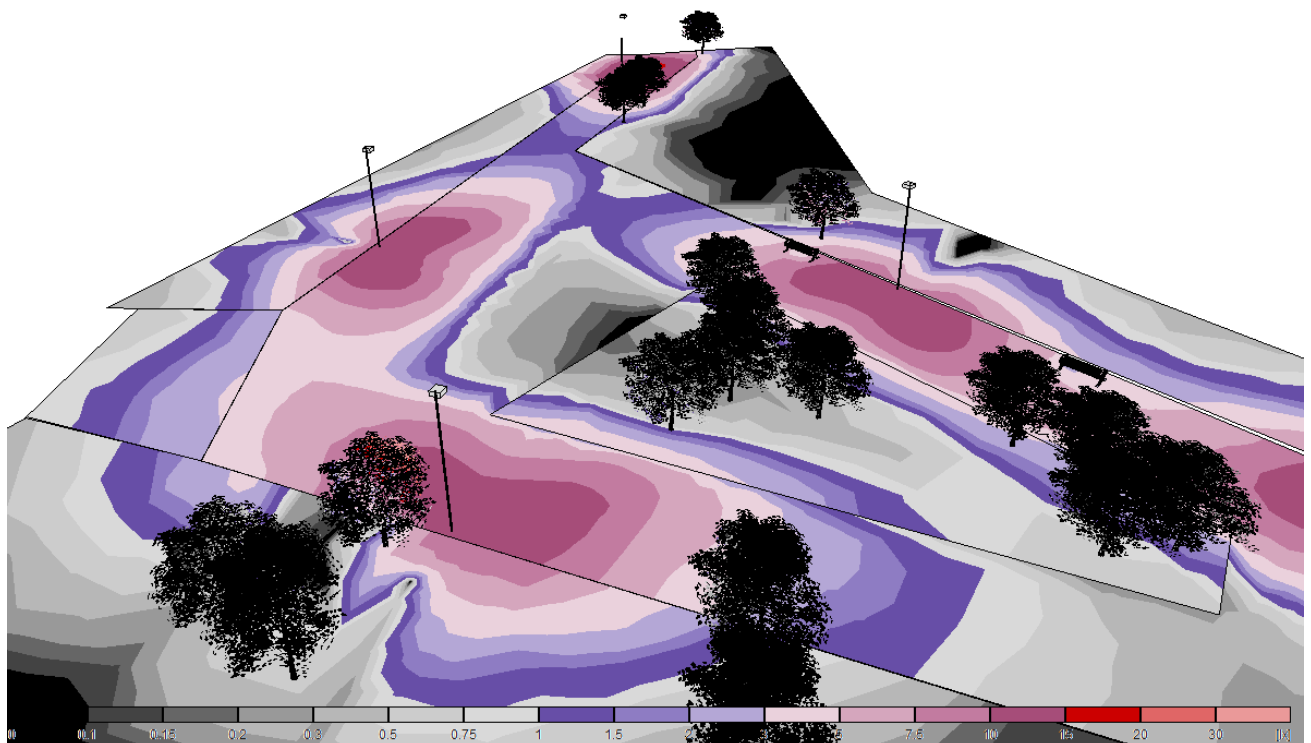


Figure 5.26 - 3D Model indicating Pedestrian Walkway illumination levels (Hollystown site 2&3)

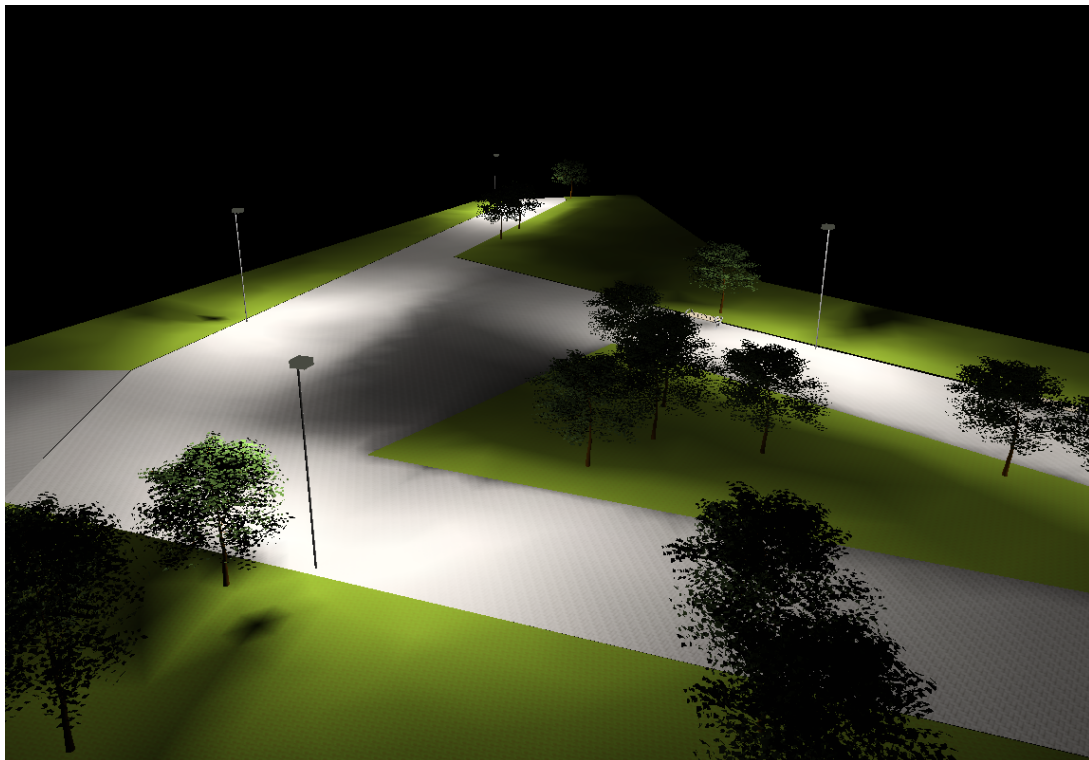


Figure 5.27- 3D model indicating pedestrian walkway illumination levels (Hollystown site 2&3)

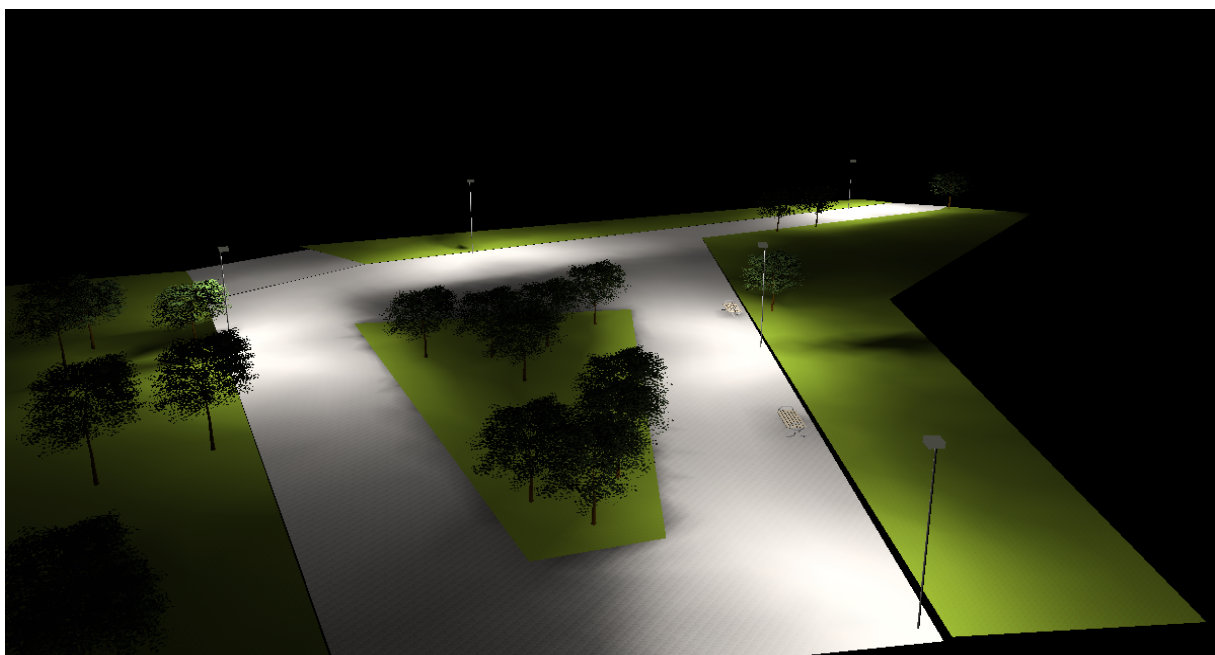


Figure 5.28 - 3D model indicating pedestrian walkway illumination levels (Hollystown site 2&3)

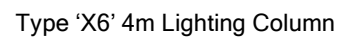
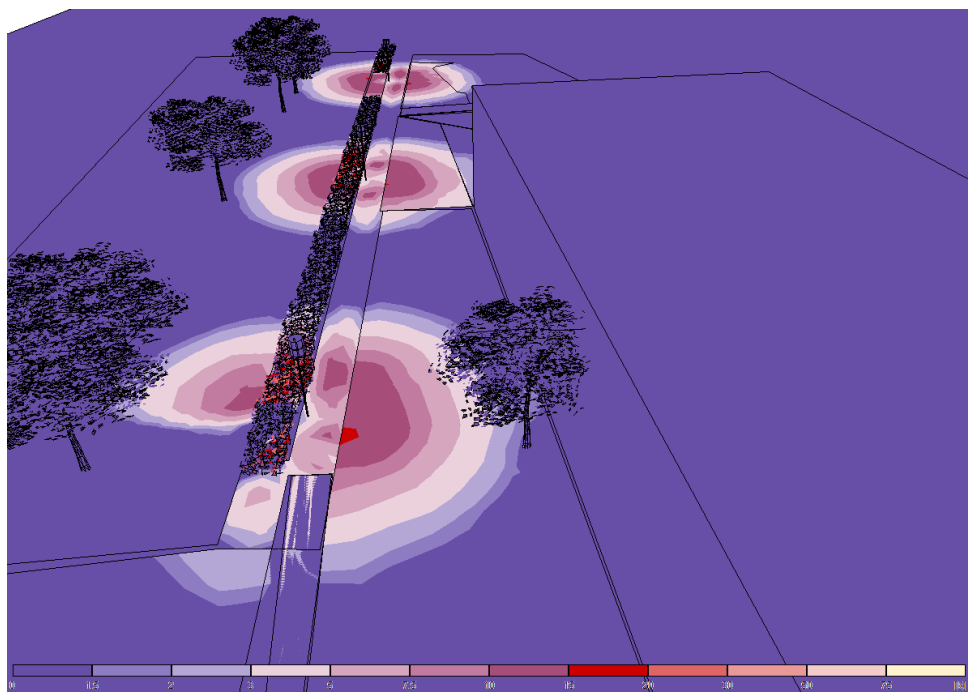


Figure 5.30 - 3D model indicating amenity walkway area illumination levels (Kilmartin LC)



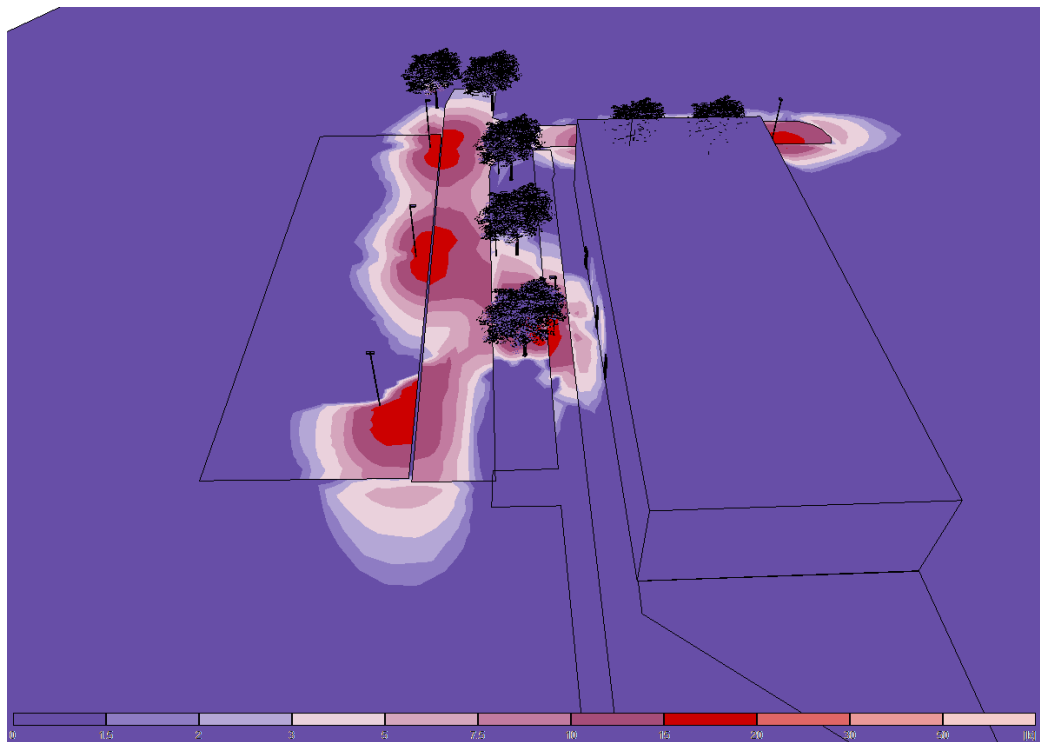


Figure 5.31 - 3D model indicating main residential roadway illumination levels (Kilmartin LC)

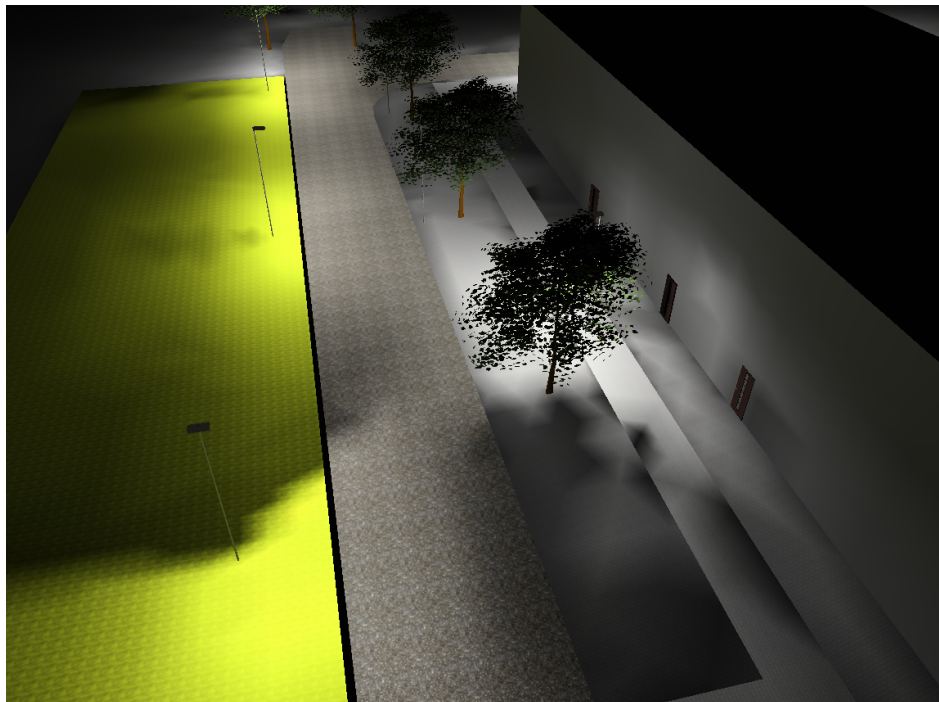


Figure 5.32 - 3D model indicating main residential roadway illumination levels (Kilmartin LC)

6.0 APPENDIX A - LUMINAIRE SCHEDULE

Refer to IN2 Document: D2035 Hollystown site 2&3 & Kilmartin LC Luminaire Schedule
Rev01

7.0 APPENDIX B - LIGHTING DRAWINGS

Refer to IN2 Drawings:

Hollystown site 2&3

- D2035-P2-IN2-SW-00-DR-E-0101
- D2035-P2-IN2-SW-00-DR-E-0102
- D2035-P2-IN2-SW-00-DR-E-0103
- D2035-P2-IN2-SW-00-DR-E-0104
- D2035-P2-IN2-SW-00-DR-E-0105
- D2035-P2-IN2-SW-00-DR-E-0106
- D2035-P2-IN2-SW-00-DR-E-0107

Kilmartin LC site

- D2036-IN2-KM-SW-00-DR-E-0101

Lands at Hollystown-Kilmartin Sites 2&3 and Local Centre




Luminaire schedule


IN2 Project. No. D2035

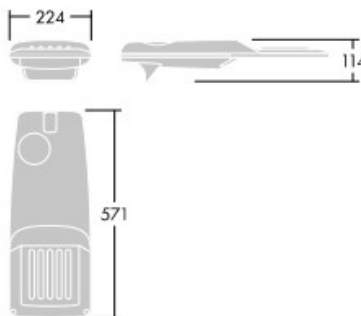
8th December 2021

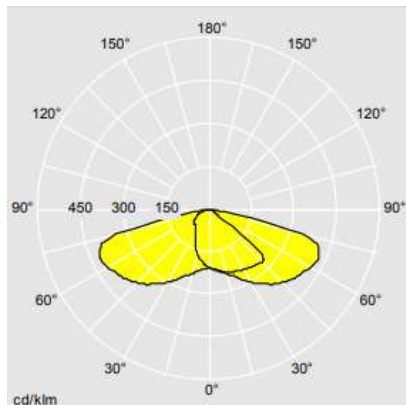
Rev01

Luminaire Reference	X3	Manufacturer	Thorn / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK08	Recessed/Surface or Wall Mounted	Pole Mounted
Diffuser Type	Tempered Glass	Lamps	28W LED Lamp
Reflector	-	Lumen Output	3504 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Site Lighting	Lamp Life	100,000 hours
Dimensions (mm)	571mm x 224mm x 114mm	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes
A state-of-the-art LED road lighting lantern (small) with 12 LEDs driven at 700mA with Narrow Road optic. Programmable LED driver.			
Lumen Depreciation	L90 B10	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Ten-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		
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Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.			

Luminaire Reference	X4	Manufacturer	Thorn / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK08	Recessed/Surface or Wall Mounted	Pole Mounted
Diffuser Type	Tempered Glass	Lamps	15W LED Lamp
Reflector	-	Lumen Output	2070 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Site Lighting	Lamp Life	100,000 hours
Dimensions (mm)	571mm x 224mm x 114mm	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes
A state-of-the-art LED road lighting lantern (small) with 12 LEDs driven at 350mA with Narrow Road optic. Programmable LED driver.			
Lumen Depreciation	L90 B10	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Ten-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		








Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

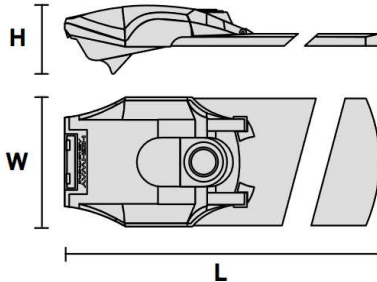
Luminaire Reference	X5	Manufacturer	ASD / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK10	Recessed/Surface or Wall Mounted	Pole Mounted
Diffuser Type	Tempered Glass	Lamps	48W LED Lamp
Reflector	-	Lumen Output	5625 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Site Lighting	Lamp Life	100,000 hours
Dimensions (mm)	476mm x 233mm x 116mm	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes
LED road lighting lantern (small) asymmetric road optic. Programmable LED driver.			
Lumen Depreciation	L90 B10	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Ten-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		



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Dimension	Size
Length	476mm
Width	233mm
Height	116mm

Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

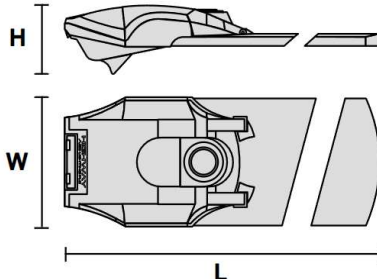
Luminaire Reference	X6	Manufacturer	ASD / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK10	Recessed/Surface or Wall Mounted	Pole Mounted
Diffuser Type	Tempered Glass	Lamps	24W LED Lamp
Reflector	-	Lumen Output	2409 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Site Lighting	Lamp Life	100,000 hours
Dimensions (mm)	476mm x 233mm x 116mm	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes
LED road lighting lantern (small) asymmetric road optic. Programmable LED driver.			
Lumen Depreciation	L90 B10	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Ten-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		



H


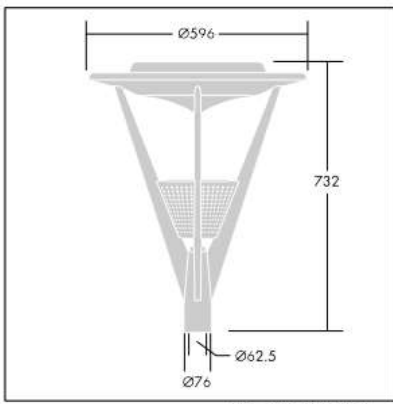
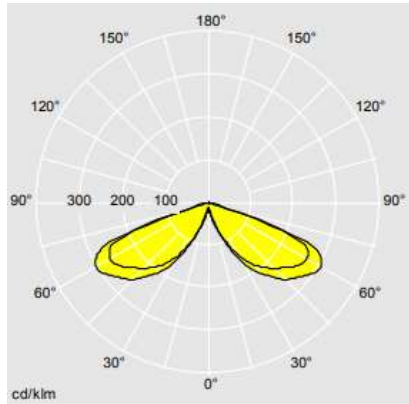
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Dimension	Size
Length	476mm
Width	233mm
Height	116mm

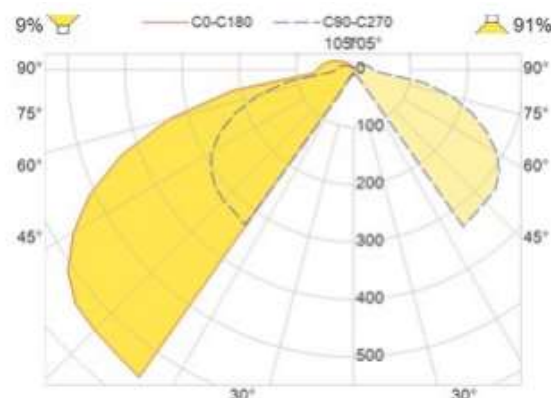
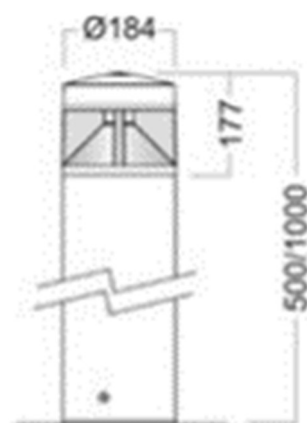
Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

Luminaire Reference	X7	Manufacturer	Thorn / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK08	Recessed/Surface or Wall Mounted	Pole Mounted
Diffuser Type	Clear Polycarbonate	Lamps	21W LED Lamp
Reflector	-	Lumen Output	2240 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Site Lighting	Lamp Life	100,000 hours
Dimensions (mm)	Ø596mm x 732mm (H)	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes
An elegant LED amenity lantern. Electronic, fixed output control gear. Light distribution: symmetric. Class II electrical, IP66, IK08. Base and arms: die-cast aluminium, powder coated dark sandy grey 900.			
Lumen Depreciation	L90 B10	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Ten-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		
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Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.			

Luminaire Reference	X8	Manufacturer	Glamox / Equal & Approved
Body Description	Die-Cast aluminium, IP66, IK10	Recessed/Surface or Wall Mounted	1 Metre Bollard
Diffuser Type	Tempered Glass	Lamps	12W LED Lamp
Reflector	-	Lumen Output	665 Lumens
Control Gear	230 V, 50 Hz.	Colour of Lamps	3000K
Area of Application	Amenity Lighting	Lamp Life	50,000 hours
Dimensions (mm)	Ø184mm x 1000mm (H)	IEC Photometric Code	840/339
Initial Colour Variation	-	IESNA LM 80-80 tested	Yes

A robust and decorative LED bollard with luminaire housing in extruded and die-cast aluminium. Double layer polyester powder coated paint finish. Supplied with tempered glass diffuser.

Lumen Depreciation	L80 B50	Power Factor	> 0.9
Colour rendering Index	<70	LED luminaire tested	To be in accordance with IESNA LM-79-08.
Manufacturing Standard	EN 60 598-1:2015, EN 60598-2-2:2012, IEC/TR 62778:2014	LED module tested	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Three-year manufacturer's warranty to include failure of all luminaire components, inclusive of driver, electronics & LED modules. Contractor to include for all fixtures and fixings necessary for correct mounting and operation.		



Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.