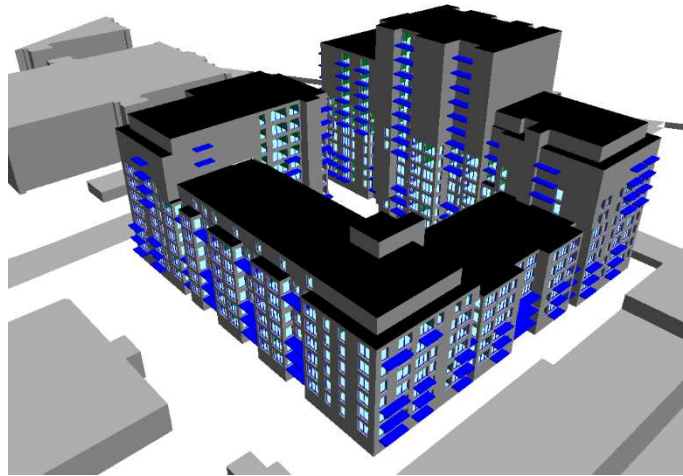


D2005
Carmanhall Road Development
Former Avid Technology International Site,
Carmanhall Road,
Sandyford Industrial Estate,
Dublin 18



Site Lighting Report

IN2 Project. No. D2005

25th January 2021

rev01

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Revision	Stage	Date	Issued By
Rev 00	Pre-App Issue	22 nd June 2020	
Rev 01	Planning Issue	25 th January 2021	

1.0 Introduction

IN2 Engineering Design Partnership has been commissioned by Marlet Property Group Limited to complete a Planning Stage Site Lighting Study for the proposed residential scheme - Carmanhall Road Development, to demonstrate that the proposed site lighting design will both enhance the development and maintain safe levels of illumination to circulation areas while minimising light overspill on the neighbouring properties and mitigating the residual impacts that the proposed lighting scheme may have on existing habitats within the site.

The site lighting design is for information only and provides an indication of the intent for the developments site lighting only and the quantities and types of fittings may differ during the design stage.

2.0 Executive Summary

The following report contains the design layout and accompanying calculations for the proposed site lighting scheme for the proposed residential scheme - Carmanhall Road 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 - Guidance Notes for the Reduction of Obtrusive Light GN01:2011
- BS EN 13201-2:2015 - Road Lighting Part 2: Performance Requirements
- BS 5489-1:2013 Code of Practice for the Design of Road Lighting
- Chartered Institution of Building Services Engineers - Lighting Guide 6: The Exterior Environment
- ETCI National Rules for Electrical Installations ET 101

For the purposes of this report, the development has been classed as an Environmental Zone E3 - Suburban with Medium District Brightness, in Accordance with ILP GN01:2011. The design criteria set out for this development, based on the lighting requirements for the stated environmental zone of E3, are 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
Stairways and ramps in the open Environment	30	0.2
Light Spill (Obtrusive Light)	10 (Maximum)	N/A
Entrance Road (Main Traffic Routes)	10	0.2

3.0 Proposed Installation

The proposed site lighting for the proposed residential scheme - Carmanhall Road 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 to ensure that key requirements such as access/egress, enhanced site security and the safe use of paths, amenity spaces, pedestrian crossings and traffic routes 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 entrance road for the carpark using 5m galvanised steel lighting columns with 'Type X4' post-top mounted LED luminaires as per the luminaire schedule in Appendix A of this report. The luminaires shall be complete with Narrow Road optics to ensure minimal light spill to adjacent buildings and no upward light spill. Each luminaire shall have individual photocell switching to reduce the energy consumption of the proposed lighting scheme.

It is proposed to illuminate the section of Carmanhall Road adjacent to the site using 10m galvanised steel lighting columns with 'Type X5' post-top mounted LED luminaires as per the luminaire schedule in Appendix A of this report. The luminaires shall be complete with Extra Wide Street optics to ensure sufficient light levels to the road and walkways. Each luminaire shall have individual photocell switching to reduce the energy consumption of the proposed lighting scheme.

It is proposed to illuminate the section of Blackthorn Road adjacent to the site using 10m galvanised steel lighting columns with 'Type X5' post-top mounted LED luminaires as per the luminaire schedule in Appendix A of this report. The luminaires shall be complete with Extra Wide Street optics to ensure full coverage of the main road. Each luminaire shall have individual photocell switching to reduce the energy consumption of the proposed lighting scheme.

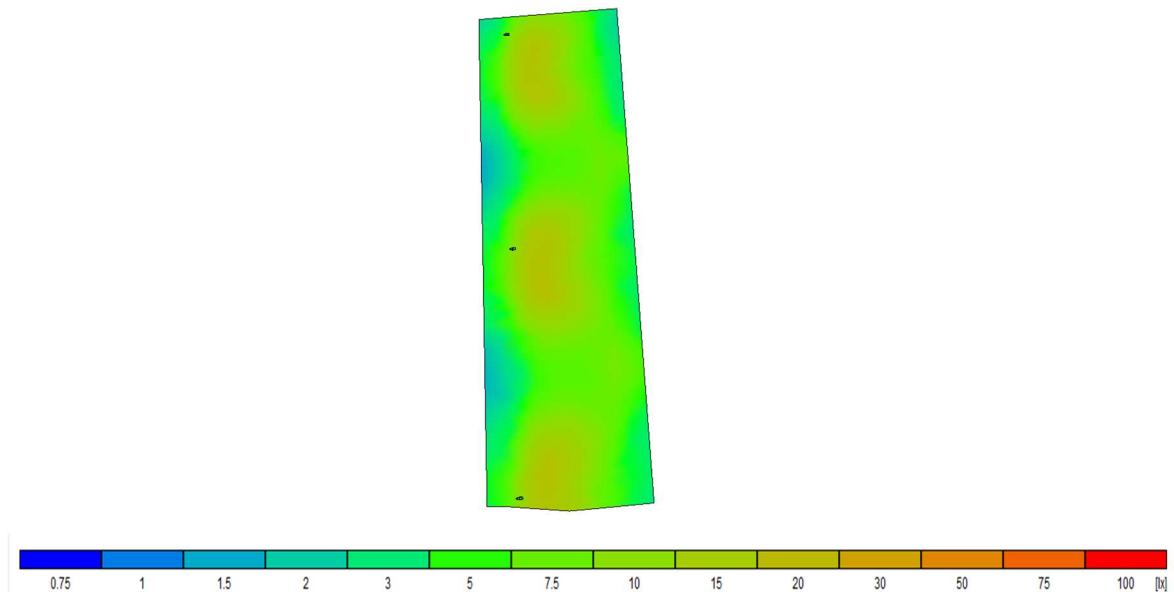
Lighting shall be provided on the pedestrian pathways and the landscaped space surrounding the development with 'Type 'X6' decorative column LEDs, 3 meters height. The luminaires on shall have a mechanical impact rating of IK09 to provide added protection against vandalism and shall be Extra-Low Voltage LED luminaires to ensure protection against electric shock in the event that damage may occur.

To complete the design, the wall recessed led Type 'X7' shall be installed on the steps located around the site. The recessed lights shall be used to ensure that the minimum lux levels required on steps are achieved in accordance with Technical Guidance Document Part M while minimising the obtrusive light spill onto the ground floor apartments. The fittings shall be Extra-Low Voltage LED to minimise risk of shock in the event of tampering.

4.0 Design analysis and Calculation Results

4.1 Main Road (Blackthorn)

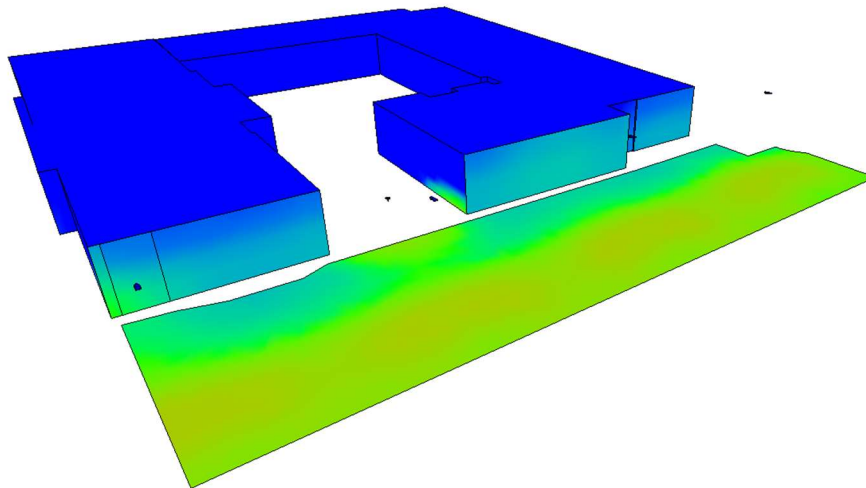
The lighting performance on Blackthorn Road has been assessed with fitting Type 'X5' (as per luminaire schedule) mounted on 10 metre columns. Columns have been placed at equal spacings of 36 meters centre to centre.



Evaluation	Result
E_{AVERAGE} (maintained)	11 lux
E_{MIN}	5.8 lux
U_o (Uniformity)	0.53

4.2 Main Road (Carmanhall)

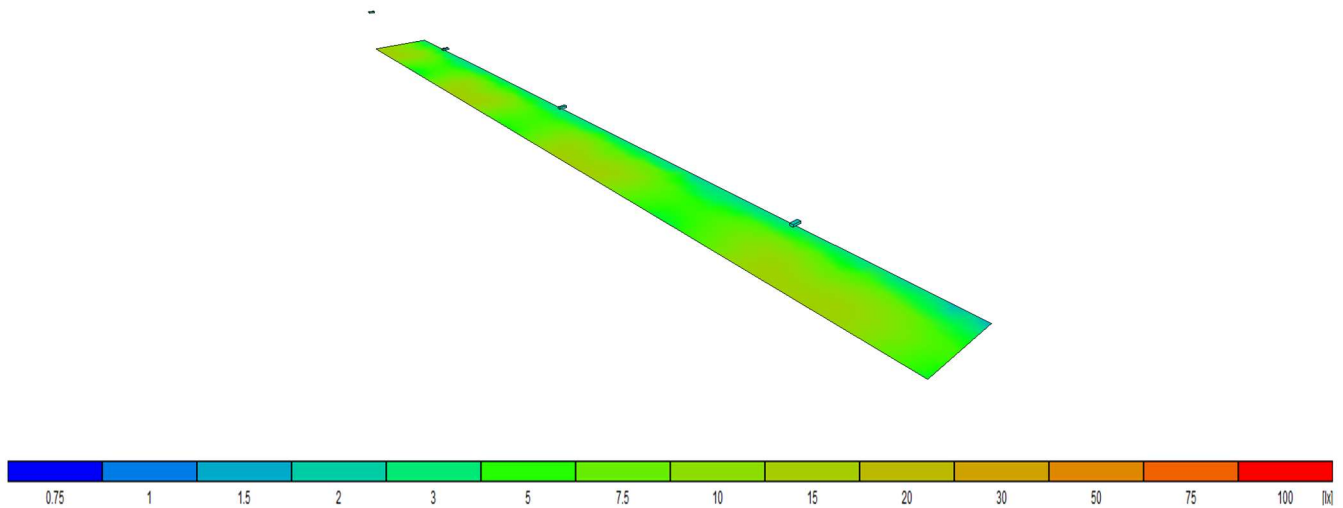
The lighting performance on Carmanhall Road has been assessed with fitting Type 'X5' (as per luminaire schedule) mounted on 10 metre columns. Columns have been placed at equal spacings of 23 meters centre to centre.



Evaluation	Result
E_{AVERAGE} (maintained)	11.8 lux
E_{MIN}	2.5 lux
U_0 (Uniformity)	0.21

4.3 Car Park Entrance Road

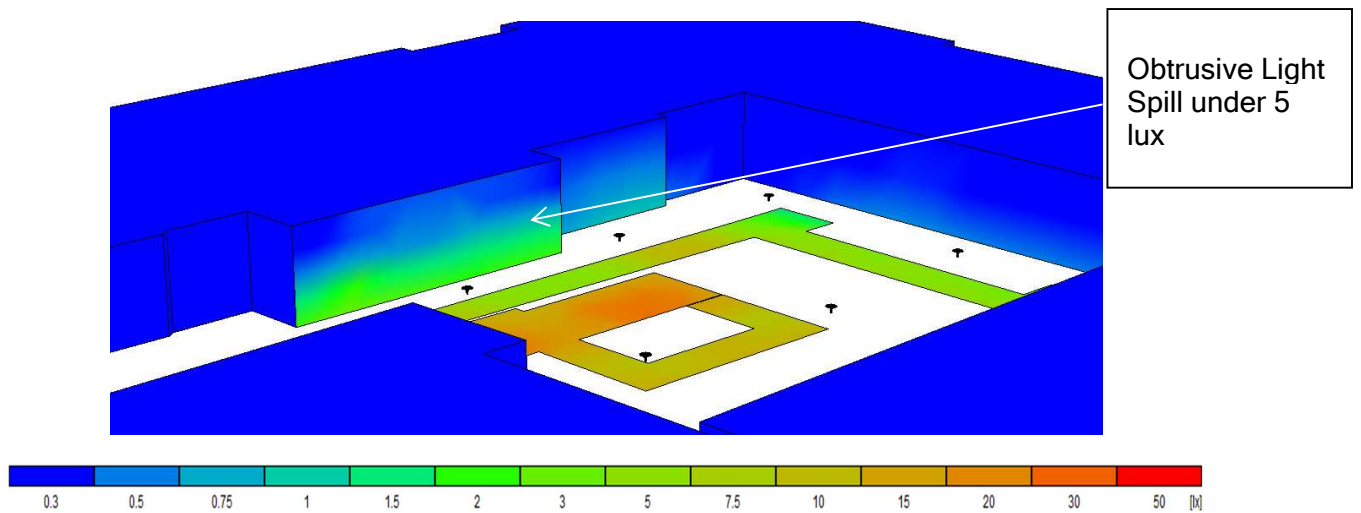
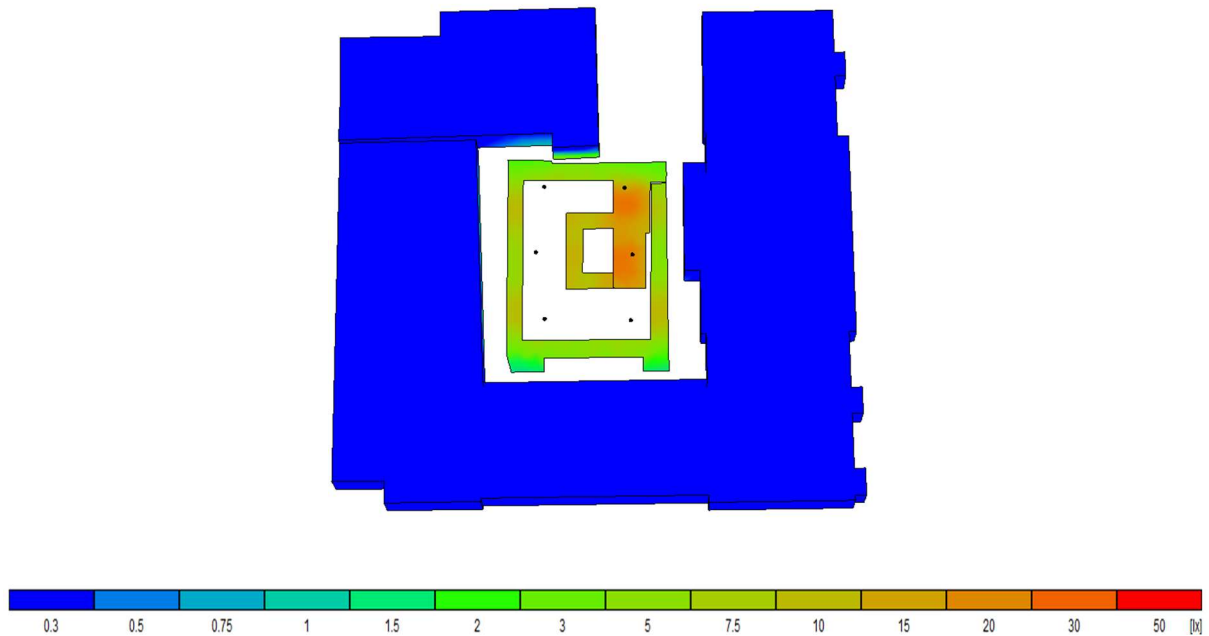
The lighting performance on the Carpark entrance road has been assessed with fitting Type 'X4' on 5m columns (as per luminaire schedule). Columns have been placed at equal spacings of 21 meters centre to centre.



Evaluation	Result
E_{AVERAGE} (maintained)	8.04 lux
E_{MIN}	3.01 lux
U_o (Uniformity)	0.37

4.4 Landscape Area

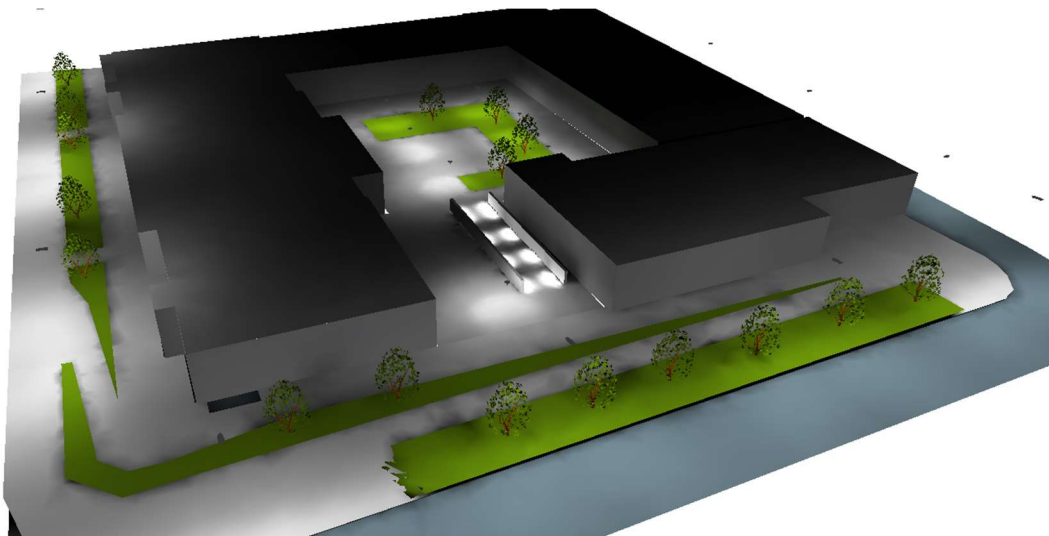
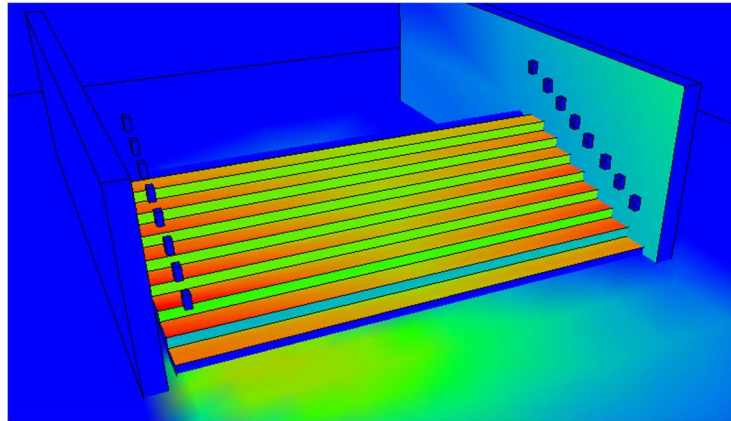
The lighting performance on the Landscape and outdoor Area located at the Centre of the building has been assessed with fitting Type 'X6' 3-meter columns (as per luminaire schedule).



Evaluation	Result
E_{AVERAGE} (maintained)	8.27 lux
E_{MIN}	1.65 lux
U_o (Uniformity)	0.2

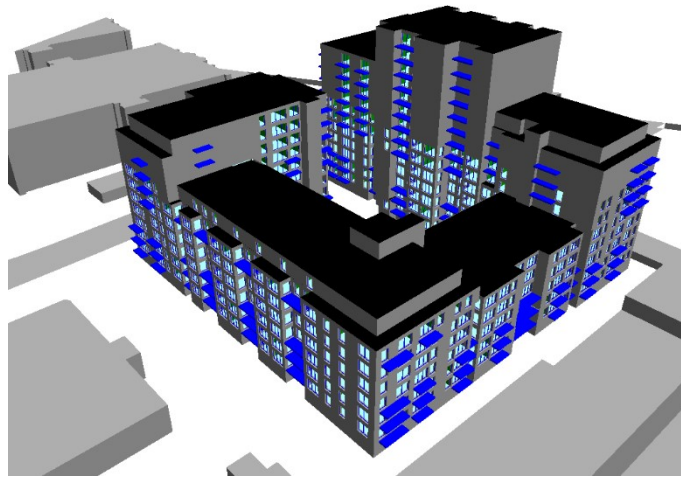
4.5 Steps

For the steps in the area fitting type 'X7' is placed above each step to provide the necessary 30 lux.



Appendix A - Luminaire Schedule

D2005
Carmanhall Road Development
Former Avid Technology International Site,
Carmanhall Road,
Sandyford Industrial Estate,
Dublin 18

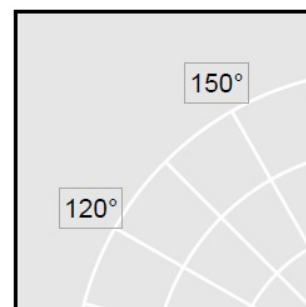
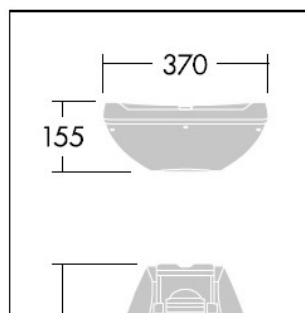


Luminaire Schedule

IN2 Project. No. D2005
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Luminaire Reference	X4	Manufacturer	Thorn or Equal and Approved
Body Description	IP66 rated Die-cast aluminium, powder coated textured anthracite, IK09	Recessed/Surface or Wall Mounted	5 Meter Pole
Diffuser Type	Tempered Glass	Lamps	15W LED
Reflector	N/A	Lumen Output	2053 lumens
Control Gear	230V, 50-60Hz	Colour of Lamps	4000K
Area of Application	Roads	Lamp Life	100,000hours
Dimensions (mm)	598mm (L) x 232mm(W) x 149mm(H)	IEC Photometric Code	840/339
Initial Colour Variation	N/A	IESNA LM 80-80 tested	Yes
Extra small size , Narrow road Optic			
Lumen Depreciation	L95 B10	Power Factor	> 0.99
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 drivers shall conform to	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Five-year on-site 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.		
<div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p style="text-align: center;">Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.</p>			

Luminaire Reference	X5	Manufacturer	Thorn or Equal and Approved
Body Description	IP66, die-cast aluminium, powder coated textured light grey. IK08	Recessed/Surface or Wall Mounted	10-meter pole
Diffuser Type	Tempered flat glass	Lamps	75W LED Lamp
Reflector	N/A	Lumen Output	10519 lumens
Control Gear	230V, 50-60Hz AC	Colour of Lamps	4000K
Area of Application	Roads	Lamp Life	100,000 Hrs
Dimensions (mm)	880mm (L) x 370mm (W)x 155mm (H)	IEC Photometric Code	840/339
Initial Colour Variation	N/A	IESNA LM 80-80 tested	Yes
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 drivers shall conform to	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Three-year on-site 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.		



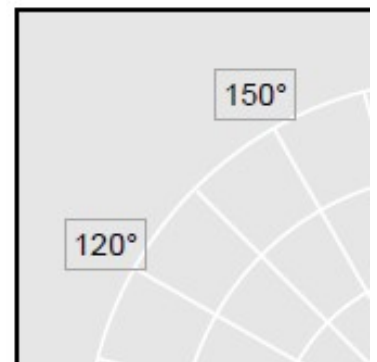
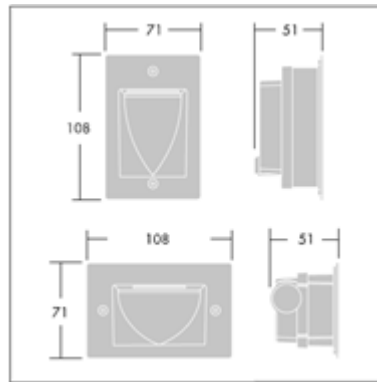
Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

Luminaire Reference	X6	Manufacturer	Glamox or Equal and Approved
Body Description	IP66, die-cast aluminium, Double layer polyester powder coated paint finish. IK09	Recessed/Surface or Wall Mounted	3-meter pole
Diffuser Type	Tempered glass	Lamps	30W LED Lamp
Reflector	Anodised aluminium	Lumen Output	2100 lumens
Control Gear	230V, 50-60Hz AC	Colour of Lamps	4000K
Area of Application	Parks, paths and amenity lighting	Lamp Life	50,000 Hrs
Dimensions (mm)	520mm (D) x 377mm (H)	IEC Photometric Code	840/339
Initial Colour Variation	N/A	IESNA LM 80-80 tested	Yes
Lumen Depreciation	L80 B50	Power Factor	> 0.9
Colour rendering Index	>80	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 drivers shall conform to	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Three-year on-site 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.		



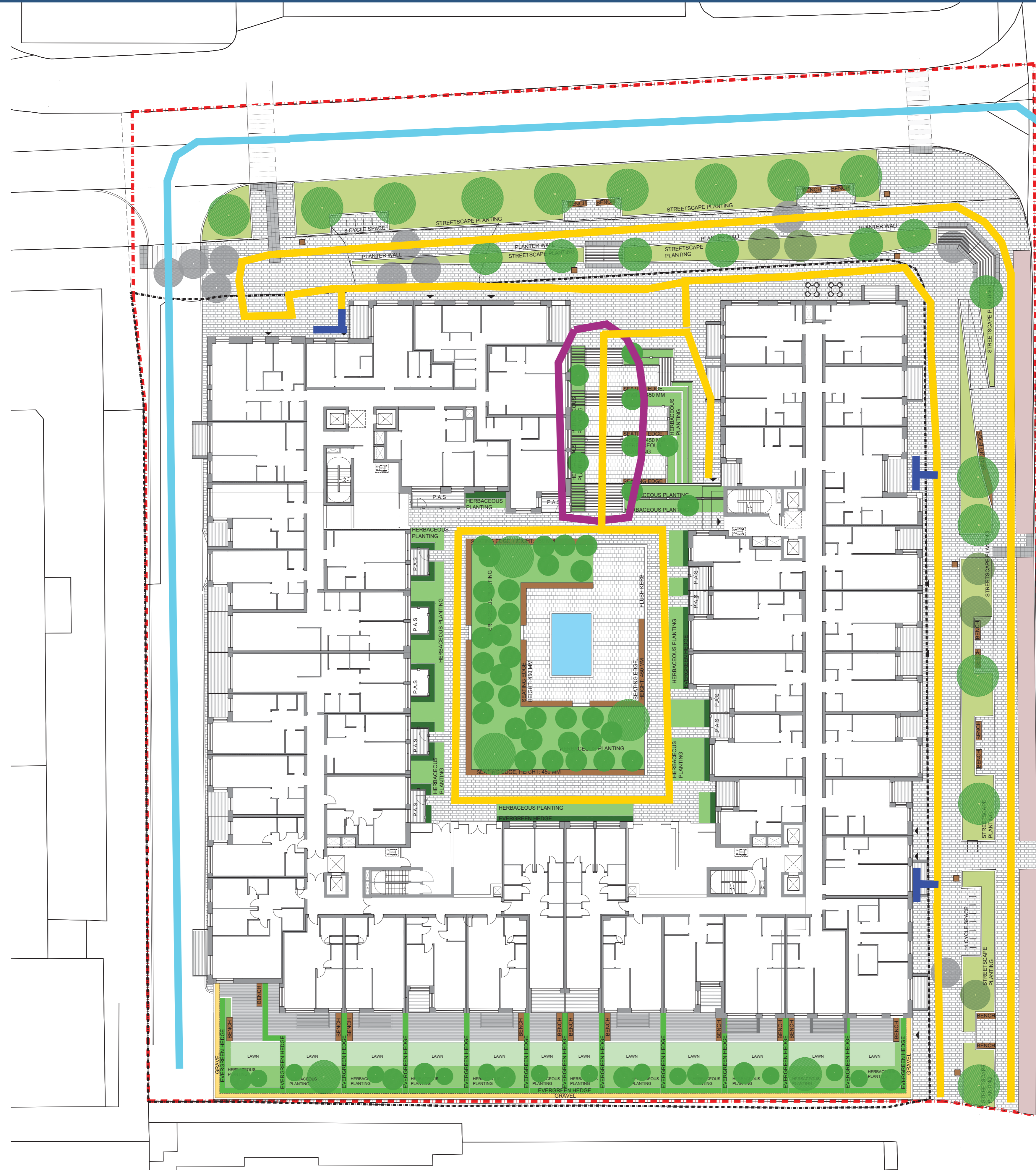
Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

Luminaire Reference	X7	Manufacturer	Thorn or Equal and Approved
Body Description	IP65, die-cast aluminium, painted dark grey. IK05	Recessed/Surface or Wall Mounted	Wall Recessed
Diffuser Type	Polycarbonate	Lamps	4W LED Lamp
Reflector	N/A	Lumen Output	96 lumens
Control Gear	230V, 50-60Hz AC	Colour of Lamps	4000K
Area of Application	Pathways	Lamp Life	50,000 Hrs
Dimensions (mm)	71mm (L) x 108mm (W)x 51mm (H)	IEC Photometric Code	840/339
Initial Colour Variation	N/A	IESNA LM 80-80 tested	Yes
Lumen Depreciation	L70	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 drivers shall conform to	To be in accordance with IEC 61347-2-13 & IEC 62384.
Warranty Length	Three-year on-site 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.		

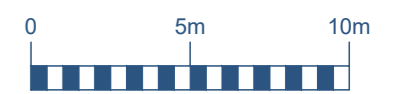


Contractor to ensure catalogue numbers are the latest and are correct prior to ordering.

Appendix B - External Lux Levels Design Requirements



- Site Lighting Lux levels
- Roads - 7.5 - 10 lux
 - Footpaths - 5 - 7.5 lux
 - Stepped areas/ Ramps - 30 lux
 - Access Routes - 20 Lux



STATUS	DATE	DESCRIPTION	DRN	ENG	APP	REV