IN2
ENGINEERING DESIGN PARTNERSHIP

Tallaght Innovation Centre

Belgard Square North,

Dublin 24

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

DRAFT

Site Lighting Report

IN2 Project No. D1949

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1.0 INTRODUCTION

IN2 Engineering Design Partnership have been retained by South Dublin County Council to complete a Planning Stage Site Lighting Study for the proposed Tallaght Innovation Centre development at Belgard Square North, Dublin 24. The proposed development incorporates additional office accommodation with a Gross Internal Floor Area (GIFA) of approximately 3,000m2. The purpose of this report is 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.

2.0 EXECUTIVE SUMMARY

The following report contains the design layout and accompanying calculations for the proposed site lighting scheme for the proposed Tallaght Innovation Centre development at Belgard Square North, Dublin 24.

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
- 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).

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_o)
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
Light Spill (Obtrusive Light)	10 (Maximum)	N/A
Entrance Road (Main Traffic Routes)	10	0.2

Figure 2.1 - Minimum Lighting Requirements

3.0 DEVELOPMENT OVERVIEW

The proposed Tallaght Innovation Centre development is to be situated just off Belgard Square North Dublin 24. The site context as illustrated below in Figure 3.1.

Figure 3.1 - Development Site

The proposed development will consist of the construction of a new landmark building on public lands, providing space for innovation technology start-ups from south Dublin County firms graduating from existing innovation spaces, and in-movers from elsewhere, attracted by the high-quality environment and business support offer allowing small beginnings but capable of accommodating business growth and success.

4.0 PROPOSED INSTALLATION

The proposed site lighting for the new Tallaght Innovation Centre 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, amenity spaces, pedestrian crossings 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 using a 6m galvanised steel lighting column with 'Type X3' post-top mounted LED luminaires as per the luminaire schedule in Appendix A of this report. The luminaires shall be complete with narrow beam 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.

Lighting shall be provided on the pedestrian pathways and the landscaped space surrounding the development with 'Type 'X4' decorative column LEDs, 4 meters in height. The luminaires on the 4-meter columns shall have a mechanical impact rating of IK10 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.

The lighting scheme will adhere to the following lighting characteristics:

- The minimum level of appropriate/required lighting level will be provided within the developed/residential 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;
- No UV component in the light;
- No light spill into biodiversity areas;
- Light standards and associated lighting to be directed away from areas of open space;
- No floodlighting will be used in the development;

The technical data and photometric curves for each of the proposed luminaires has been provided in the luminaire schedule enclosed in Appendix A of this report.

The performance of the proposed lighting scheme has been analysed using Relux Pro 3D lighting simulation software package.

5.0 DESIGN ANALYSIS AND CALCULATION RESULTS

Entrance road

The lighting performance of the entrance road has been assessed with fitting Type 'X3' 6000mm (H) lighting columns as per luminaire schedule, Appendix A.

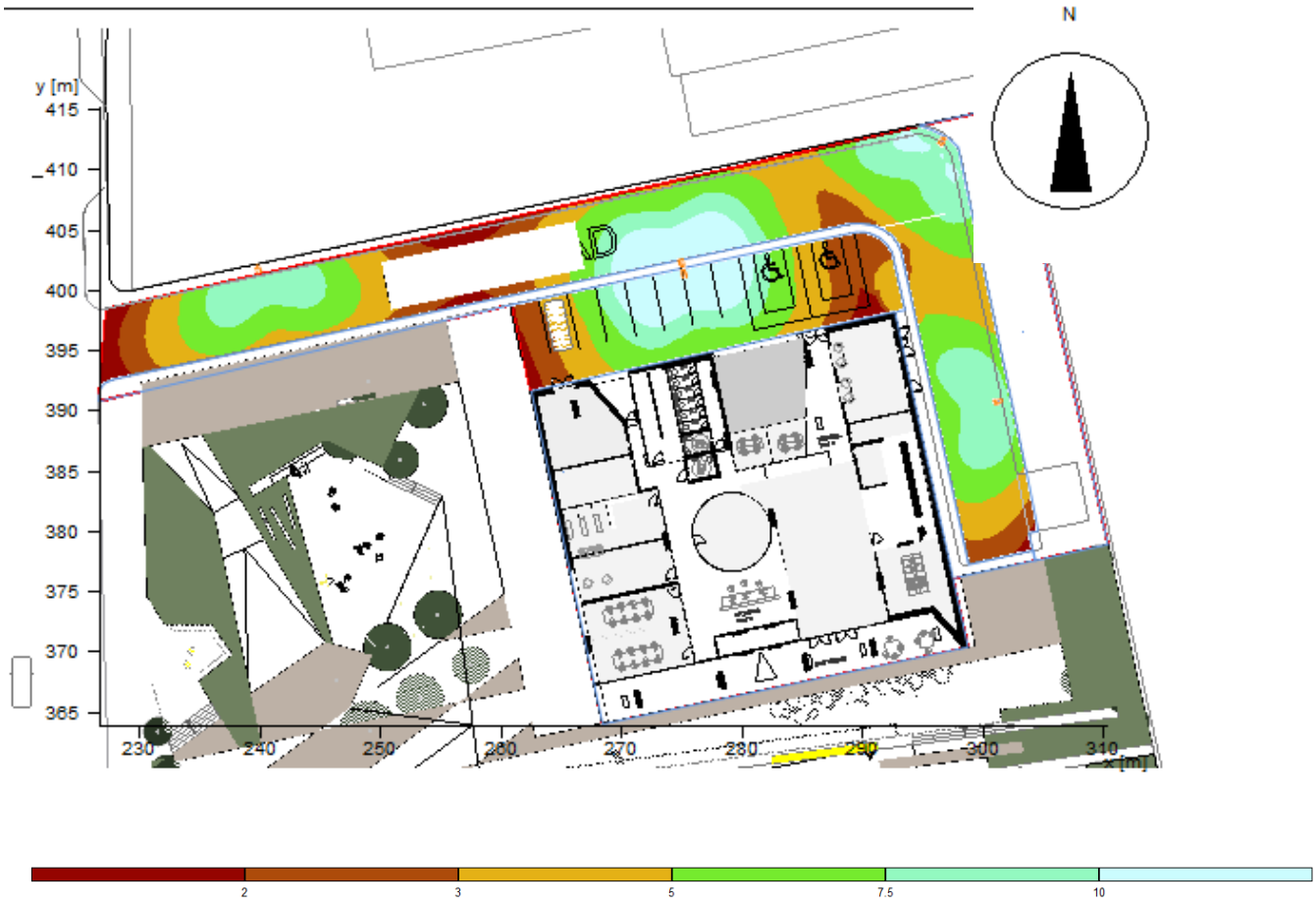

Figure 5.1.1 - Illumination Levels at the Entrance Road

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	5 - 7.5 lux	5.66 lux	PASS
U_O (Uniformity)	0.20	0.24	PASS

Figure 5.1.2 - Analysis Results

Pedestrian Access

The lighting performance of the Pedestrian access to the building has been assessed with fitting Type 'X4' 4000mm (H) lighting columns as per luminaire schedule, Appendix A.

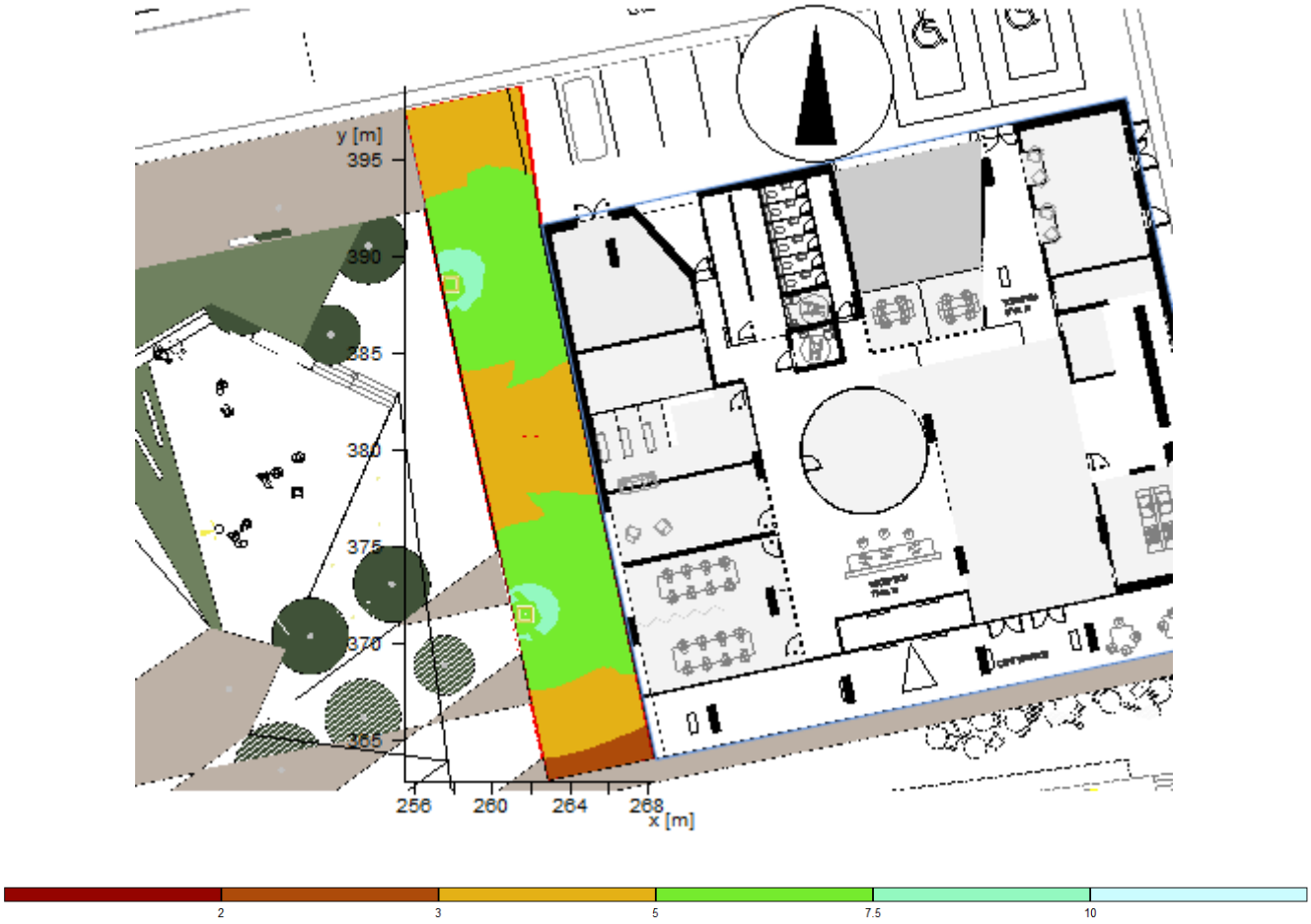

Figure 5.1.3- Illumination Levels Pedestrian Access

Evaluation	Target	Result	
$E_{AVERAGE}$ (maintained)	5 - 7.5 lux	5.66 lux	PASS
U_O (Uniformity)	0.20	0.24	PASS

Figure 5.1.4 - Analysis Results

Rendered images of calculations

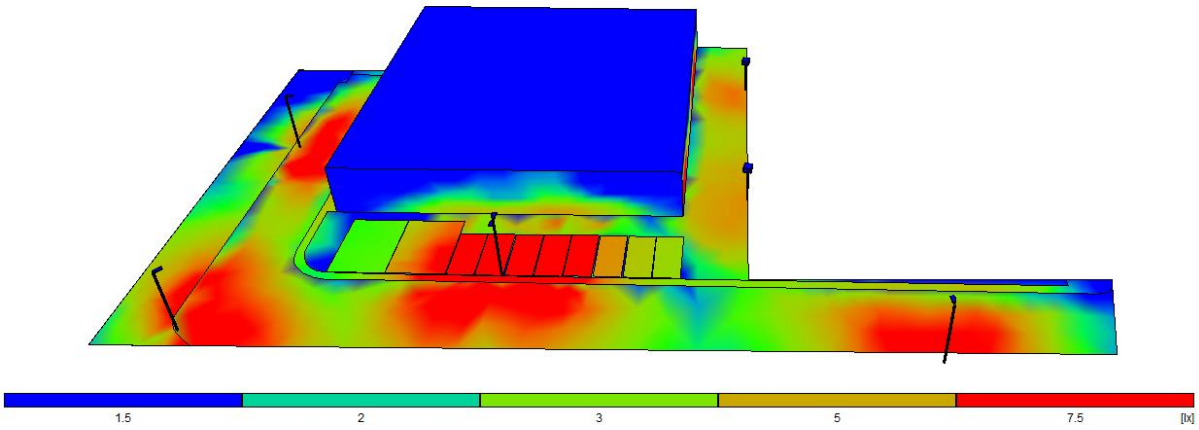

Figure 5.1.5 - 3D Model indicating Site Illumination Levels

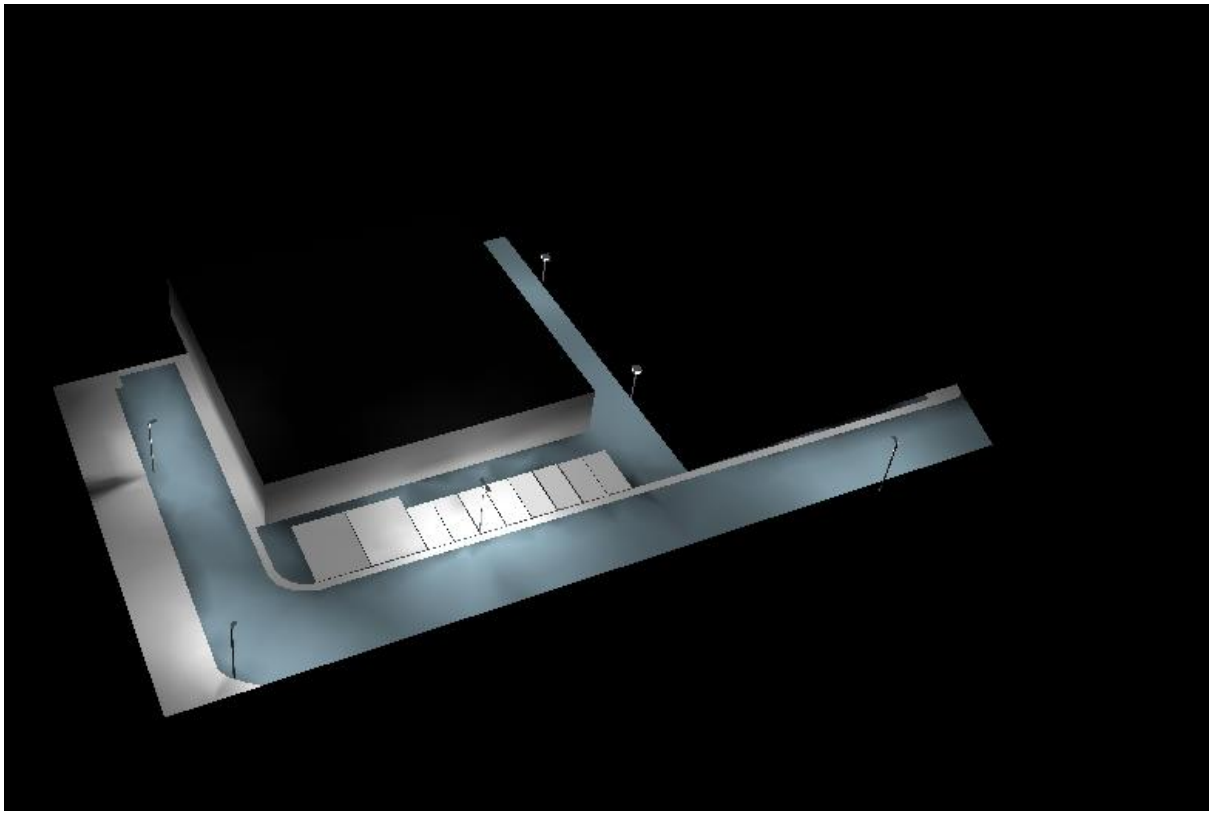

Figure 5.1.6 - 3D Model indicating

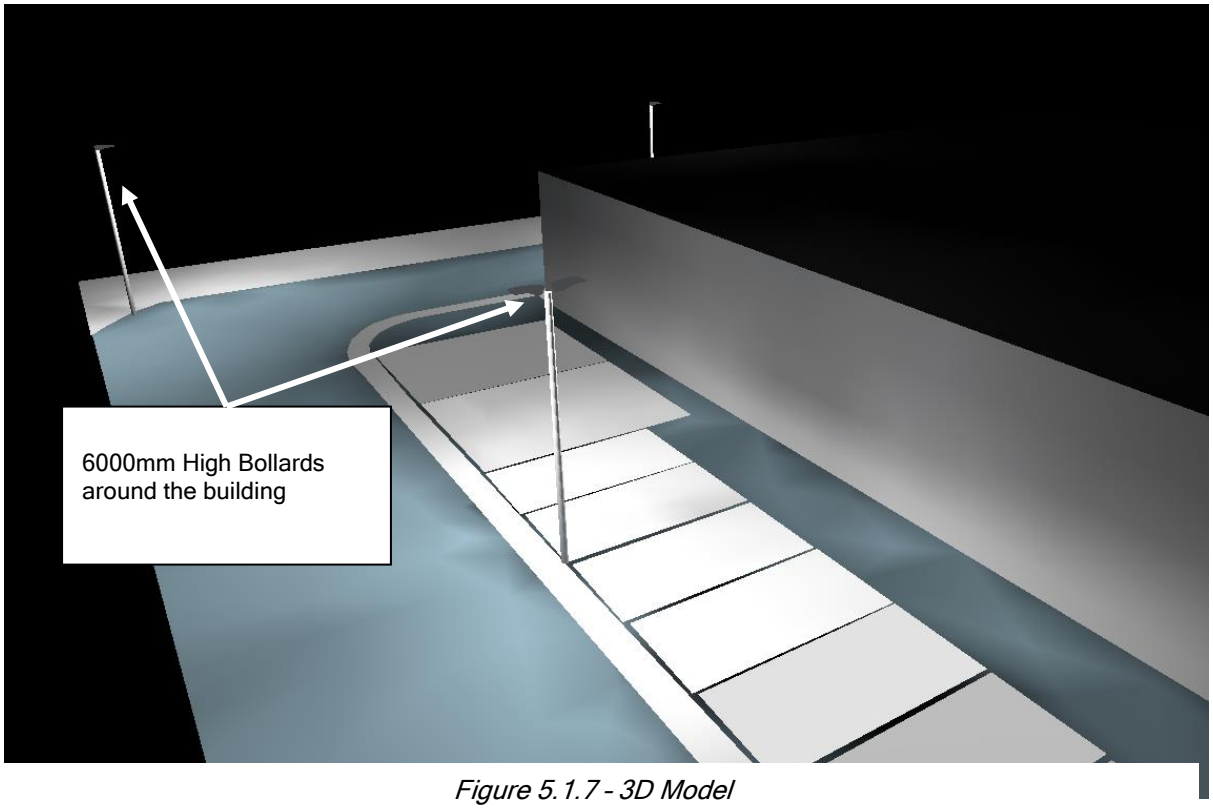

Figure 5.1.7 - 3D Model

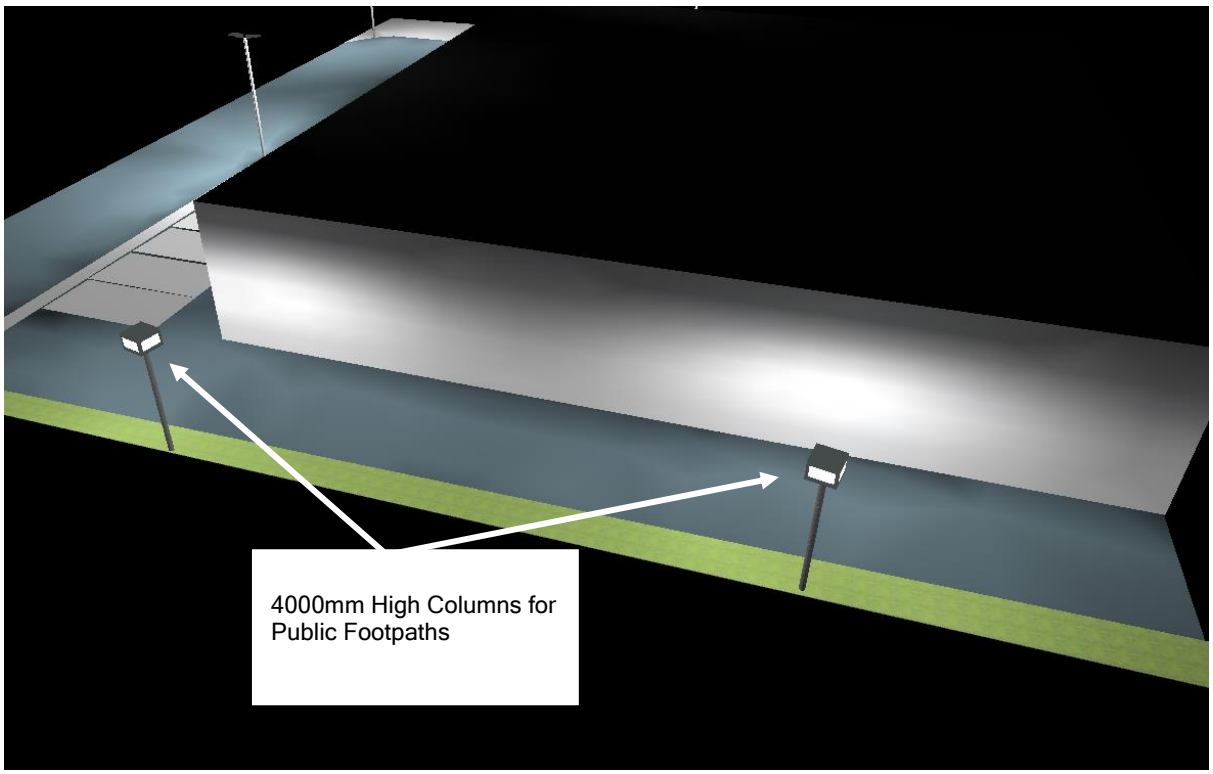

Figure 5.1.8 - 3D Model

6.0 APPENDIX A – LUMINAIRE SCHEDULE