



MANSFIELD BOWLING CLUB LIGHTING IMPACT ASSESSMENT AND EXTERNAL LIGHTING DESIGN

Issue Purpose: Information
Document Revision: R02

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Project No: 22-10056

1. Lighting Design Summary

Our lighting scheme is limited to the external areas of the development. It includes the entrance into the site, parking, walkways, landscaping elements like the community garden and play areas as well as the facade of the proposed building. Refer to Section 3 for light fitting specifications.

Our design is simple and unobtrusive since our aim was to illuminate the architectural and site features using optimum light sources while causing minimum impact on the surroundings. Subtle wall lights with a downward direction have been placed on the façade at lower levels (not exceeding 3m) and on balconies to provide a subtle non intrusive illumination of the façade.

The driveways and pedestrian walkways on site have been illuminated using bollard lights to guide the movement of vehicles and occupants.

The main entrance path into the site abuts existing residential buildings on either side. Therefore, subtle low level LED bollards (with a downward direction only) have been used along both sides of the access road to efficiently illuminate the pathways without causing much disturbance to the surroundings. This also offer an illuminated transition zone between the main road and the driveway into the development.

As mentioned above uniformly spaced LED wall lights (downward light only) have been proposed along the building façade to illuminate circulation spaces surrounding the property and provide a level of comfort and security to residents. The external perimeter and landscaping has also been subtly illuminated not to provide sufficient levels for walking throughout the gardens but to provide a warm, comforting, secure and subtly lit environment for the residents.

The main entrance door to the building has been highlighted using recessed downlights mounted within the canopy over the front doors. Wall lights have also been placed either side of the doors to enhance the overall look of the entrance.

In terms of controls, all external lighting within the driveway, car park and walkways shall be controlled via wall mounted daylight sensors as per specification below. These sensors shall be mounted to the façades of the building and landscaping where applicable in a suitable locations as agreed with the architect.

The Daylight sensor has a night economy mode which can be programmed to turn off fittings after a period of time to ensure fittings can be switched off throughout the night if required.
Night economy mode is adjustable i.e. on/off period of all fittings can be adjusted.

DAYLIGHT SENSOR:
Steinel Nightmatic 3000
Black or White
IP54

The wall lights located on the balconies shall be controlled via a manual switch located inside the residential property. These lights are enclosed within the covered balconies so there is no concern of light spill from these as proved with the Dialux modelling and results indicated below.

Results

The assessment results demonstrate that only 1 neighbouring residential property façade exceeds the pre and post curfew lux levels as set out in Table 2 below. However this only occurs at the property adjacent to the entrance driveway. The lux level recorded (at 1m AFFL) is coming directly from the low level bollard which will be installed adjacent to the external wall along a pathway. Along this wall there is also no windows or doors and therefore the lighting will not affect the residents of this home.

See below image for further clarity/identification of this location. Note the floor mounted lighting bollards will also help to ensure the dwelling is visible and will reduce the potential risk of vehicle collisions.



Image: No 11 Croftdown Road from Google Street View (left) & Dialux Model (right) which indicates the area recorded as 22 lux on the external wall at low level only.

Other than the 1 No location indicated above none of the neighbouring properties surrounding the site experience light intrusion over the pre-curfew levels or the post-curfew lux threshold (*refer to Section 2 - Table 1 and 2 below*).

Therefore we can conclude that there shall be no negative intrusive light spill from this development and therefore no visual impact on neighbouring properties.

Please refer to 3D images for visuals of the proposed lighting scheme (*refer Section 5*).

The lighting simulation/modelling was produced in Dialux Evo 11.0.

2. Lighting Impact Assessment – Explanation & Results

We have included a horizontal lux calculation for the gardens of neighbouring properties and a vertical calculation at the facing elevation of each house on Croftdown Road, York Rise, Laurier Road and Dartmouth Park Avenue that may be affected with the external lighting installation from the development. Refer to site layout in *Section 6* below indicating calculation zones.

ILP GN01, BS 5489, CIE Standards, the CIBSE and the Society of Light & Lighting guidance documents all apply a common Environmental Zoning system, which is summarised in the table below. It has been assumed that the site falls in the classification of zone E3 (Medium district brightness areas).

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations.
E4	Urban	High district brightness	Town / city centres with high levels of night-time activity.

Table – 1 Environmental Zones (Source: ILP GN01)

Based on the Zoning above see below the limits of obtrusive light into neighbouring properties as outlined within the above guidance.

Environmental Zone	Sky Glow ULR (Max %)	Light Intrusion (into windows) Ev (Lux)		Source Intensity I (cd)		Building Luminance Pre-curfew
		Pre-Curfew	Post-Curfew	Pre-Curfew	Post-curfew	Average L (cd/m ²)
E0	0	0	0	0	0	0
E1	0	2	0	2500	0	0
E2	2.5	5	1	7500	500	5
E3	5.0	10	2	10000	1000	10
E4	15.0	25	5	25000	2500	25

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations

The analysis results suggest that none of the neighbouring properties experience light intrusion higher than the pre-curfew or post-curfew levels. The only 1 No neighbouring property that does is detailed above and has no windows or doors on this facade.

Note that we have not included any outbuildings in residential private gardens or any foliage/tress located within the new development or in private residential gardens. These would act as further obstacles and would decrease the lux levels on neighbouring buildings even further i.e. the worst-case scenario has been assessed in this case (Winter - when foliage will be at its bare minimum).



The assessment results demonstrate that none of the neighbouring properties experience light intrusion over the pre-curfew levels or the post-curfew lux threshold. Therefore we can conclude that there shall be no intrusive light spill from this development and therefore no visual negative impact from the installed external lighting to any neighbouring properties.

3. Luminaire Schedule

Ref	Manufacturer & Model	Description	Image	Location	Drawing Symbol
W1	Light Graphix LD97	Surface Wall Mounted LED downlight (Finish to be black) Wattage: 1.2W Lumens: 106 lumens Colour Temperature: 3000K		Façade – Entrance, Balcony and General around building	
B1	Whitecroft Lighting KOLO	Floor mounted LED Bollard (Finished in black) Wattage: 4W Lumens: 388 lumens Colour Temperature: 3000K		All areas on landscaping, car aprking and walkways	
D1	Light Graphix LD1094	Recessed adjustable external LED Downlight Wattage: 7W Lumens: 448 lumens Colour Temperature: 3000K		Entrance Canopy	

4a- Site Lighting Layout (Landscape)





4b- Building Façade Lighting – Ground Floor





4c- Building Façade Lighting – First Floor



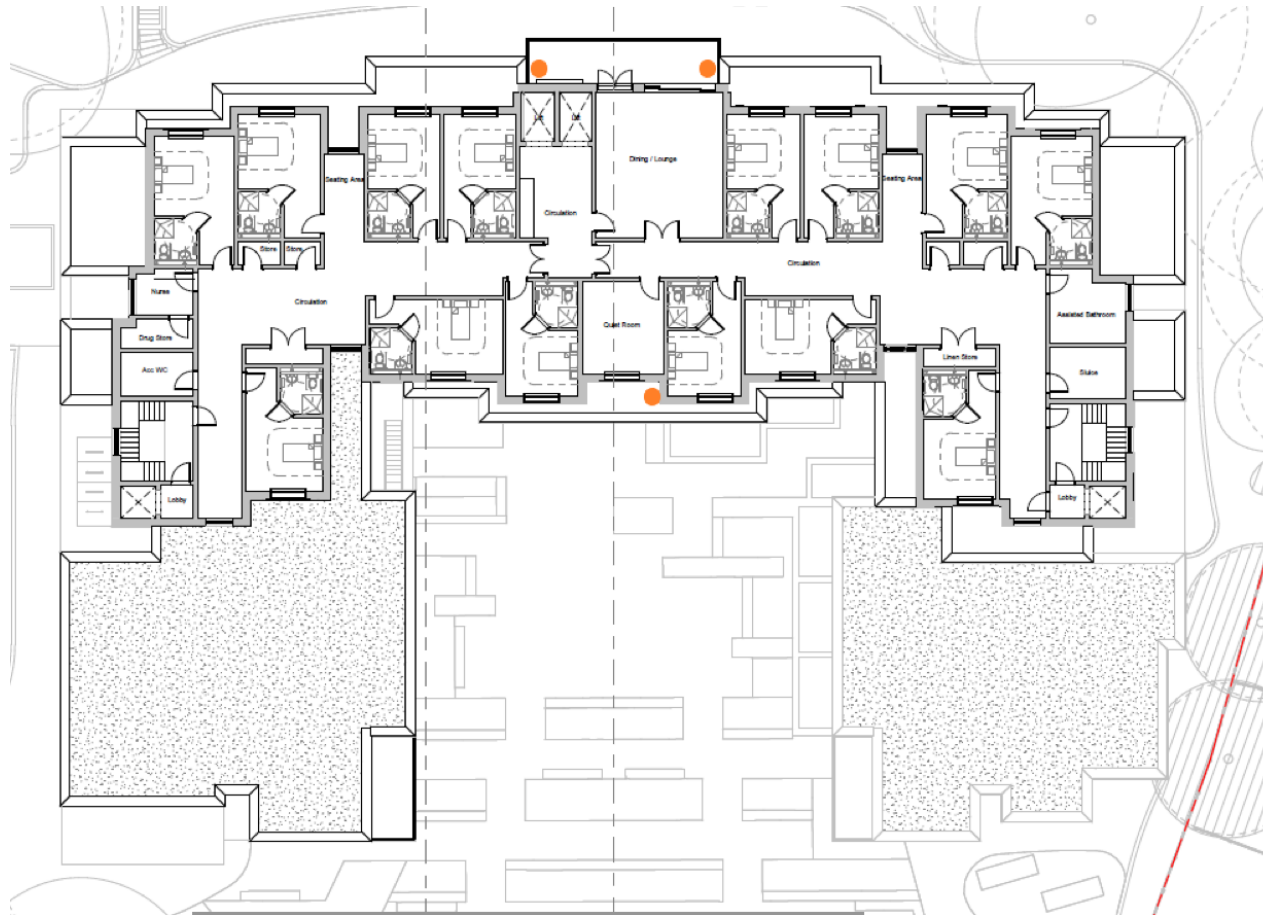


4d- Building Façade Lighting – Second Floor



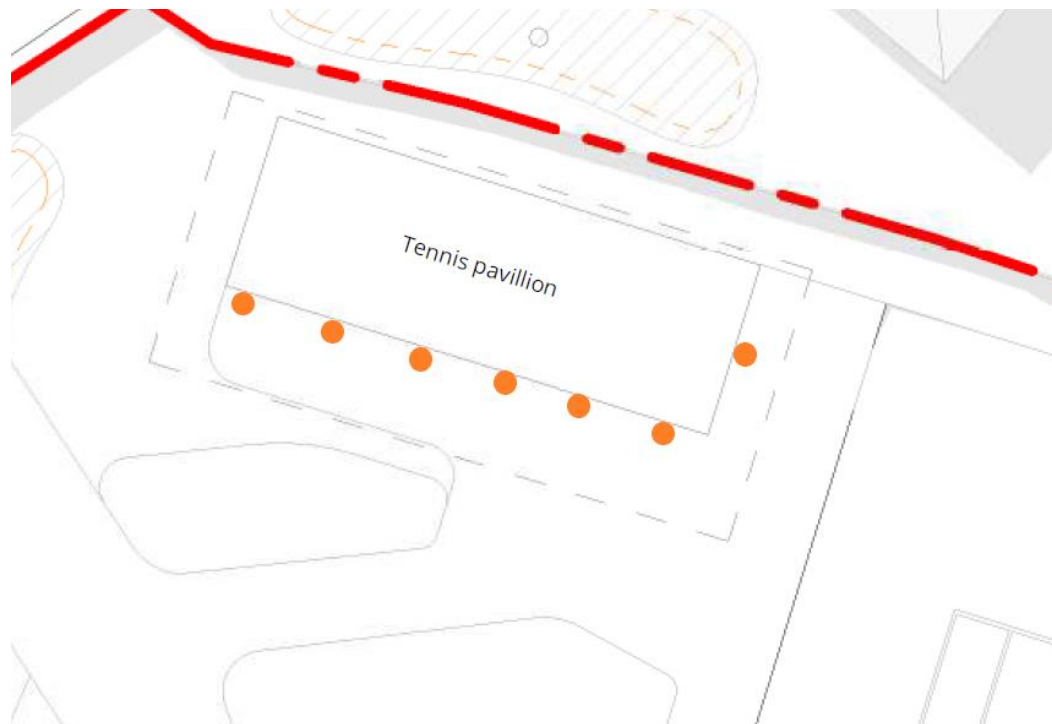


4e- Building Façade Lighting – Third Floor

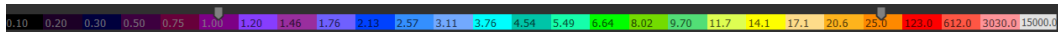
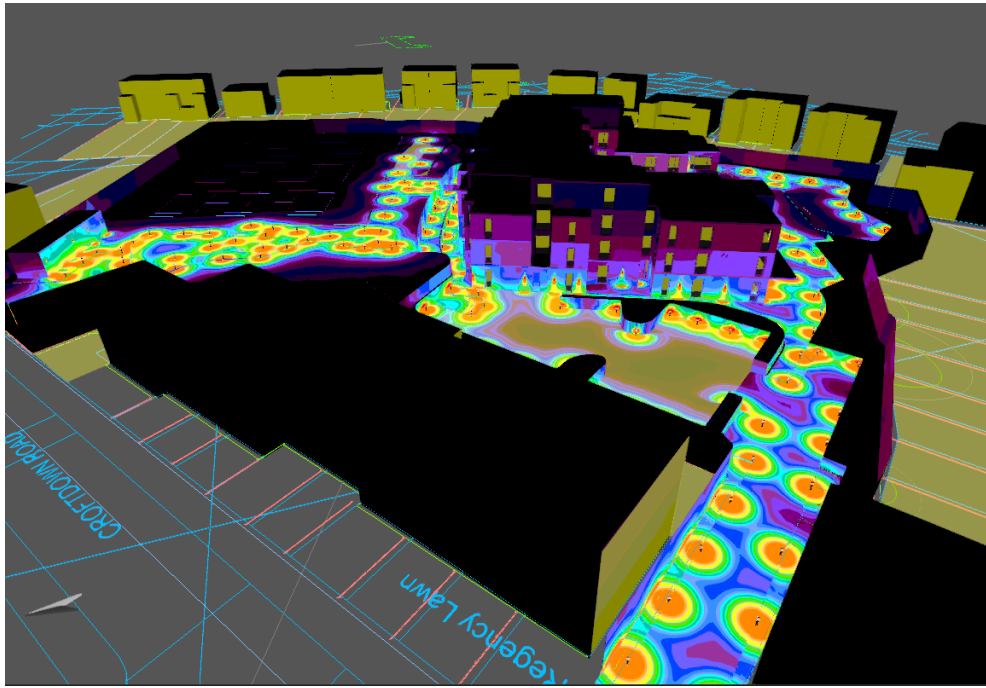


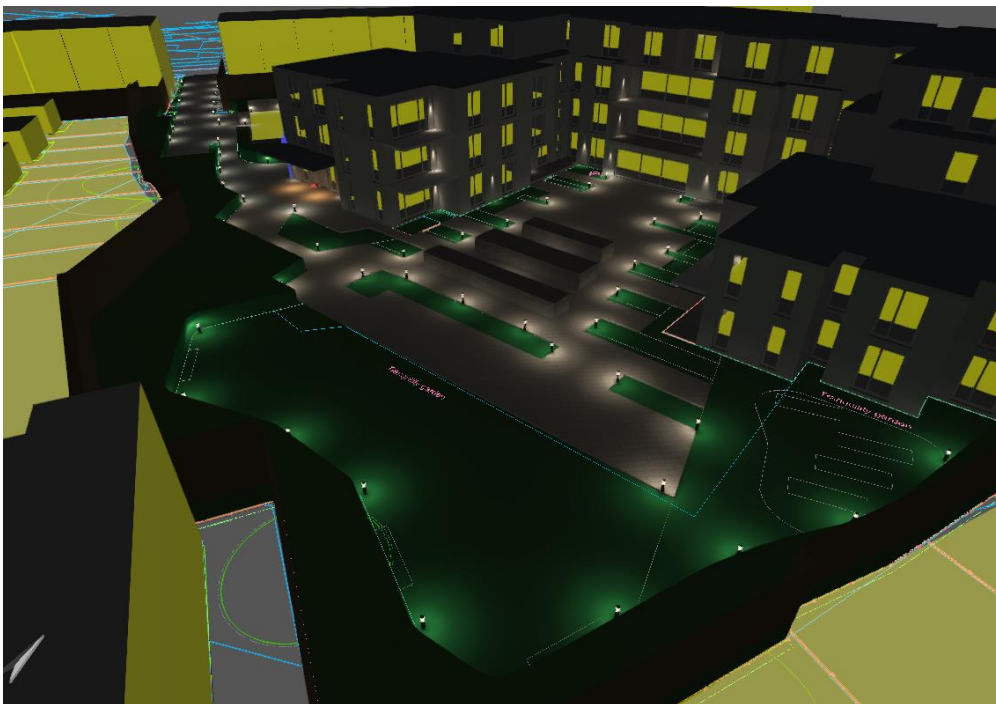
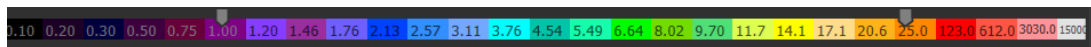
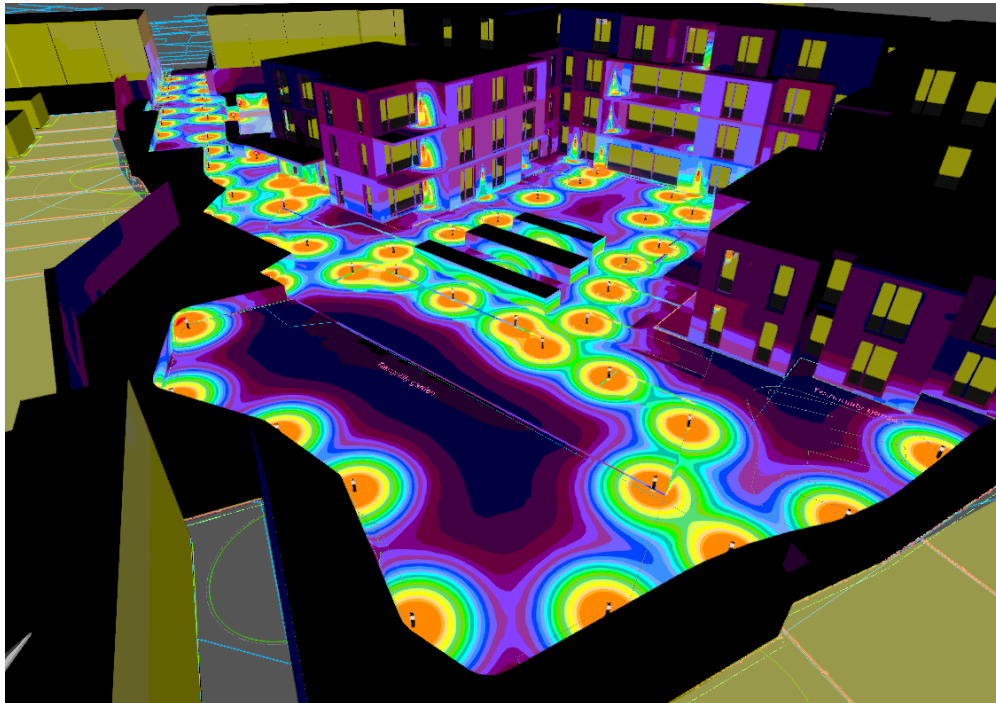


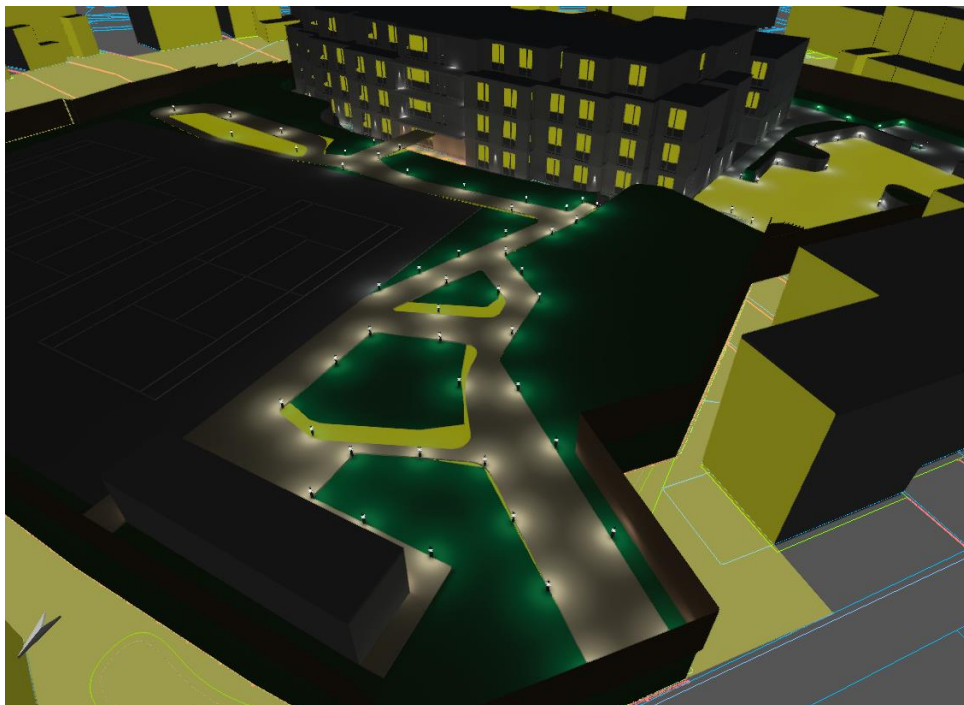
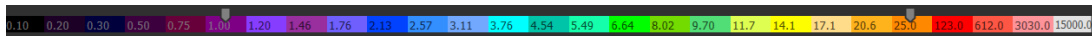
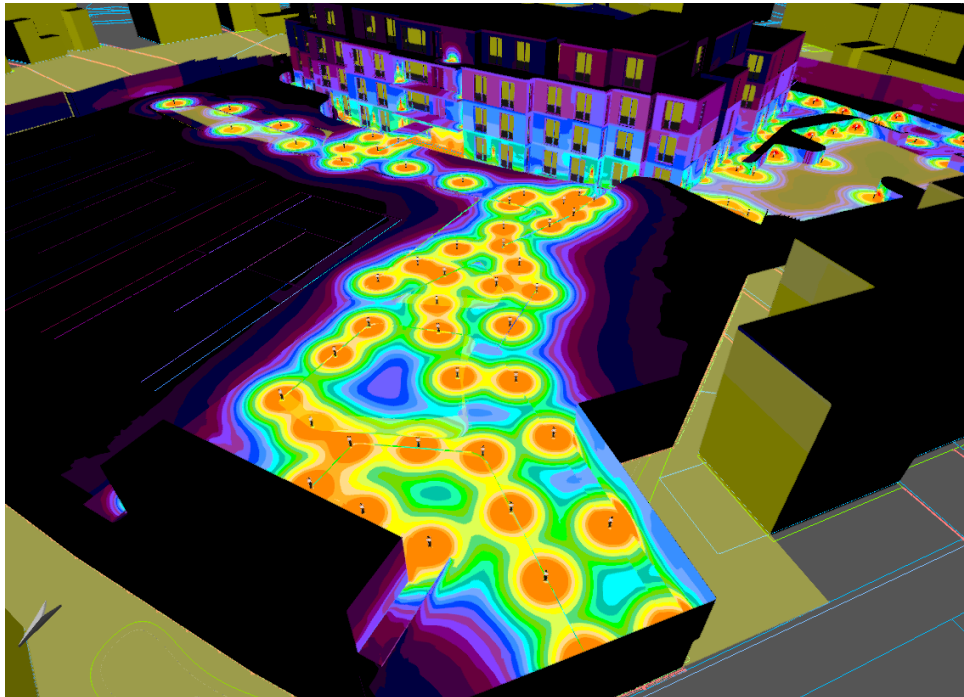
4f- Building Façade Lighting – Tennis Pavillion

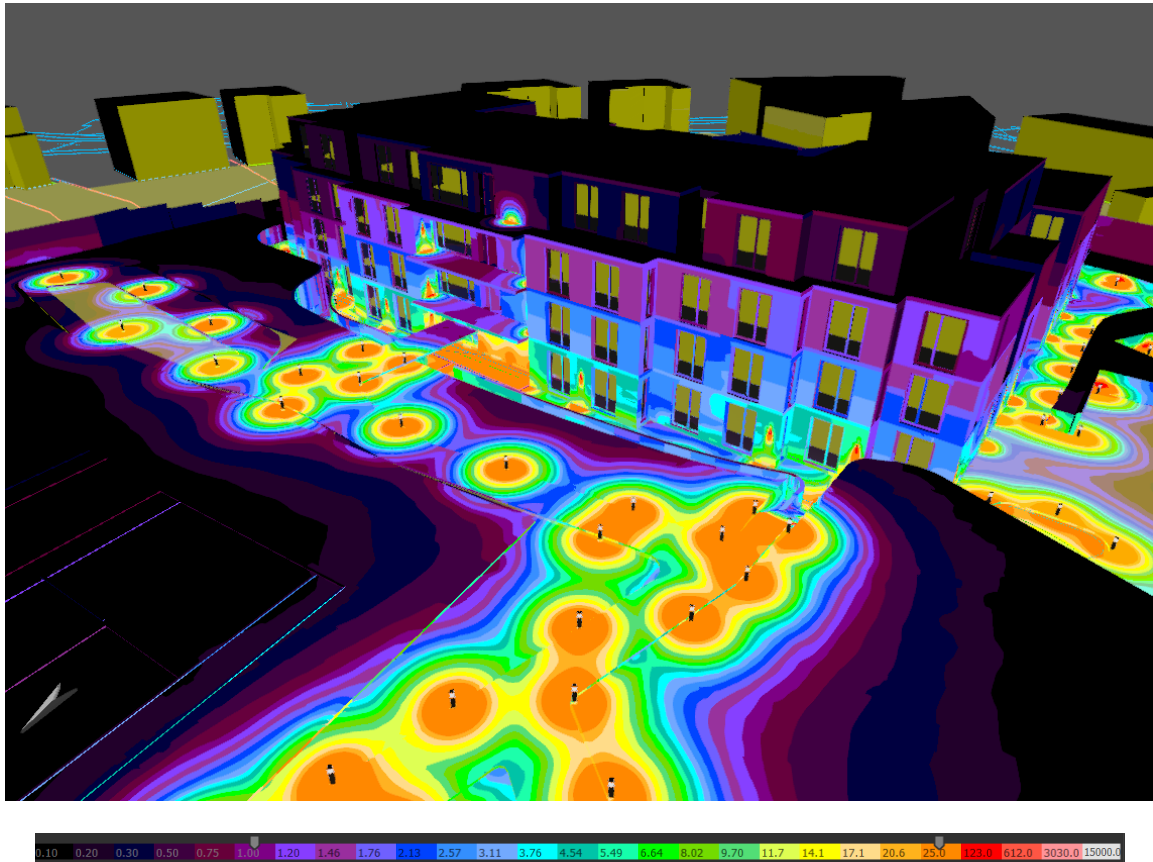


5. Lighting Design Images













6. Site and Calculation Zones



-  Proposed Site Area
-  Horizontal Calculation Zones – Neighbouring Properties (Gardens)
-  Vertical Calculation Zones – Neighbouring Properties (Building Facades)
-  Indicates Proposed Site Boundary

End of Report