



LIGHT
360

Logicor Park Reading, Rose Kiln Court, UK

Stage 1 – Lighting Strategy Report

Ref: L0795 – Rev_B

18th October 2023

Planning Portal Reference: PP-12054457

Contents

1.0 - Introduction.

2.0 - Design Approach

3.0 - Site Analysis:

- Logicor Park Overview
- Macro & Street view Approach to the Site
- Site Analysis - Adjacent Lighting Systems & Typology

4.0 - Lighting Strategy:

- Zoning Brightness Requirements & Lighting Hierarchy
- Lighting Codes & Standards
- Overall Lighting Plan - Car Parking
- Overall Lighting Plan - Yard & Pathways
- Obtrusive Light & Spill Lighting
- Ecology Impact Statement

5.0 - Technical Statement:

- Preliminary Lighting Layout
- Preliminary Lighting Calculation
- Preliminary Luminaire Typology
- Reduction of Carbon
- Lighting Control Strategy
- Access & Maintenance

6.0 - Summary

7.0 - Contact Sheet



1.0 - Introduction

Light 360 were instructed by Redwood (Light Industrial) Propco Sarl Limited (the ‘Client’) to develop Lighting Strategy Report for the Planning Application of the development of the Logicor Park Reading site. The design team which Light360 have primarily interacted with is comprised of Savills Engineering & Webb Gray Architects, who we have consulted in advance of this submission.

This Lighting Strategy Report relates to the proposals to improve and enhance the Building Facades, Car Parking Areas, Loading Bays, Vehicular Circulation, Pedestrian Access and lighting impact for the ecological assessment for the site development. This document forms part of the submission of the Pre-Application Service to Reading Borough Council.

Our approach to the architectural lighting scheme was informed by the following documentation;

- BS 5266 – Emergency Lighting
- BS 5489-1:2020- Code of Practice for Design of Road Lighting
- BS 5266 - Emergency Lighting installation
- The HSE’s guidance document – HSG 136: Workplace Transport Safety
- BS 7671 – IET Requirements for Electrical installation
- SLL Lighting Guide 1
- SLL Lighting Guide 6
- SLL Lighting Guide 12
- The Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light
- ILP Professional Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments CIE 126 Guidelines for Minimising Sky Glow
- Environmental considerations for exterior lighting - Chartered Institute of Building Services Engineers (CIBSE)
- Reading Borough Local Plan - Adopted November 2019 which references the Institute of Lighting Professionals (ILP) for illuminance levels.

The scope of the scheme is limited to the architectural lighting to the followings areas of the proposed site :

- Blocks A, B & C Facades
- Car Parking Zones
- Entrance & Exits
- Loading Bays & Yards
- Overspill Car Park
- Vehicular & Pedestrian Circulation routes
- Emergency Lighting & Anti-panic zones



2.0 - Design Approach

We have reviewed the information provided to us by Webb Gray Architects (via Savills Engineering) for the proposed Site, which comprised of:

- Architectural CAD drawings.
- Elevations & Sections
- Proposed Site Plan

The objectives for the Exterior Lighting of the Planning Application Report are:

1. Raising the external environment light quality, reflecting clients aspirations to ensure safety, security, functionality & energy efficient lighting.
2. Rationalise fixture types, lighting elements and minimise the visual impact upon the surrounding residential areas & wild life.
3. Use energy efficient lamps / fixtures with long lamp life and stability to minimise energy consumption and maintenance.
4. Implement a basic lighting control system to maximise luminaire longevity and enable the lighting to respond to seasonal diurnal change.
5. Consider cabling and wiring routes, reducing their visual impact upon the overall development.
6. Consider the wider lighting impact, i.e. being sympathetic to the neighbouring residential developments, local wildlife & adjacent A33 road traffic safety.
7. Harmonise the overall illuminated effect of the external communal areas considering; lighting levels (illumination), surface brightness's (luminance), light distribution and control of glare.
8. Regularise the light colour temperature and colour rendition of finish materials.
9. Although emergency lighting would form not part of the Light360 scope of services, we would collaborate with Savills (appointed MEP consultants) to integrate as much of the emergency lighting within luminaires, which have been proposed and located by Light360 to reduce unnecessary visual clutter.

This document should be studied closely by The Client to ensure the final implemented lighting scheme is achieved as per the objectives which have been listed above.



Google Image - Reading Centre



3D Aerial Overview of Logikor Park Site Location



Aerial Overview of Logikor Park Site Location

3.0 - Site Analysis

Logicor Park Reading - Proposal Site Analysis

3.1 - Site Analysis - Logikor Park - Site Development

The new Logikor Park development (highlighted in **Red**) is located within the administrative boundaries of the Reading Borough Council. The area of the proposed developments is situated on the vacant Thames Water industrial site. The proposed development is made up of industrial warehouse & office buildings two storeys in height.

The proposed site is located in a urban zone on the periphery of a residential area beside Holly Brook to the North & enclosed by the A33 dual carriageway to the East with Holly Lane & Reading Link Retail Park to the West of the development.

We understand that this planning application is for the development of three buildings for Class E(g)(iii) (Light Industrial) / Class B2 (General Industrial) / Class B8 (Storage or Distribution) uses, including the provision of a new substation, parking, landscaping, and associated works. The proposed development will also contain the following zones:

- 3no. Commercial Units Blocks A, B & C totalling 33,150sqft
- New entrance barriers.
- 33no. Car parking bays
- 1no. Bike rack

Currently the proposal is to retain the tree line to the North of the site at Holly Brook bank side, therefore the report has undertaken a spill lighting exercise to ensure there is minimal light trespass which potentially disrupts local wild life habitat.

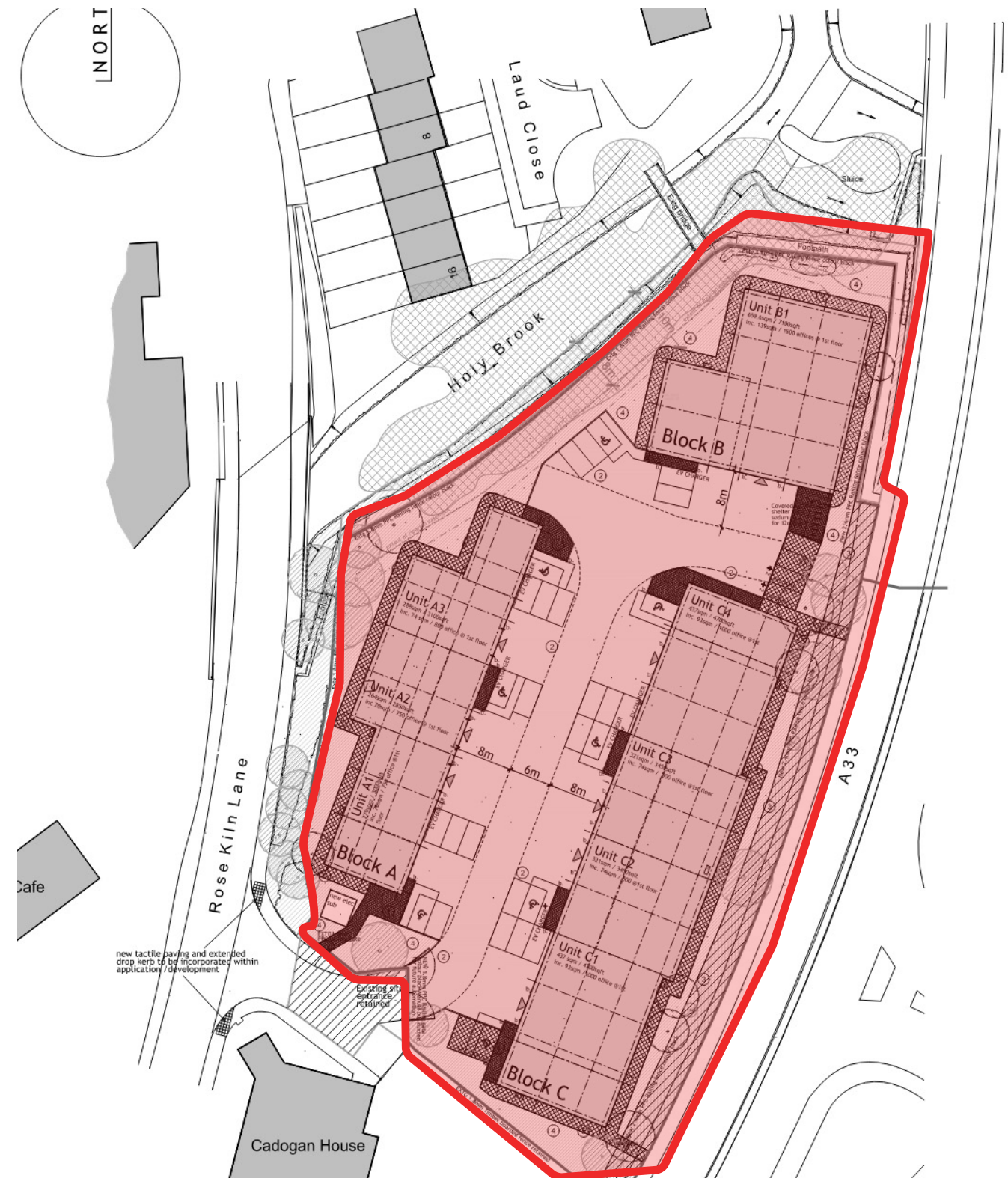
The application also proposes a foot path extended to the rear of the development alongside Holly Brook connecting Rose Kiln Lane & the A33 footpath.

Careful consideration has been taken to keep the mounting height of the site luminaires as low as practicable to ensure it is appropriate to the location and minimise impact on the local wildlife, residential properties beyond & ensure they pose no road safety risks to high density traffic on the A33.

Light360 have considered that the site will have operation hours (in compliance with planning restrictions). As part of the planning application, we have suggested the use of lighting controls so that within the hours of operation there is sufficient lux levels are provided. During late night scenarios, dimmed lighting will be on to provide security lighting.

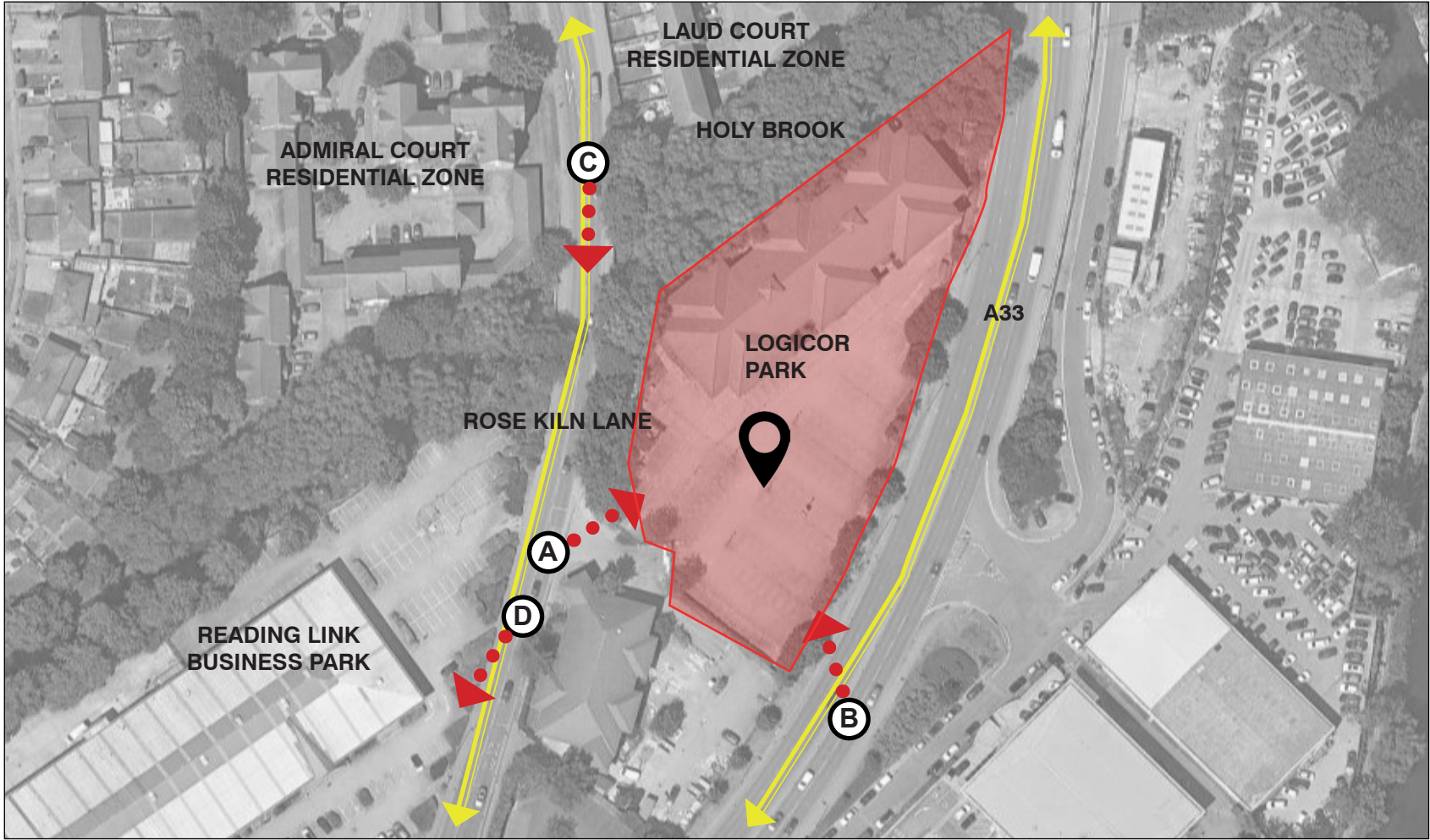
As part of the overall development, the external lighting will:

1. Consider & integrate with the wider public road lighting scheme.
2. Mitigate light spill & pollution to adjacent residential & wildlife zones.
3. Ensure all lighting codes, regulations and standards are met.
4. Provide high colour rendering & visibility for both aesthetic and safety reasons.
5. Provide sufficient lighting levels for safety and security.
6. Safe guard local wild life or migrating species..
7. Employ astronomical lighting controls for energy efficiency & maintenance purposes.



Aerial Overview of Proposed Logikor Park Site

3.2 - Site Analysis - Macro & Street view Approach to the Site



Aerial Overview of Logikor Park Development



(D) Existing Street view from site to Reading Link Business Park



(C) Existing Site view from Rose Kiln Lane adjacent to Admiral



(A) Existing Site Entrance view from Rose Kiln Lane



(B) Existing Site view from A33 roadway

3.3 - Site Analysis - Existing Lighting Systems & Typology



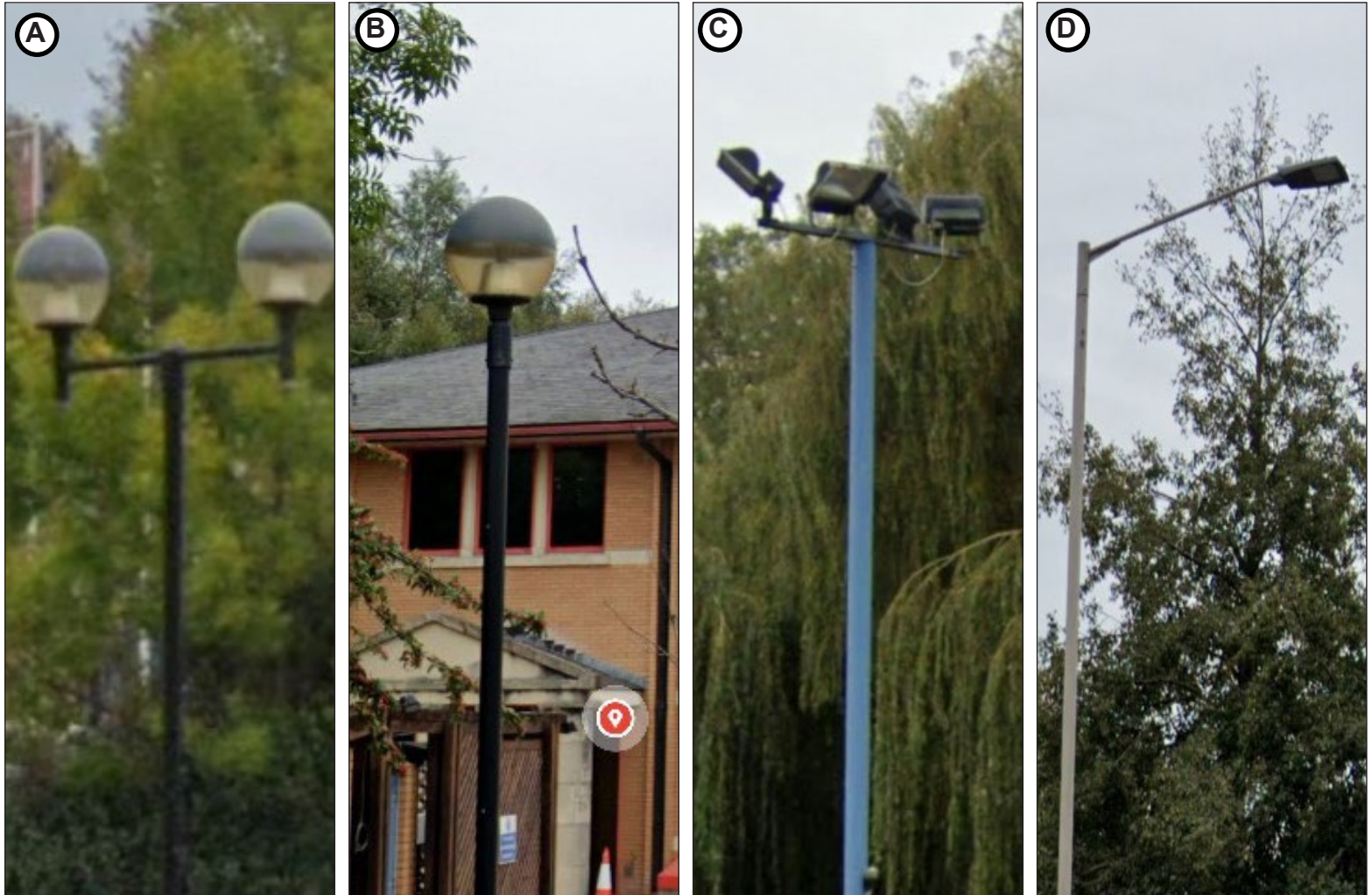
Site Map indicating different luminaire types used throughout the existing & adjacent locations.

As indicated in the selected images above, the existing luminaire typology is a mixture of various out dated lamp technologies, such as Metal Halide, Quartz Halogen, High Pressure Sodium & Fluorescent.

The current installation utilises various mounting heights & techniques which do not provide focused illumination to specific task zones and therefore create sky glow and light pollution.

It should also be noted that some luminaires appear to be on during daylight hours.

The combination of these factors will provide poor illumination to the industrial park, create issues for maintenance of the lighting system and be a source for glare and light pollution/trespass in a wider site context.



Variations of different outdated lamp luminaires, technologies and mounting heights

The proposed lighting intent is to develop a cohesive lighting scheme which delivers a high level of functional lighting, safety and minimal light trespass/pollution.

Light 360 propose a more rational luminaire specification to utilise the following characteristics :

- Single luminaire manufacturer to maintain light consistency throughout the development.
- Use LED / energy efficient lamp technology.
- Focused lighting to specific task and area lighting zones.
- 3000K colour temperature.
- Colour Rendering Index (CRI) 85+.
- Astronomical Time clock to reduce unnecessary lamp burning and energy consumption.

4.0 - Lighting Strategy

Logicor Park Reading - Development Lighting Strategy

4.1 Lighting Strategy - Zoning Brightness Requirements & Lighting Hierarchy



Proposed extension site plan - indicating different lighting zones and access routes.

Lighting Key:

-  **A** - Proposed Blocks A, B & C Facades - We propose highlighting the Block Signage Loading Bay Numbers on the horizontally laid profiled cladding using surface mounted downward at 8m high wall grazer with shielded light source using a 4000K with 90+ CRI LED technology.
-  **B** - Car Parking - We propose a target of 10-15 Lux 0.40 uniformity to be achieved for safety and way finding. 6m wall mounted luminaires & column mounted twin and single head flood lights with street optics, cut-off louvres to avoid spill light. 3000K with 85+CRI LED technology.
-  **C** - Loading Bays - We propose a target of 150 Lux 0.40 uniformity to be achieved for safety and security. Wall mounted luminaires fixed to the building facade at 6m height using bi-symmetrical flood optic, with anti-glare shielding to avoid spill light & visual discomfort. 3000K with 85+CRI LED technology.
-  **D** - Pedestrian Circulation - We propose a target of 5-10 Lux 0.25 uniformity to be achieved for safety and way finding. 6m wall mounted luminaires using elliptical beam optic, with cut-off louvres to avoid spill light. 3000K with 85+CRI LED technology.
-  **E** - Security Barriers - We propose a target of 15-20 Lux 0.25 uniformity to be achieved for safety and way finding. 6m column mounted luminaires using symmetrical flood optic, with cut-off louvres to avoid spill light. 3000K with 85+CRI LED technology.
-  **F** - Holy Brook - Minimal light spill <1lux.
-  **G** - Adjacent Residential Zone - Minimal light spill <1lux
-  **H** - Adjacent Public Highway A33 - Minimal light spill <1lux
-  **I** - Bicycle Stands - We propose a target of 5-10 Lux 0.25 uniformity to be achieved for safety and way finding. 6m Wall mounted luminaires fixed to the building facade at 6m height using bi-symmetrical flood optic, with anti-glare shielding to avoid spill light & visual discomfort. 3000K with 85+CRI LED technology.

Entrances & Exits Routes

-  **1** - Loading Bay Entrances - We propose a target of 100 Lux 0.40 uniformity to be achieved for safety and security from the internal lighting by others
-  **2** - Office Entrances & Exits - We propose a target of 50 Lux 0.40 uniformity to be achieved for safety and security. Wall mounted luminaires fixed to the building facade at 2m height using downward symmetrical optic, with anti-glare shielding to avoid spill light & visual discomfort. 3000K with 85+CRI LED technology. Must be emergency provisions with 3hr inverter pack for egress & anti panic lighting.

4.2 Lighting Strategy - Overall Lighting Plan - Car Parking & Circulation



L360 proposed lighting plan for coordination with MEP consultant.

Proposed Car Parking & Circulation Lighting Elements

Opposite are Photoshop lighting views of the proposed installation with supporting reference images for various lighting elements for the car parking & circulation.



4.3 Lighting Strategy - Overall Lighting Plan - Loading Bays & Entrances



L360 proposed lighting plan for coordination with MEP consultant.

Proposed Loading Bays & Entrances Lighting Elements

Opposite are Photoshop lighting views of the proposed installation with supporting reference images for various lighting elements for the loading bays & entrances.



4.4 - Lighting Strategy - Obtrusive Light & Spill Lighting

The invention of artificial light and its application in the external environment has done much to safeguard and enhance our night-time environment but, if not properly controlled, obtrusive light can present serious physiological and ecological problems. The ILP have established Environmental Zones for exterior lighting based on the existing external ambient lighting levels in the area (see table below). The Application site and its surroundings have been identified as an Rural setting; it has therefore been categorised as ILP Environmental Zone E2 as set out in ILP Guidance Notes for the Reduction of Obtrusive Light GN01.

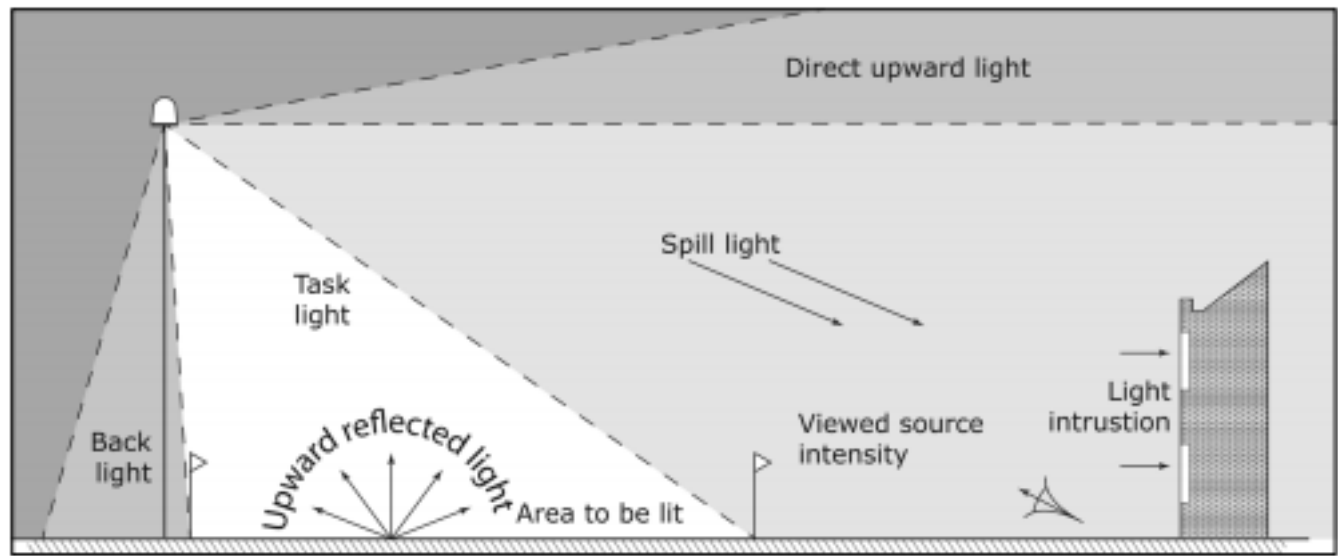
Environmental Zone	Surrounding	Environment	Example
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc..
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Med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

Where reasonably practicable, lighting shall be directed away and/or controlled from all of the sensitive receptors so as to minimise/prevent obtrusive light, glare or intrusion. Any vertical illuminance on the façades should achieve no more that 5 lux (pre curfew) and 1 lux post curfew.

Light Technical Parameter	Application Conditions	Environmental Zone				
		E0	E1	E2	E3	E4
Illuminance in the Vertical Plane	Pre-curfew	N/A	2 Lux	5 Lux	10 Lux	25 Lux
	Post Curfew	N/A	< 0.1 Lux	1 Lux	2 Lux	5 Lux

Consideration of the potential adverse effects of the following three components of obtrusive light will be included during the lighting design:

- **Sky glow**, the brightening of the night sky above areas with large amounts of artificial light which may be reflected from illuminated surfaces or come from direct upward lighting installations.
- **Glare**, the brightness of a light source which is uncomfortable when viewed against a dark background. This is mostly experienced when light sources are not covered by a shield or a suitable lens/reflector.
- **Light intrusion**, when light affects areas beyond the boundary of the area which is to be lit. This is also known as ‘spill’ or ‘trespass’ and may cause nuisance or disturbance to sensitive receptors.



How to reduce obtrusive lighting:

- Use a prismatic diffuser to control the light transmitted, giving more control to the fixture and less glare light.
- Keep glare and light spill at a minimum by considering mounting heights and beam angles. E.g. a narrower beam angle allows for a higher mounting height (as shown in figure 2a).
- Minimise upward facing light fixtures e.g. uplights, ground markers.
- Avoid over lighting a space, only light as you need.
- Light intrusion into neighbouring areas of the site will be limited using luminaires with good optics providing sharp cut-off angles.
- The external façade feature lighting shall be carefully specified to reduce unwanted upward light spillage.

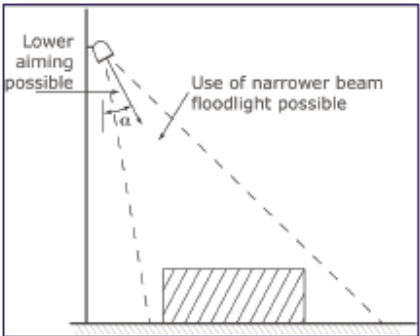


Figure 2a: Higher mounting height – less spill light and glare

5.0- Technical Statement

Technical Statement For Logicor Park Development

5.1 - Technical Statement - Preliminary External Lighting Layout





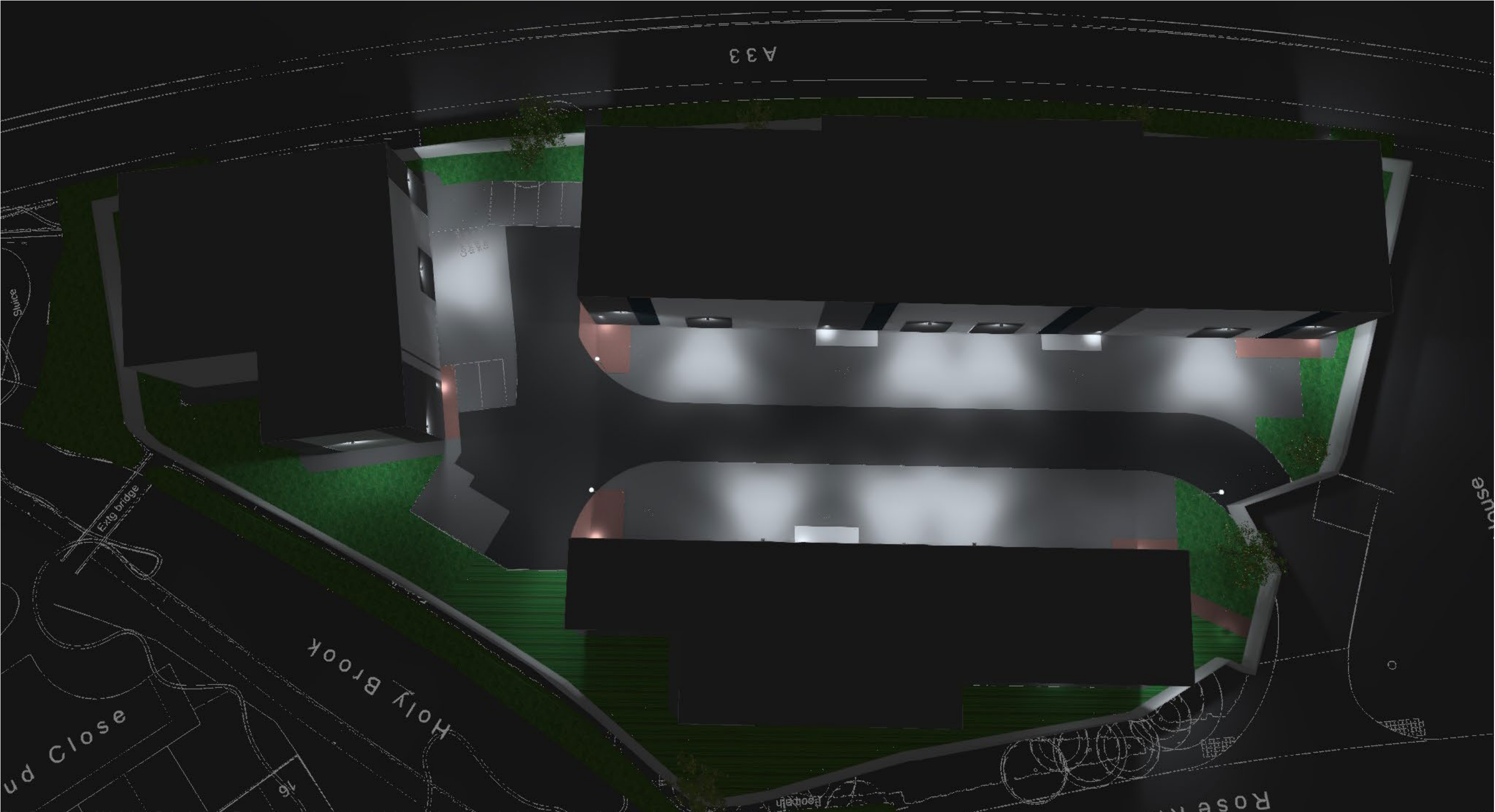
- Drawing Key:**
-  - Recessed Downlight
 -  - Surface Mounted Spot Light
 -  - Single Gimbal Adjustable Downlight
 -  - Pendant Light
 -  - Floor/ Table Lamp
 -  - Surface Mounted Wall Light
 -  - Recessed Wall Light
 -  - Floor Uplight
 -  - Power Provision
 -  - Linear LED
 -  - Wall Socket (5 Amp)
 -  - Floor Socket (5 Amp)
 -  - Master Control Panel

- Draft Key:**
- | | |
|---|-----------------------|
|  | - Luminaire Reference |
|  | - Control Tag |
|  | - Revision Delta |
|  | - Section Tag |
|  | - Elevation Tag |
|  | - Center Line |
|  | - Detail window |



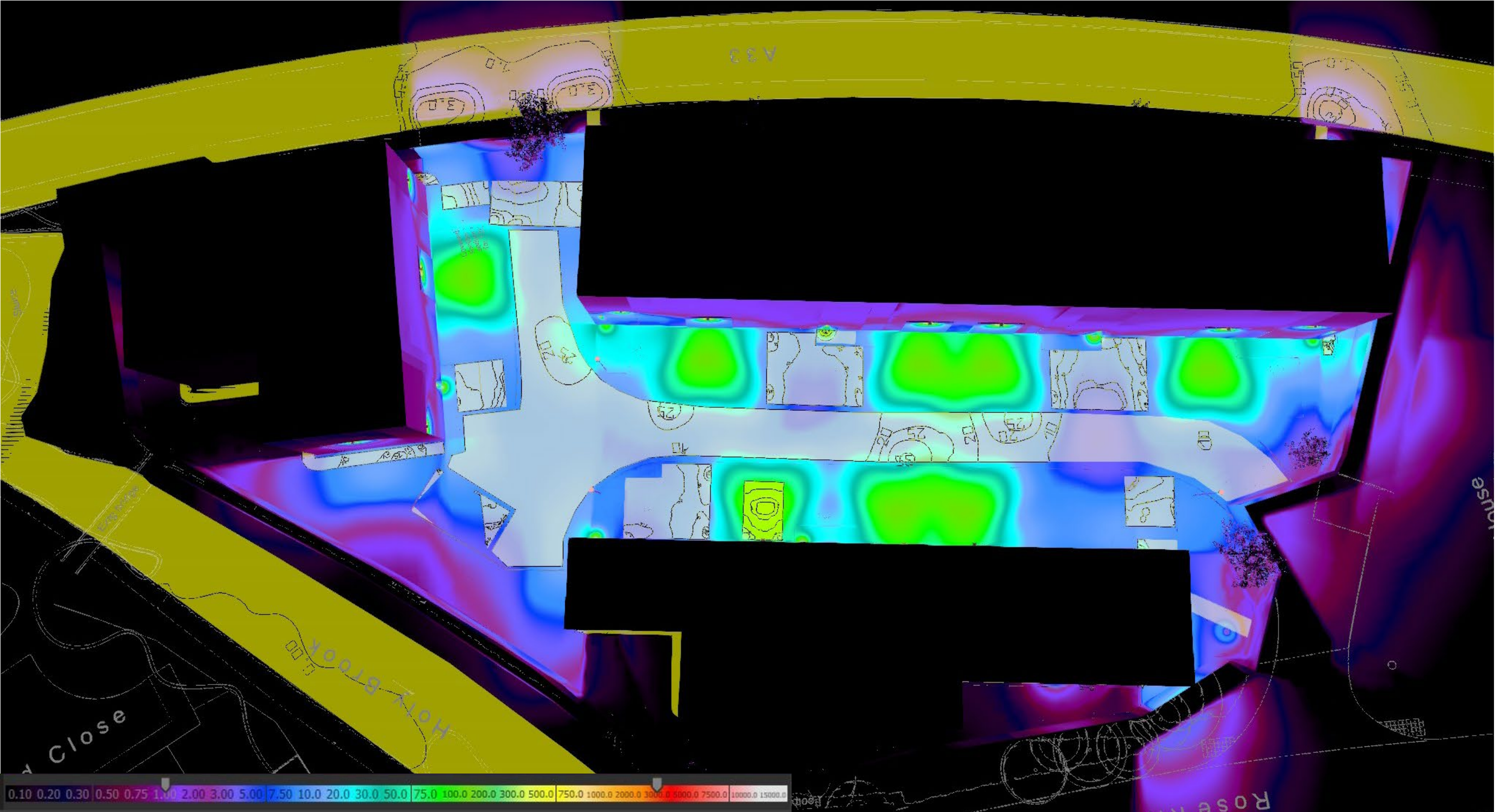
PROJECT NAME LOGGON PARK, READING			
CLIENT: SAVILLS ENGINEERING AND DESIGN CONSULTANCY			
ARCHITECT / DESIGNER: HEBB GRAY			
DRAWING TITLE STAGE 1: PLANNING APPLICATION			
FRONT ELEVATIONS			
LIGHTING PLAN			
DRAWING No DWG-1360-EXT-001			REVISION A
SCALE: PRINTED AT 1:100	DATE 18/03/2013	DRAWN BY: AK	CHECK BY: DM
Unit 6, FORESTGROVE BUSINESS PARK NEWTONHEATH, BELFASH, BT9 6JW		TEL: 08006699120 FAX: 08006691180 E-MAIL: info@savillsengineering.co.uk	

5.2 - Technical Statement - Preliminary External Lighting Calculation



Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.2 - Technical Statement - Preliminary External Lighting Calculation



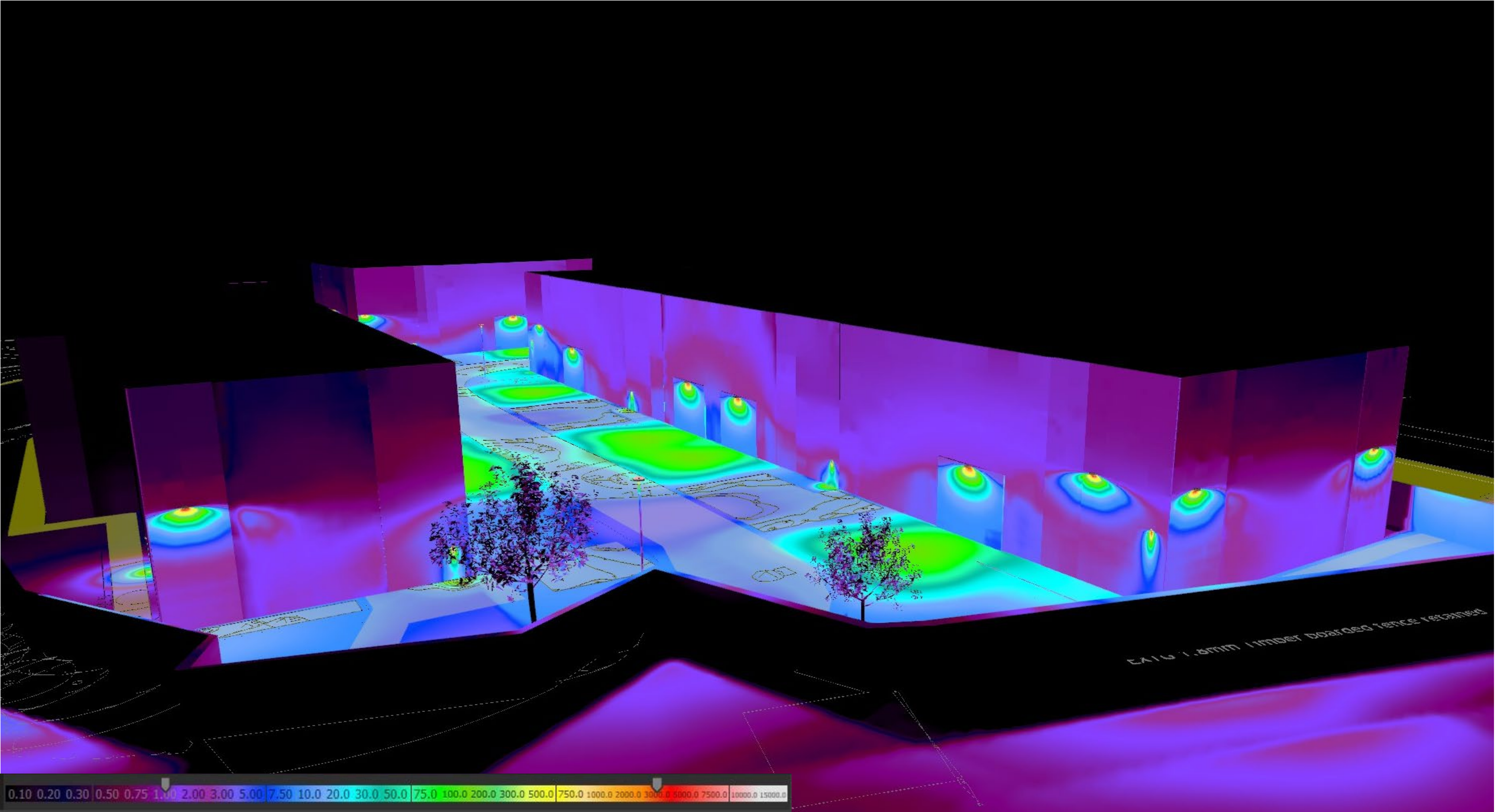
Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.2 - Technical Statement - Preliminary External Lighting Calculation



Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.2 - Technical Statement - Preliminary External Lighting Calculation



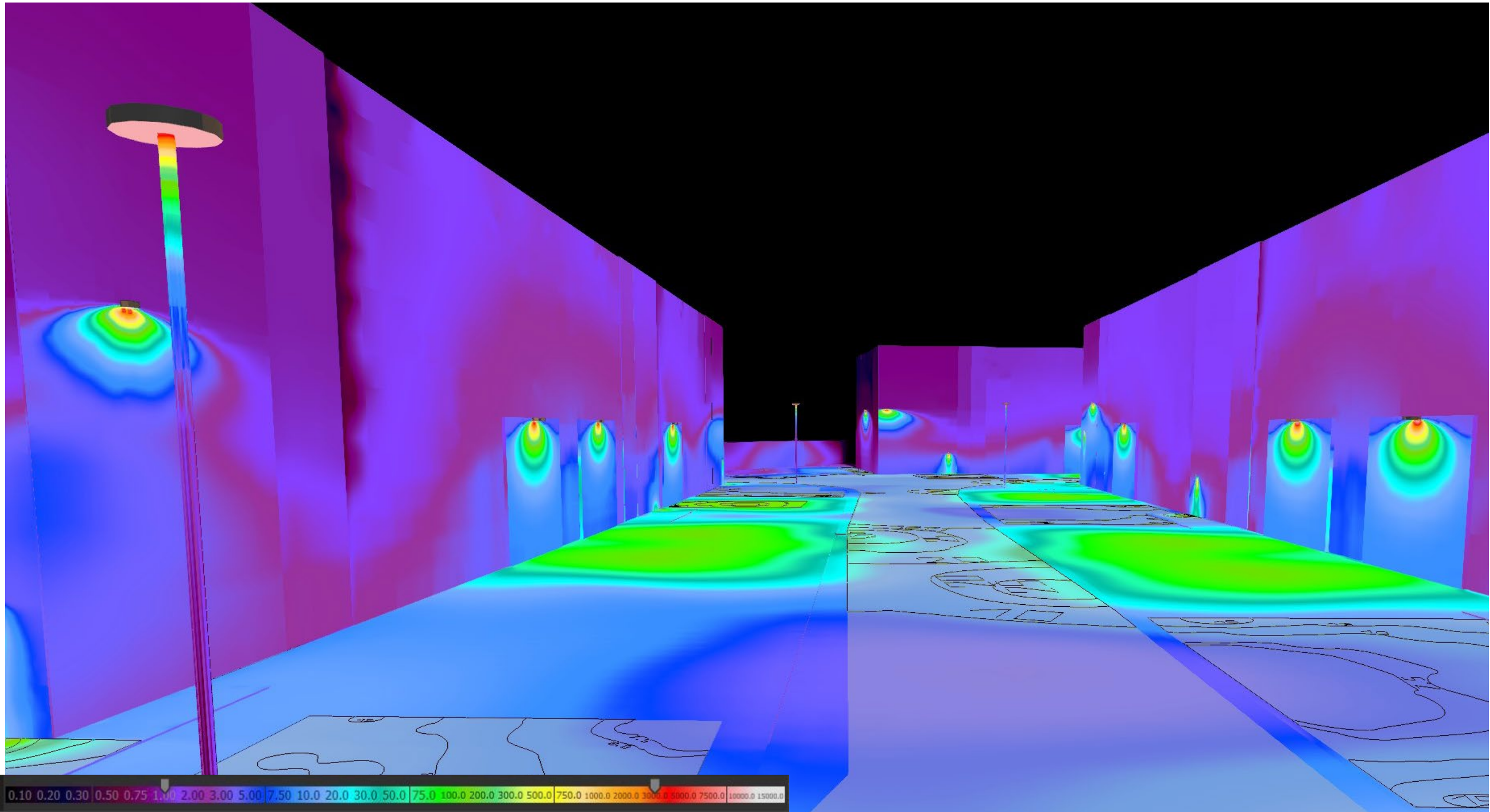
Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.2 - Technical Statement - Preliminary External Lighting Calculation



Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.2 - Technical Statement - Preliminary External Lighting Calculation



Site Overview of Lighting Calculation - Below graph indicates brightness levels as depicted on the diagram above.

5.3 - Technical Statement - Preliminary Luminaire Typology

REF. XB1



BOLLARD LUMINAIRES FOR PATHWAY
3000K, 800mm HEIGHT

REF. XC1



SINGLE COLUMN MOUNTED LUMINAIRES FOR CAR PARKING
3000K, SYMMETRIC STREET OPTIC

REF. XW2



WALL MOUNTED FLOODLIGHT FOR LOADING BAYS
HIGH OUTPUT, 3000K, FORWARD THROW OPTIC

REF. XW3



BOLLARD LUMINAIRES FOR ENTRANCES & EXITS
3000K, NARROW DIRECT BEAM

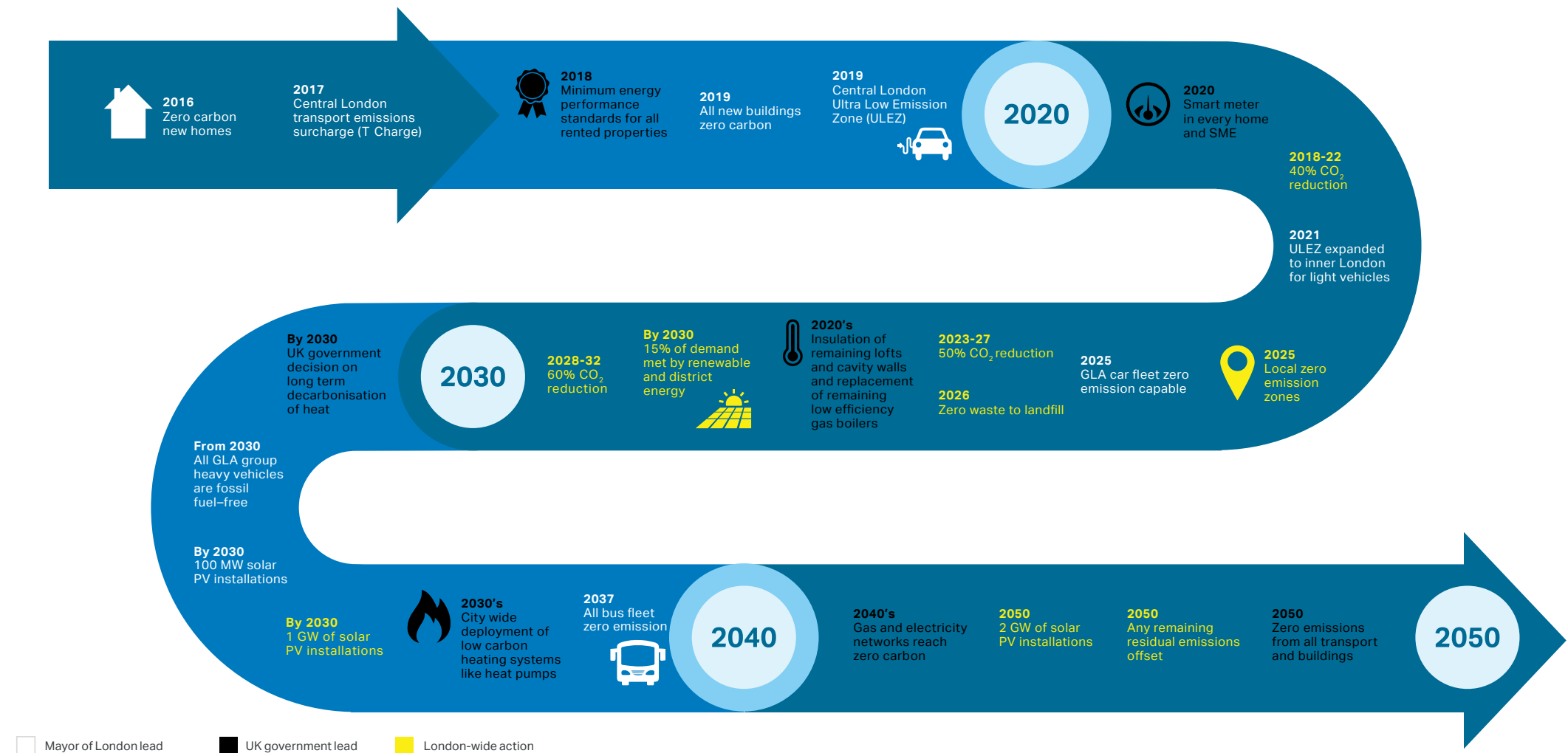
REF. XW4



WALL MOUNTED FLOODLIGHT FOR CIRCULATION
LOW OUTPUT, 3000K, STREET OPTIC

5.4 - Technical Statement - Commitments to Cutting Carbon

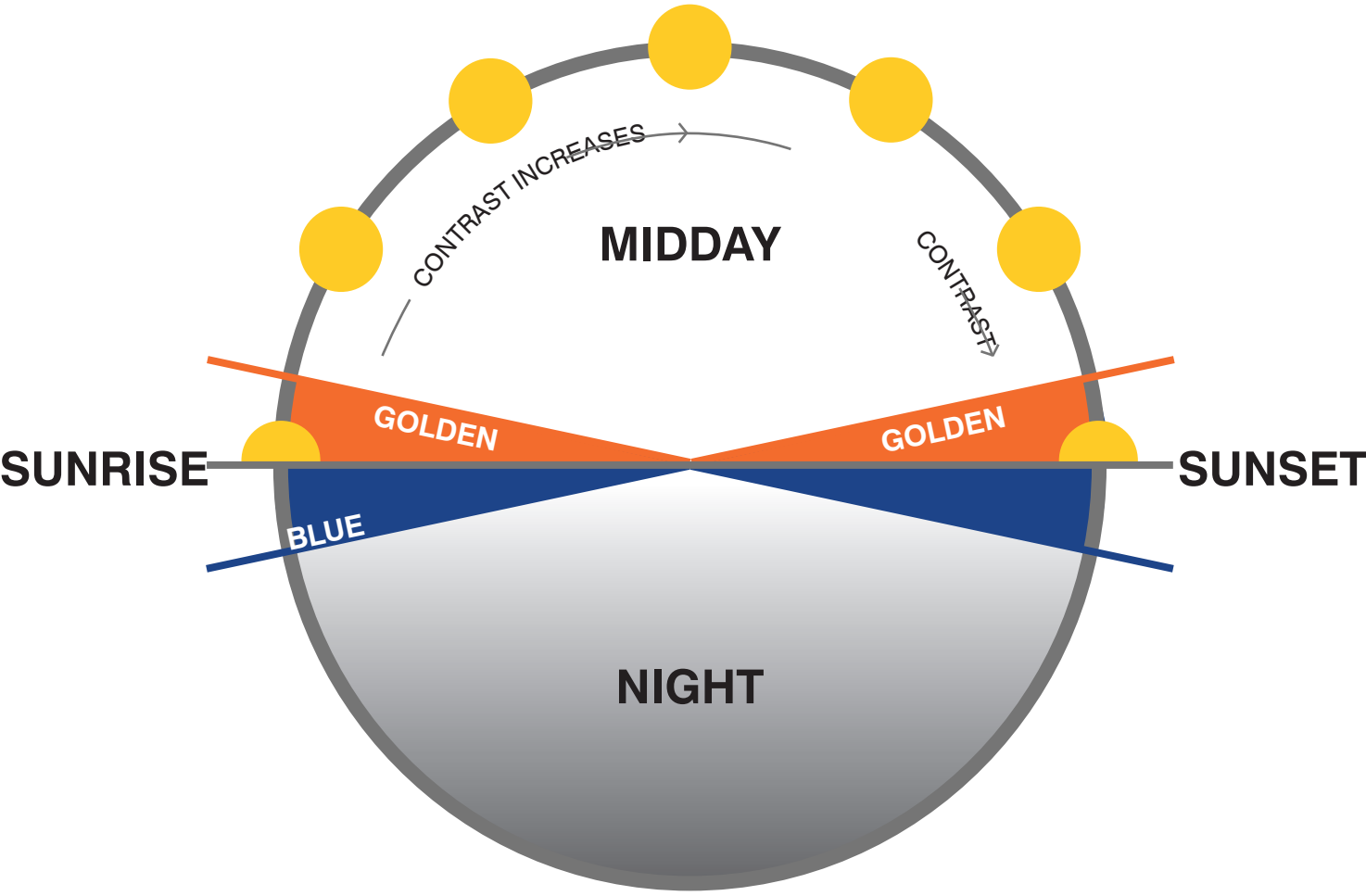
In 2015, the UK signed up to the Paris Agreement along with 178 other countries with an aim to limit the global average temperature rise to 1.5C above pre-industrial levels. This has then led to the UK government turning this ambitious climate change target into law to reduce emissions by 78% by 2035 (compared to 1990 levels). The below timetables sets out the governments plan of becoming carbon neutral by 2050.



While lighting is a small aspect when looking at the overall build, it still accounts for approx **17% of energy use in Commercial Buildings**. In order to reduce the energy consumption of lighting, L360 advise that the below points are take on board and considered from an early design point:

- During the design phase, L360 will not over design the lighting needed for the façades and external areas. Use only the amount of light needed.
- Monitor and assess the electrical usage and identify areas that can possible be dimmed, not utilised by members of the public/residents efficient.
- Introduce smart meters so that building management can access
- Building Management to set reduction targets once the site is occupied and the use of the space is better understood.
- Use LED Lighting with a at least 60 lumen's per watt (aim for higher where possible)
- Use PIR's and time-clocks so that lighting is only on when required.
- Ensure that you regularly clean any lamp shades or fittings to increase the impact of the light

5.5 - Technical Statement - Lighting Control Strategy



The Lighting Control System is an important element for any large scale industrial development, and should be:

- Automatic & set as per the clients requirements.
- In line with the developments overall operational usage and hours of business.
- Provide secure and safe lighting for all areas.
- Flexible and integrated within other control systems (security cameras,etc).
- Controlled automatically according to the time of day via an astronomical time clock. Or via push button located in central secure zone.
- Remote access and support of the lighting control system 365 days of the year.

The Lighting Control System will enable the selection of pre-programmed site lighting scenes to provide differing light levels depending on the hours of operation for the entire site.

It should be considered the varying seasonal change in daylight hours for a northern European country such as there UK therefore a quarterly review of the lighting scenes/levels should take place in the 1st year of operation.

Light360 propose the lighting control manufacturer should provide on-site and remote assistance when and if necessary for the 1st 3 years of operation.

The on-site maintenance team should be sufficiently trained and familiar with the use of the Lighting Control System & provided with remote or on-site assistance for a determined period post hand over.

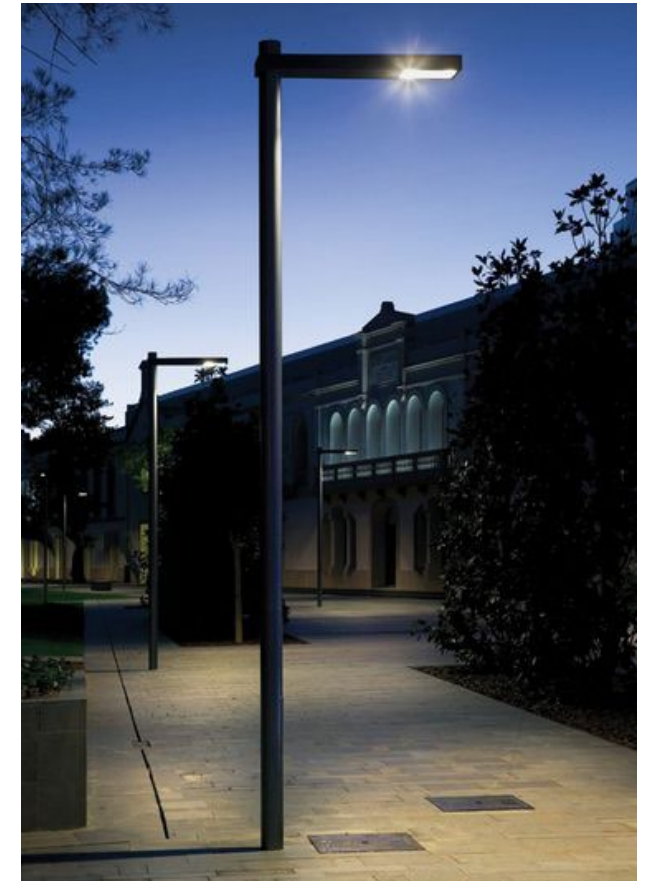
5.6 - Technical Statement - Access & Maintenance

It is important that a regular maintenance service is provided for the lighting equipment of, especially as the development is in continual use 24 hours a day 365 days a year.

Poorly maintained lighting equipment could be detrimental to the overall functionality of such a large scale industrial site located within a rural area. Whilst we would advocate the use of the latest LED lamp technologies, which are superior in energy efficiency and life expectancy of more traditional light sources, it is also important to remember that they will require an annual maintenance programme.

With good maintenance, the lighting installation should be trouble free for many years. A simple programme and basic training of staff will give the basis for a good maintenance service:

- Use of the testing facility of the automated lighting control system to identify failures.
- Individual luminaire / driver replacement of any failures.
- Regular visual checks of installed equipment at night time.
- Spare luminaires, control gear and fixing accessories to be held on site as attic stock
- Scheduled maintenance of the lighting control system.
- Risk assessments and hazard identification, through both installation and maintenance.



6.0 - Summary

We believe that the lighting proposals shown within this document can be developed into an installation that fulfils the design objectives set out at the beginning of this document:

1. Raising the external environment light quality, reflecting clients aspirations to ensure safety, security, functionality & energy efficient lighting.
2. Rationalise fixture types, lighting elements and minimise the visual impact upon the surrounding residential areas & wild life.
3. Use energy efficient lamps / fixtures with long lamp life and stability to minimise energy consumption and maintenance.
4. Implement a basic lighting control system to maximise luminaire longevity and enable the lighting to respond to seasonal diurnal change.
5. Consider cabling and wiring routes, reducing their visual impact upon the overall development.
6. Consider the wider lighting impact, i.e. being sympathetic to the neighbouring residential developments, local wildlife & adjacent A33 road traffic safety.
7. Harmonise the overall illuminated effect of the external communal areas considering; lighting levels (illuminance), surface brightness's (luminance), light distribution and control of glare.
8. Regularise the light colour temperature and colour rendition of finish materials.
9. Although emergency lighting would form not part of the Light360 scope of services, we would collaborate with Savills (appointed MEP consultants) to integrate as much of the emergency lighting within luminaires, which have been proposed and located by Light360 to reduce unnecessary visual clutter.

Our aim is to work closely with the client, the architects and technical team to deliver a high end, affordable, functional lighting scheme for the proposed extension to the existing Factory site.



7.0 - Contact

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