

Atlantic House (for Thames Valley Police)

Lighting Design Strategy Report for Planning

Atlantic House

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Job No: P2007586
Doc No: TVP-BDP-XX-XX-RP-Y-630001
Rev: P0
Date: 29/11/2019

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Document Control

Revision	Description	Issued by	Date	Reviewed
P0	Draft for Planning	GK	29/11/2019	CL

Author

Giorgos Kourtelis
Senior Lighting Designer

Signature

Date 29/11/2019

Approved

Chris Lowe
Lighting Associate

Signature

Date 29/11/2019

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Executive Summary

This document has been prepared to outline the external lighting strategy proposed for the additional deck added to the existing multi-storey car park and the main elevation / entrance to Atlantic House.

An appropriate lighting scheme for the site has been assessed in order to establish its effects on the surrounding environment and neighbouring properties.

The lighting scheme in this report is to be viewed as a lighting design strategy rather than a detailed design solution.

The proposed lighting scheme will comply with all relevant British Standards, the Institute of Lighting Professionals and guidance provided by the Society of Light and Lighting. These documents and other relevant standards are scheduled and summarised within the report.

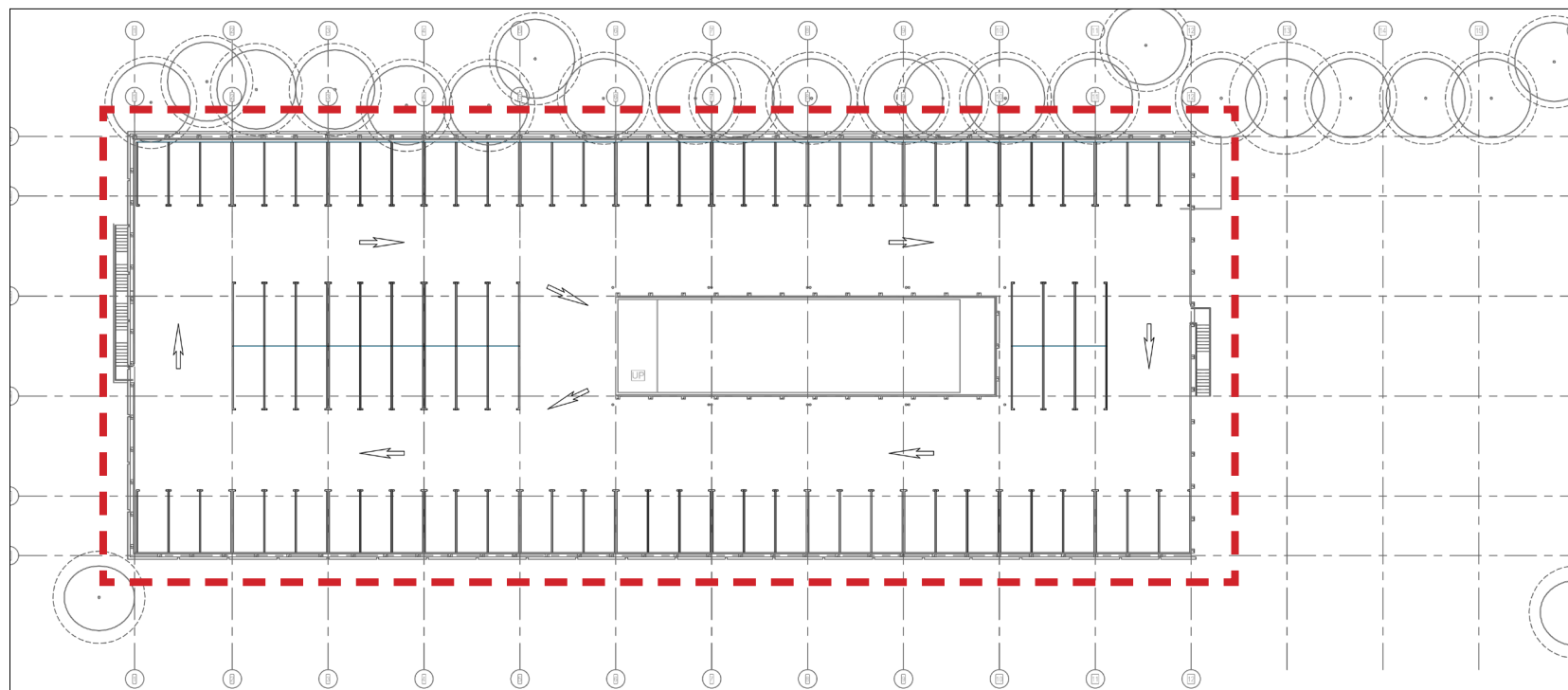
This lighting scheme ensures lighting levels at the site boundary will not exceed 10 Lux as described in the Illuminance Criteria section of this report. Lighting as proposed will not cause excessive glare to neighbouring properties from this site. An adequate and safe level of lighting will be provided for site tasks, amenity and security.

External lighting illumination levels will be based on CIBSE and CIE guidance to maximise safety for both visitors and residents on the site, whilst maintaining a minimal impact on the site surroundings, environment and neighbouring properties. The illumination levels for various areas are detailed later in this report.

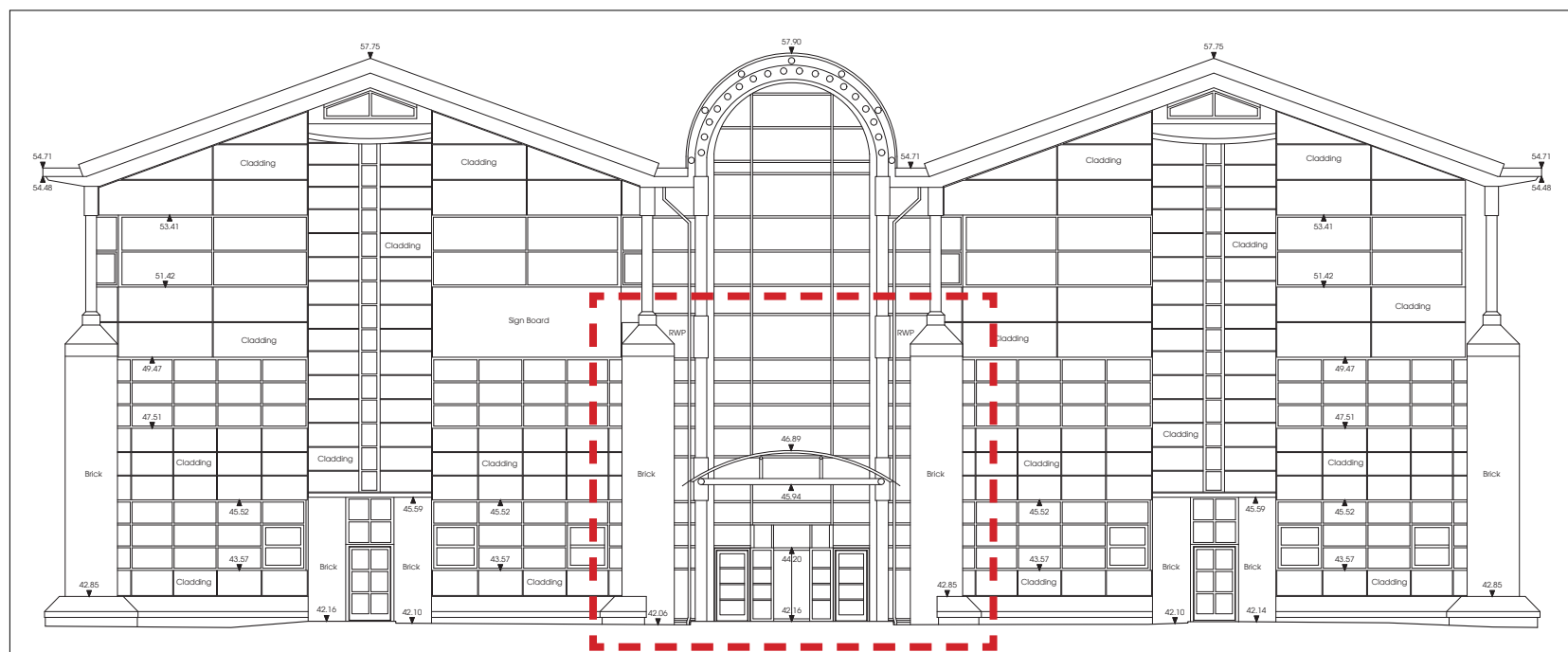
This scheme also takes into consideration the need to reduce energy consumption, whilst maintaining a high quality of illumination for the site. This is achieved by using low energy luminaires, the minimum number of lighting columns/points and energy efficient controls.

Introduction & Scope

The site is located off Imperial Way in Reading, RG2 0TD. The existing multi-storey car park is associated with the Atlantic House office building. Atlantic House is set within the Worton Grange Industrial Estate on the outskirts of Reading close to J11 of the M4 motorway.



Plan - BDP Lighting scope of works and proposed MSCP top deck plan



Elevation - Location of potential facade lighting highlighted in red

Multi-storey Car Park

The car park requires specific levels of illumination in order to ensure users feel safe and ensure good driving conditions. It requires lighting from multiple locations to avoid harsh shadowing and enhances facial recognition.

The lighting scheme on the top deck of the multi-storey car park should be carefully designed to have minimal impact on the surrounding environment. Lighting shall be designed in order to avoid any upward light spill and minimise glare.

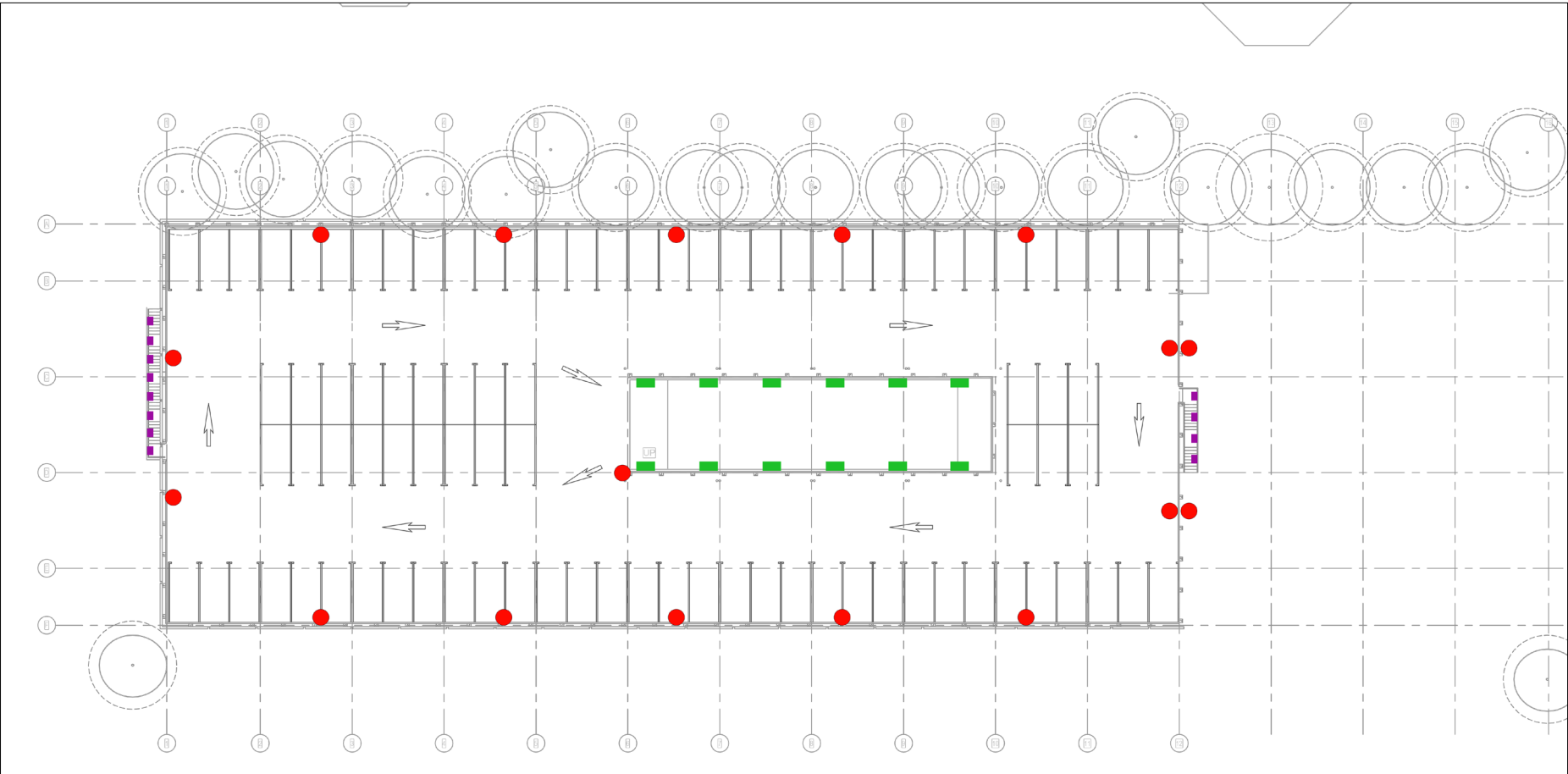
The top deck lighting will consist of 6m lighting columns with LED luminaires with street light optics.

The in/out ramp will be illuminated by wall mounted linear LED luminaires mounted at the barriers either side of the ramp.

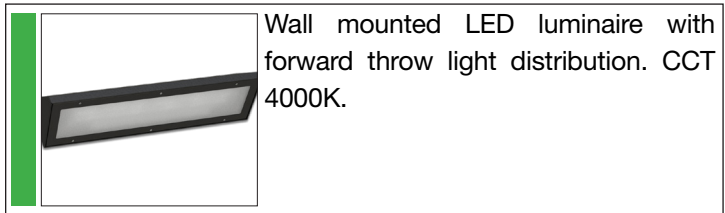
Lighting to the access staircases to the top deck will be illuminated by wall mounted luminaires with controlled light distribution.

- Lighting controls:
- Photocell and time-clock

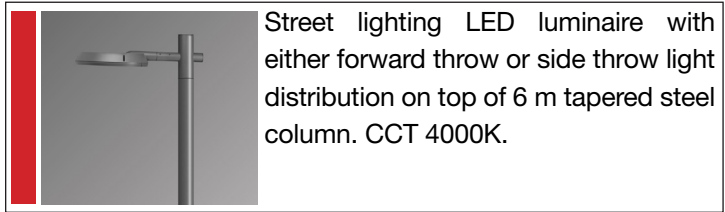
Assumption:
Colour temperature preference to be agreed with the client. Current design assumes 4000K for all lighting equipment.



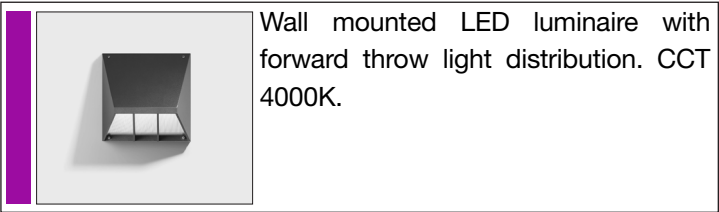
Plan - Lighting masterplan



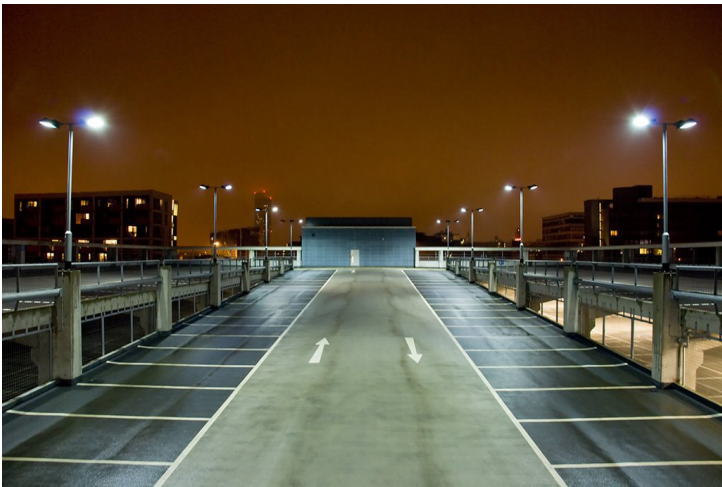
Wall mounted LED luminaire with forward throw light distribution. CCT 4000K.



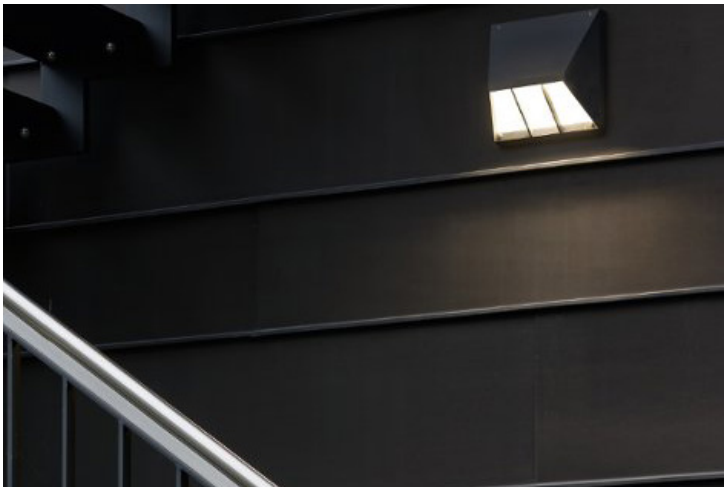
Street lighting LED luminaire with either forward throw or side throw light distribution on top of 6 m tapered steel column. CCT 4000K.



Wall mounted LED luminaire with forward throw light distribution. CCT 4000K.



Precedent image of car park lighting



Precedent image of exterior staircase lighting

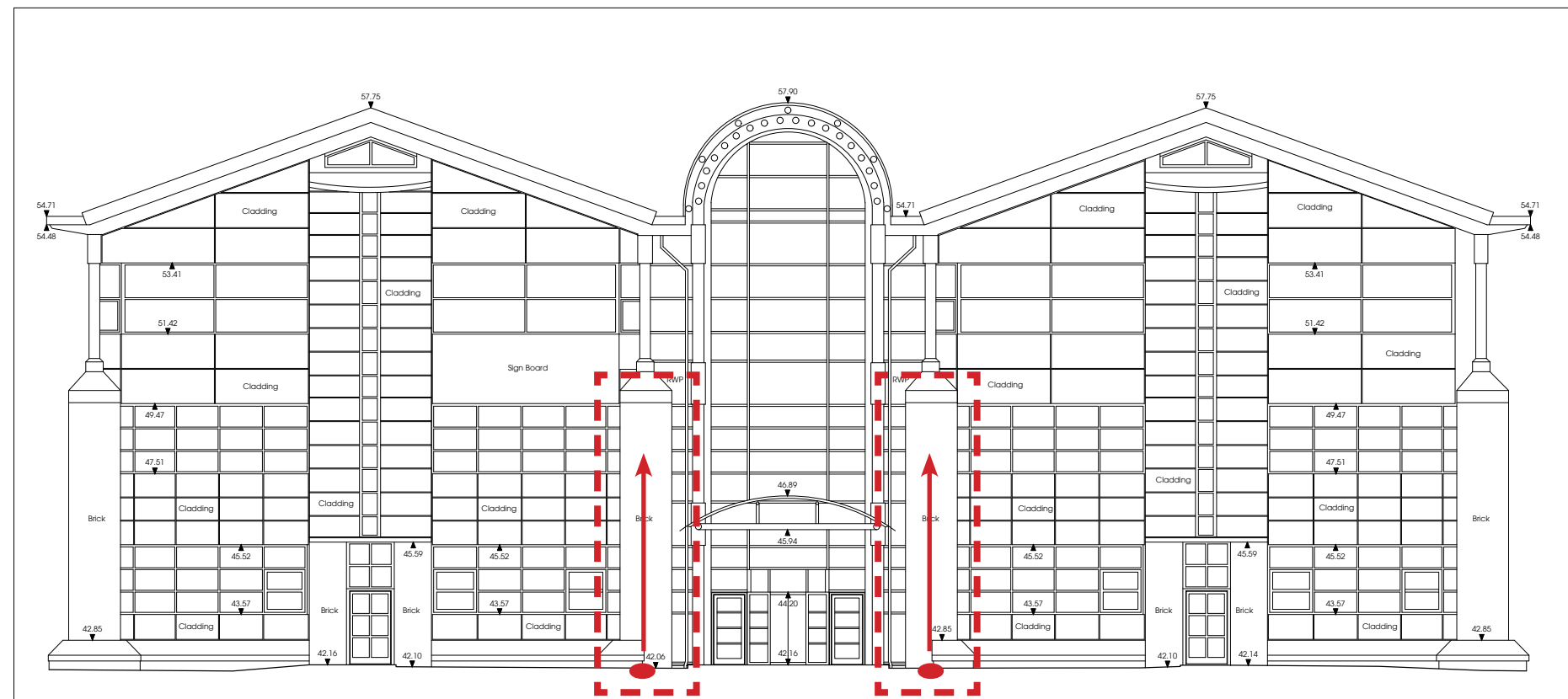
Elevations

The front entrance elevation may be highlighted to enhance the architectural value and attractiveness of the building. Illuminating the vertical surfaces is important as it enhances the perception of brightness and increases the feeling of safety within the entrance and lobby.

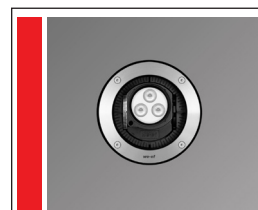
The lighting proposal consists of replacing the existing in-ground uplight luminaires with adjustable LED luminaires to graze up the brick columns either side of the entrance.

Lighting controls:

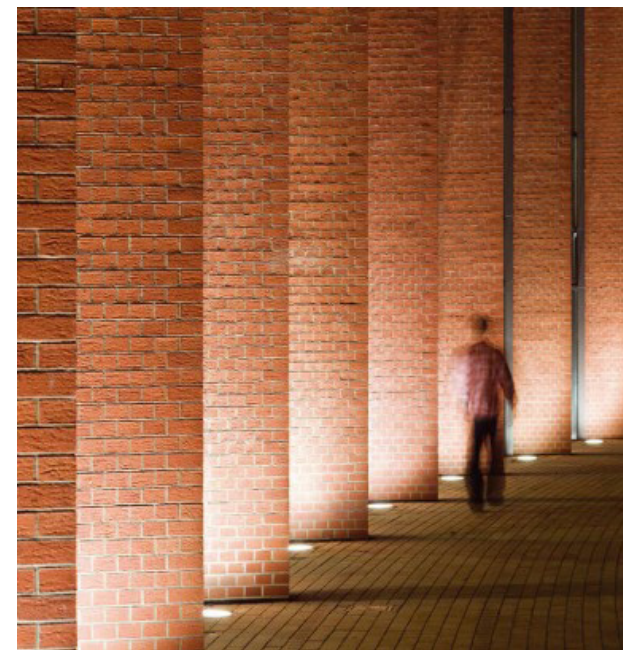
- Photocell and time-clock



Elevation - Location of potential facade lighting highlighted in red



Adjustable in-ground uplight LED luminaire with narrow to medium light distribution. CCT 2700K.



Precedent image of column uplighting



Existing view of Atlantic House entrance

Performance Objectives & Design Parameters

The design objectives of the lighting scheme may be summarised as:

- Provide general exterior lighting to the areas defined within the area of scope agreed with the client.
- Identify and illuminate pedestrian and vehicular routes within the site, to secure the health and safety of both its users and visitors throughout the hours of darkness. Sufficient lighting will be provided for a safe environment whilst limiting light pollution and ingress to neighbors to a minimum.
- Provide effective lighting control to ensure illuminance levels are suitable for the activities taking place while also maximising light source life, and minimising energy consumption and maintenance.
- Provide a cost effective, sustainable and energy efficient system, in terms of initial capital costs and continuing operational use. Select light source types for their efficacy, colour rendition and longevity to provide an efficient lighting solution with a predictable maintenance regime.
- Utilise light source types appropriate for the character and function of each space while retaining a coherent, rationalised illumination system in terms of lit effect and equipment installed.

Design Parameters

The following mandatory, legislative and regulatory requirements, British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installation:

- BS EN 12464-1:2011 - Part 1 Lighting of work places, BSI 2011
- BS EN 12464-2:2014 - Part 2 Outdoor work places, BSI 2014
- Guidance Notes for the Reduction of Obtrusive Light GN01:2011, Institution of Lighting Professionals, 2011
- Guide to Limiting Obtrusive Light, SLL 2013
- Lighting Handbook, SLL 2018
- Code for Lighting, SLL 2012
- DDA BS 8300-1:2018 - Design of an accessible and inclusive built environment; Part 1: External environment - Code of practise, 2018
- DDA BS 8300-2:2018 - Design of an accessible and inclusive built environment; Part 2: Buildings - Code of practise, 2018

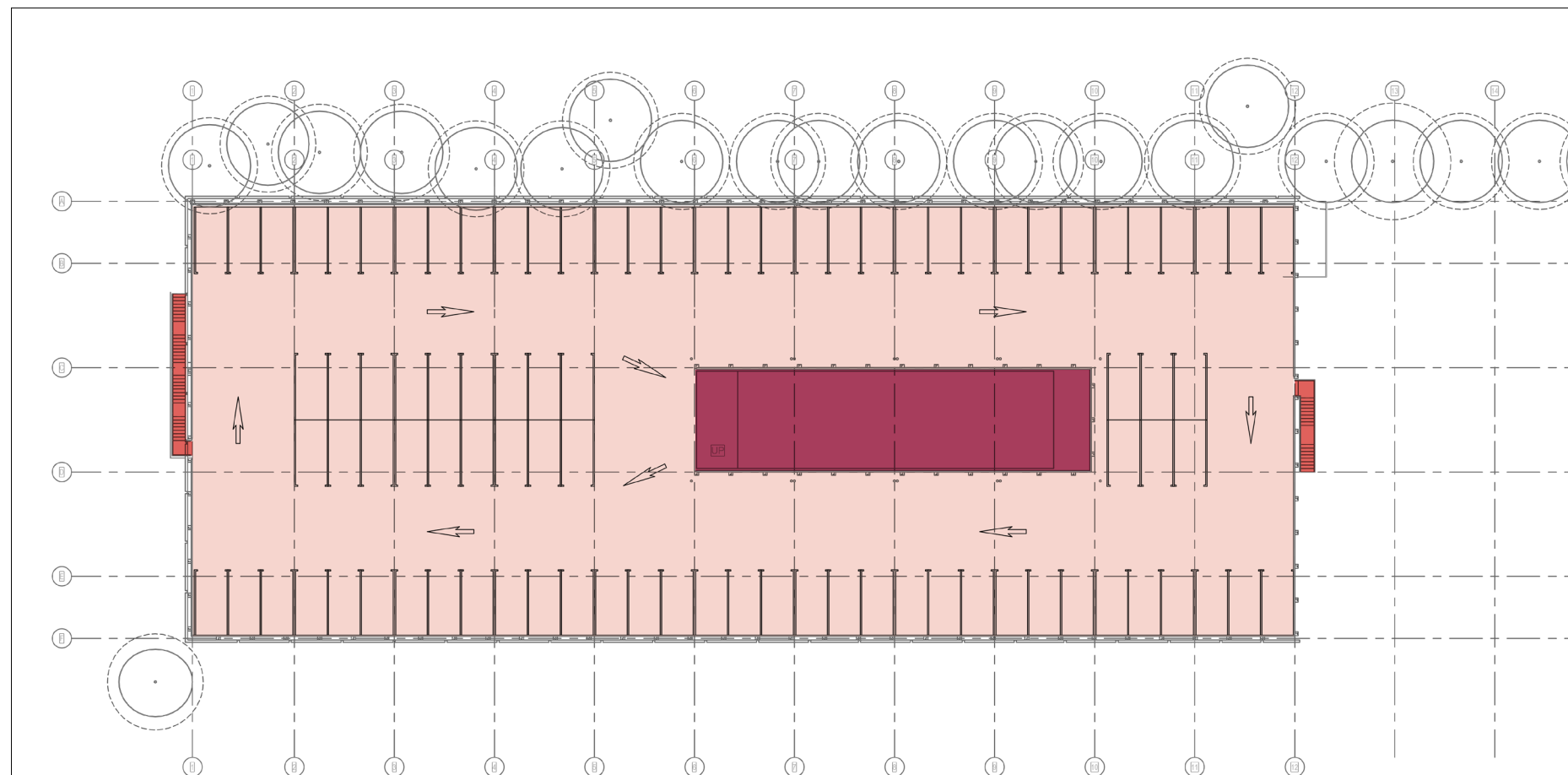
Illuminance Criteria (continued)

With reference to the design parameters and based upon previous practical experience, the lighting scheme will be designed to achieve the average maintained illuminance levels at finished floor level.

The following illustrative plan shows the illuminance zones across the site boundary for all different types of use.

- Ramp In/Out: 75lx average, 0.40 uniformity
BS EN 12464-1:2011, Table 5.34
- Stairs and steps: 30lx average, 15lx minimum
BS 8300-1:2018, Table 5
- Car park: 10lx average, 0.25 uniformity
BS EN 12464-2:2014, Table 5.9

Note: The existing car park decks are excluded from the scope of this report.



Plan - Illuminance Criteria

Light Pollution

Light pollution, or obtrusive light, can create serious physiological and ecological problems. It takes various forms:

Sky glow: the brightening of the night sky above our towns and cities.

Glare: the uncomfortable brightness of a light source in contrast to the background.

Light Trespass: the spilling of light beyond the boundary of the property on which the light source is located.

Light Ingress: the passage of light into buildings from an external source(s). Obtrusive light is a nuisance to both humans and wildlife; it is a waste of energy and contributes to greenhouse gas emissions. The problems of unnecessary, obtrusive light can and should be reduced or eliminated at the design stage.

During the design phase of a lighting installation, consideration of the following measures to reduce the occurrence of obtrusive light is taken.

Over-lighting. This is avoided by conducting thorough calculations and carefully selecting the most appropriate lighting equipment and lamp types. Lighting Control to ensure luminaires are only switched on when necessary, a lighting control performance specification is produced.

Luminaire Technology. When specifying luminaires, careful consideration is given to minimising upward light and the use of optical units with precise light intensity distribution: thus ensuring that spill and glare are minimised. The lighting scheme is designed to have minimal impact on the surrounding environment. Lighting is only installed where a visual task requires it for safety, comfort and wellbeing. Light levels are kept to the minimum levels needed to meet the requirements. Luminaires with a controlled light distribution will be specified in order to ensure that light falls only where it is required. A combination of lighting controls and

precise optics will help minimise any impact on the surrounding environment.

Luminaire positioning and direction except in specific locations, where it is desired that elements of the design are uplit for aesthetic reasons, all general lighting luminaires are positioned to avoid uplighting where possible. Where practical, directional luminaires are utilised to enable the precise projection of light. Proper commissioning will ensure directional luminaires perform as intended.

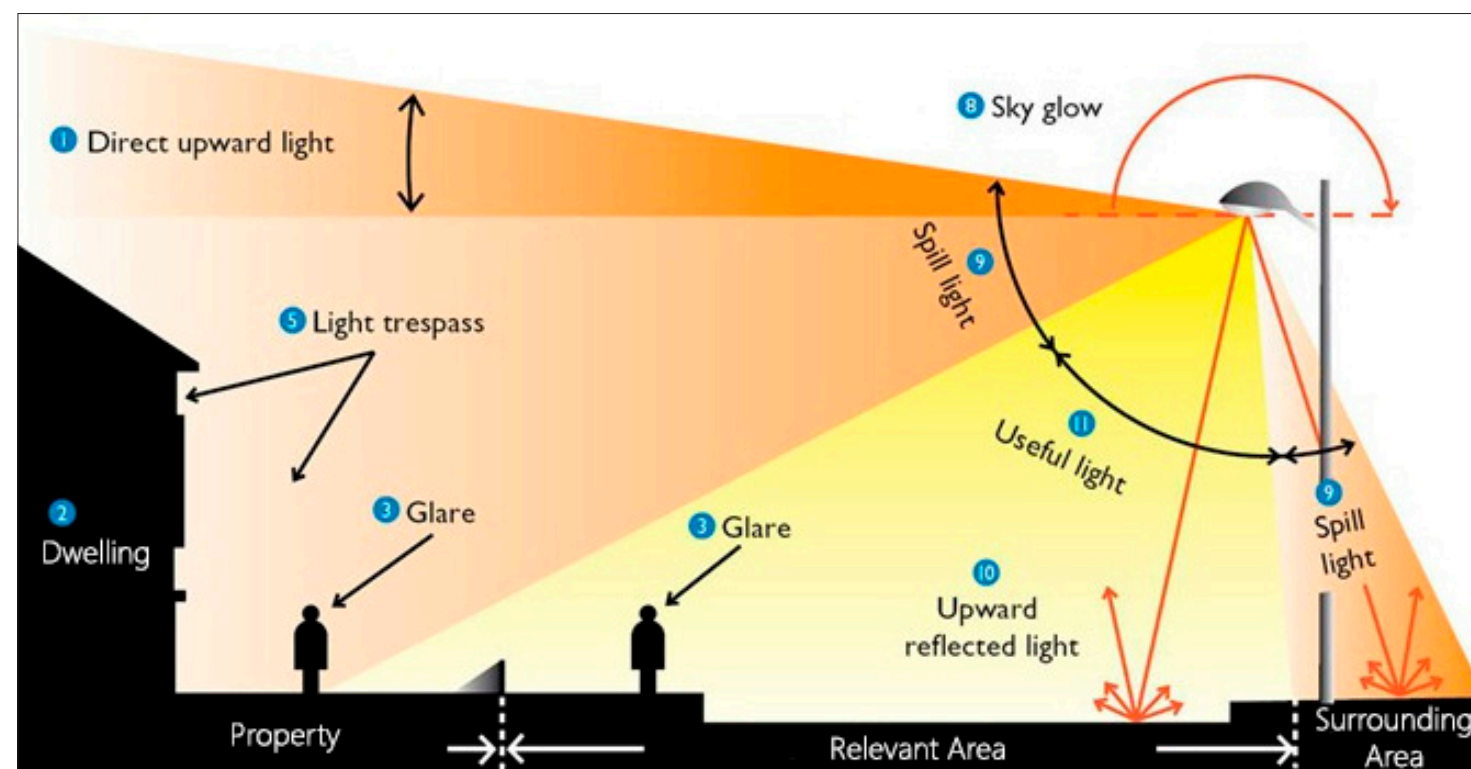


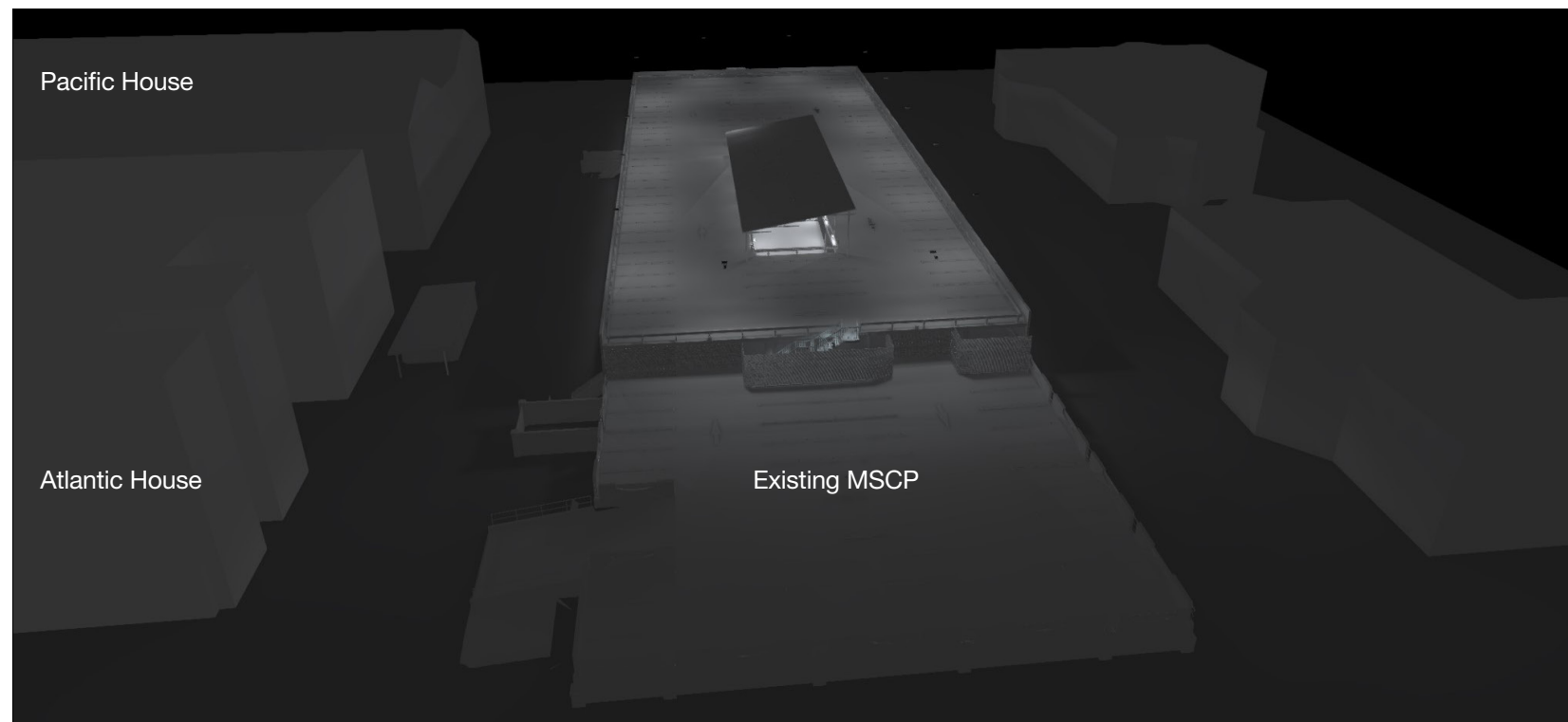
Diagram - Luminaire technology & positioning

Light Pollution (continued)

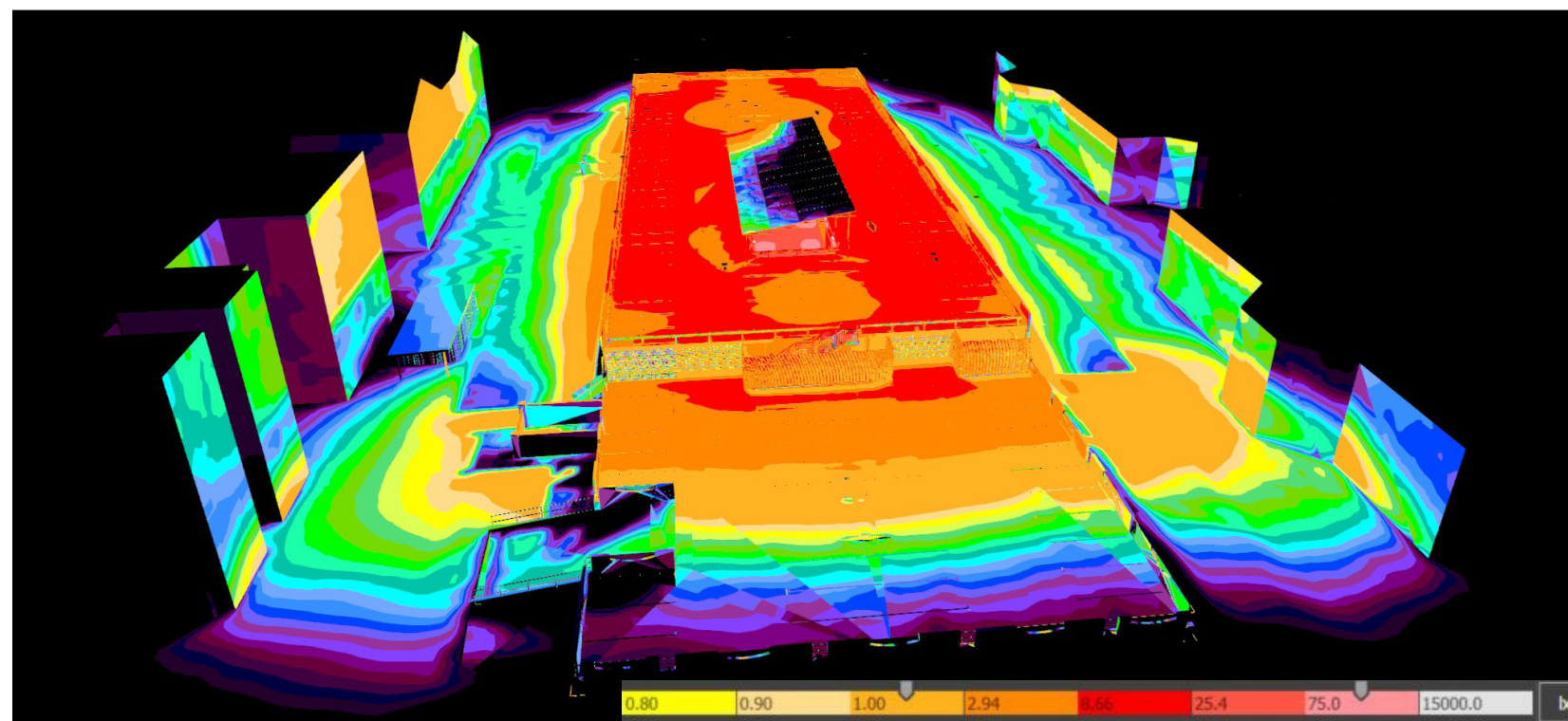
The lighting design strategy has been developed to minimise the impact to the existing neighbouring properties and will rely primarily on downward directed lighting, with a tightly controlled distribution to limit unwanted backwards spill and minimise light spill outside of the immediate site area.

Lighting is only installed where a visual task requires it for safety, comfort and visual aesthetics. Light levels are kept to the minimum needed to meet the requirements.

A combination of lighting controls (photocell and time-clock unit) and precise optics will help minimise any impact on the surrounding environment.



3D view - Sample calculation of MSCP top-deck



3D view - Sample calculation of MSCP top-deck showing spill light adjacent to site boundary

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For further information contact

Chris Lowe
Lighting Associate

BDP
11 Ducie Street, Piccadilly Basin
Manchester M1 2JB
United Kingdom

chris.lowe@bdp.com
www.bdp.com/lighting