The Civic Barnsley

Lighting Report for Planning

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INTRODUCTION

Scope and Overview

This document presents a concept lighting proposal for the facades at The Civic Barnsley.

The report details a lighting strategy which enhances the evening and night time appearance of the street, sensitively highlights the architecture whilst mitigating light spill.

Illumination of the built environment shapes the perception of night time experience during the hours of darkness. Quality architectural lighting enhances the cultural value and attractiveness of the surroundings and enhances the perception of brightness which increases the general feeling of safety.

Within this report, performance guidelines and limitations will be identified in accordance with relevant British Standards and best practice guidance documents.

The main drivers of the lighting design are:

- Aesthetic appeal. The design will meet the aesthetic aspirations of the client, celebrate the architecture, enhance the prestige of the building and increase their attractiveness and commercial value.
- Low light pollution. The facade lighting must not cause nuisance to neighbouring buildings. Spill light into the sky is to be minimised.
- Contextual sensitivity. The design should be sympathetic to the historic architecture. The placement of luminaires and associated wiring is to minimise impact to the building structure.
- Sustainability. The design will use the latest luminaire technology and controls to minimise energy use and create an easily maintainable installation

Quality of Light

White light shall be specified. Colour temperatures shall be within the warm white range (2700K - 3000K) and shall be selected according to the materials lit.

Luminaire selection

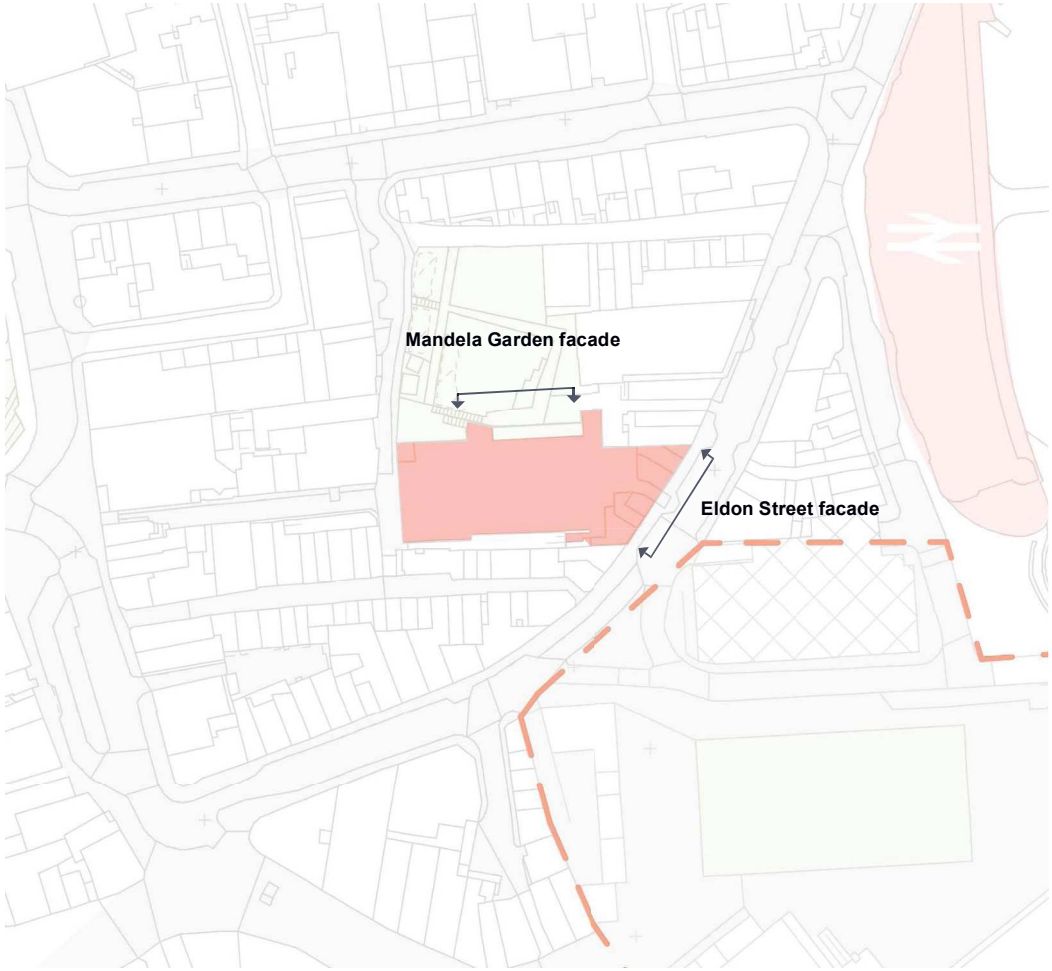
The size of lighting equipment shall be minimised where possible. Where luminaires are not concealed from view they shall be finished with the appropriate RAL colour to reduce their visual impact.

Wiring

Cabling shall be considerately designed to minimise the visual impact. Cabling routes shall be determined at the next stage of design.

Luminaire Fixation

Fixation methods which are sympathetic to the building fabric are to be explored at the next stage of design.



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FACADE LIGHTING

ELDON STREET

The facade lighting scheme treatments are focused around the central ‘spine’ of the facade. Focusing on this area and the newly opened up entrance will create a destination and street presence.

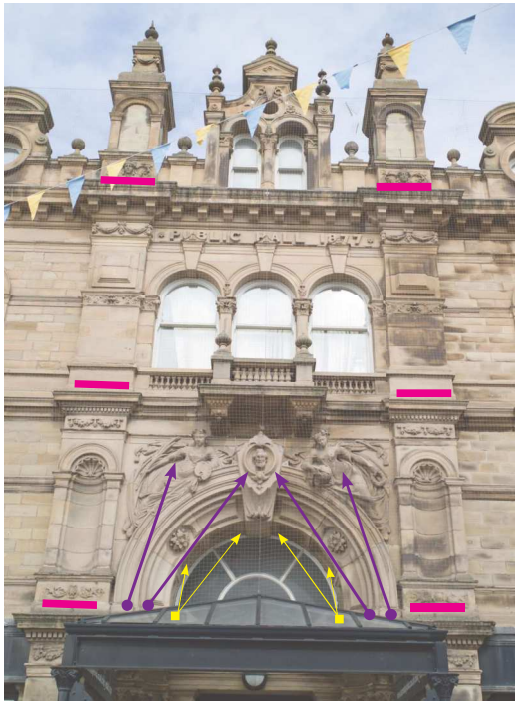
This proposal excludes any external lighting or illuminated signage associated with the retail units.

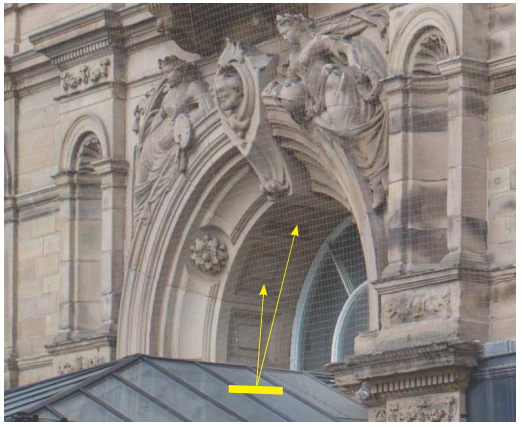
Lighting Treatment & Luminaires

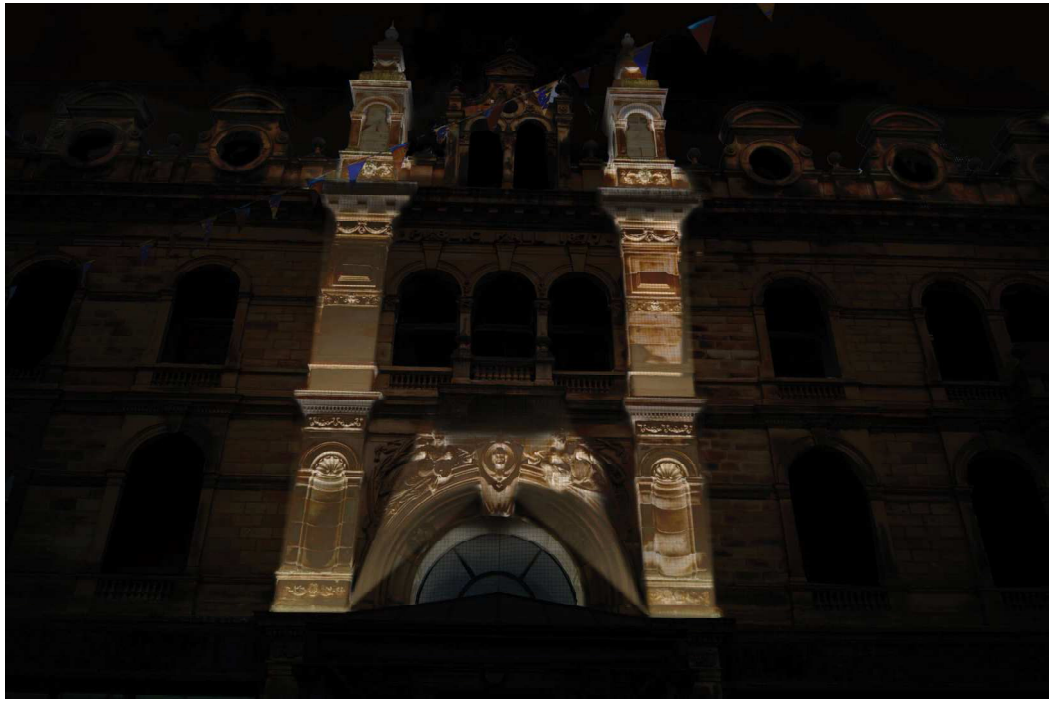
1. Close offset linear uplighting to emphasise the surface texture and cornice detail of the facade. Controlled optics and shield accessories are to be used to minimise light spill into dwellings.
2. Close offset linear uplighting to highlight the detail of the window reveal arch.
3. To celebrate the key stone and surrounding decoration detailing narrow beam projectors will provide focused accent illumination.
4. Wall mounted luminaires providing direct illumination to the immediate entrance areas.

Indicative luminaire typologies

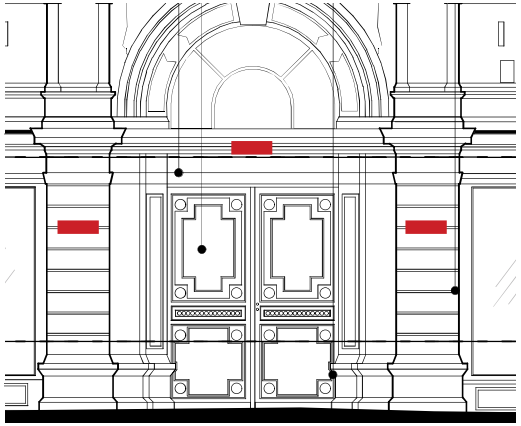
Lighting Control
Daylight linked and time clock control.




2. Uplighting to window reveal




Street level luminaire - Resident entrance

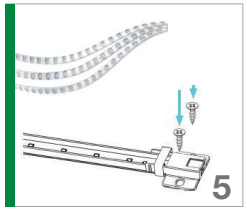

Street level luminaire - Main Civic entrance

FACADE LIGHTING

ELDON STREET

5. To create an illuminated facade element which is visible from distance and adds to the Barnsley skyline, shelf mounted LED strip is proposed to illuminated the crown of the building.

Precedent crown illumination



Indicative luminaire typologies

Lighting Control
Daylight linked and time clock control.

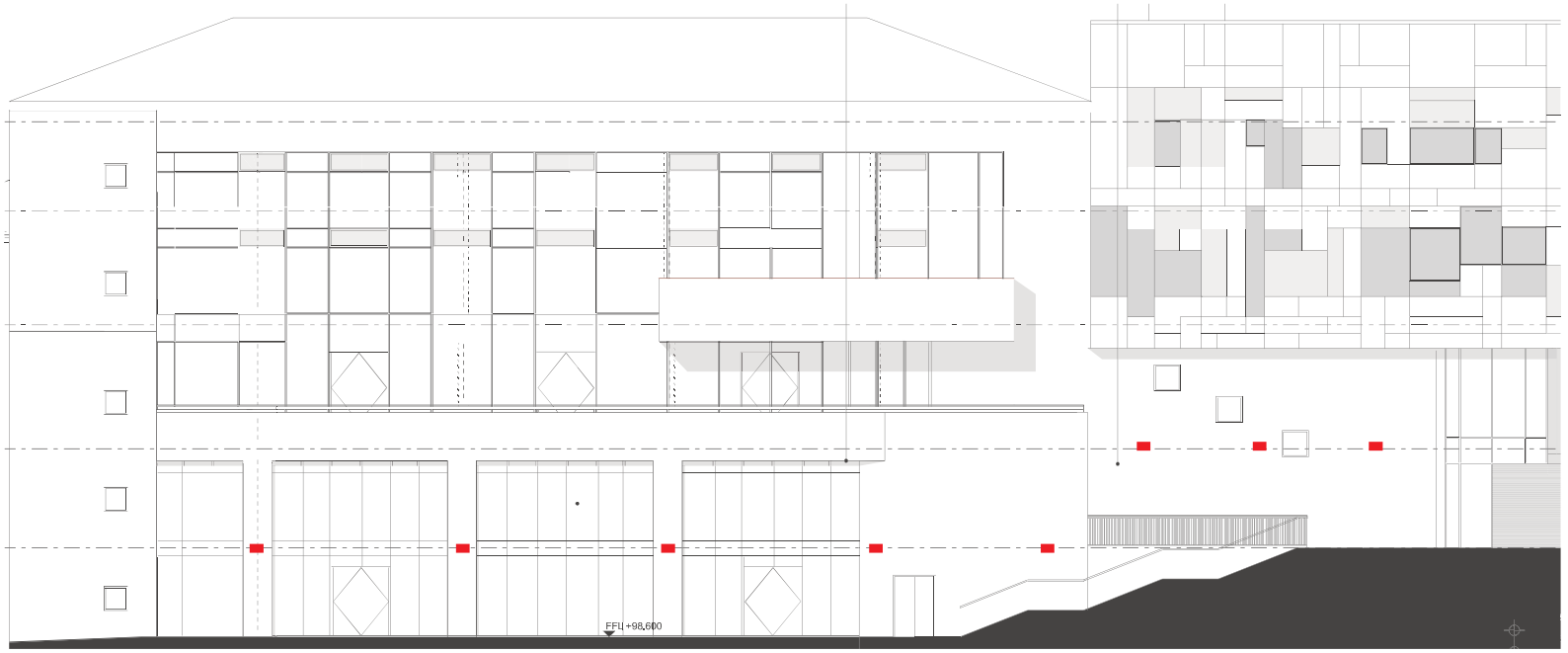
FACADE LIGHTING

MANDELA GARDENS FACADE

Existing wall mounted luminaires are to be replaced with new LED fittings and additional fittings added where required.

Indicative luminaire typologies

Lighting Control
Daylight linked time clock and manual override.



Proposed facade

Existing facade

TECHNICAL APPENDIX

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Design Objectives

Performance objectives & design parameters

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

- Provide general exterior lighting to the areas defined within the area of scope agreed with the client
- To limit light pollution and light trespass to neighbouring properties
- 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.

British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installation:

- ILP Guidance Notes for the Reduction of Obtrusive Light GN01/20
- LG6 The Exterior Environment, CIBSE 2016
- BS EN 12464-2:2014 Light and lighting - Lighting of work places. Outdoor work places
- SLL Lighting Handbook, 2018

Illuminance criteria & light levels

It is important to select light levels appropriate for the task taking place. British Standards and CIBSE guidance all stipulate appropriate light levels however where there an option to select a level from more than one document, the lower light level should typically be sought.

Exterior illuminance criteria as set out in BS EN 5489-1:2013 is dependant upon the district brightness where the lighting is to be deployed. The district brightness is determined according to criteria set out in ILP publication Guidance Notes for the Reduction of Obtrusive Light and requires knowledge of the local area.

Lighting controls & dimming

A lighting control system shall be provided to enable appropriate illumination levels to be controlled to meet the design intent. This shall also result in energy savings, minimisation of operational hours and therefore reduced running and maintenance costs for the life of the system.

Control of exterior lighting is to be linked to the hours of darkness and time of day. This shall be through the utilisation of a photocell unit and timeclock. All exterior lighting shall be switched off during hours of daylight and switched on at dusk. Luminaires may be switched off at a predetermined curfew time according to the planning conditions and Client's requirements.

LED technology has made it possible to vary external light levels via dimming. This approach helps to minimise energy consumption and also reduces disturbance to residents and wildlife. The opportunity to use these technologies should be investigated and reviewed during the design of any new lighting installation or the replacement of existing lighting systems.

Access and Maintenance (CDM)

For the facade lighting installations it is envisaged that MEWP access would be utilised for scheduled maintenance. Further detail shall be developed at the next stage of the design.

TECHNICAL APPENDIX

Light pollution

Reduction of Light Pollution

The following explanation and advice is taken from the Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light GN01:2020:

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.

Luminaire Technology

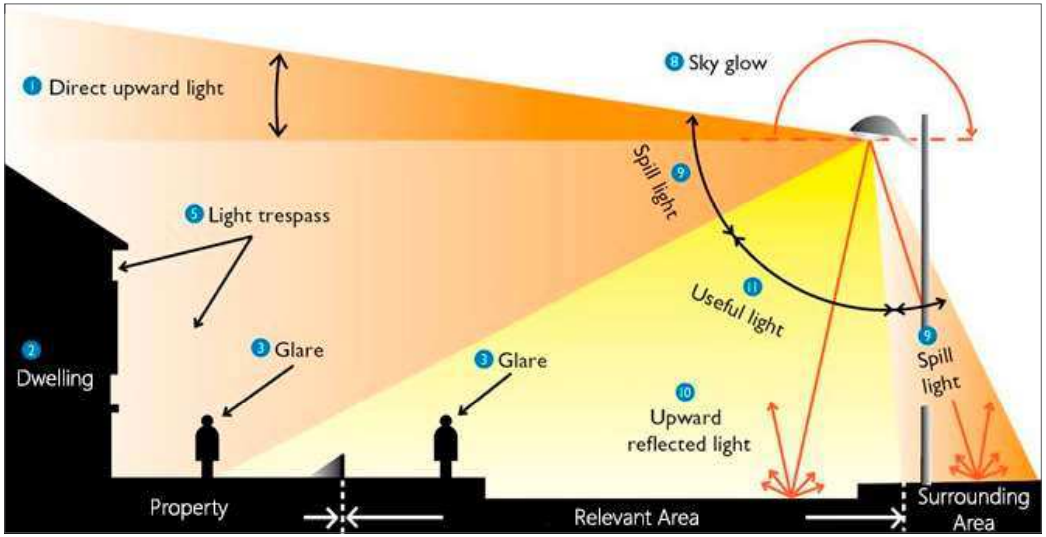
When specifying luminaires, careful consideration is given to minimising upward light and the use of optical units with precise light intensity distribution: thus ensuring that spill and glare are minimised. The lighting scheme is designed to have minimal impact on the surrounding environment. Lighting is only installed where a visual task requires it for safety, comfort and well-being. Light levels are kept to the minimum levels needed to meet the requirements. Luminaires with a controlled light distribution ought to 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.

Optical control

Using luminaires with good optical control will be crucial in minimising the impact of artificial lighting on the surrounding ecology. Internal reflectors, collimators and louvres all help to focus light on to the intended task area. Flat glass lenses are recommended over curved or bowl lenses to avoid light spill above the horizontal. If required, back-shields can be employed as barrier to stop unwanted light spill.

Luminaire Positioning and Aiming

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.



Light Pollution Explained

TECHNICAL APPENDIX

Light Pollution

Environmental Zones

The Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light (GN01:2020) provides guidance according to the location of the project.

The Civic falls within Environmental Zone E4 'Town/City centres with high levels of night-time activity'. Refer to Table 1 opposite for details. These principles have been applied during the design of this lighting scheme.

ILP Design Guidance

The following limitations may be supplemented or replaced by a local planning authority's own planning guidance for exterior lighting installations. As lighting design is not as simple as it may seem, you are advised to consult and/or work with a professional lighting designer before installing any exterior lighting. See Table 2.

1. Upward Light Ratio – Some lighting schemes will require the deliberate and careful use of upward light, e.g. ground recessed luminaires, ground mounted floodlights, festive lighting, to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments. Guidance Notes for the Reduction of Obtrusive Light GN01:2011
2. Light Intrusion (into Windows) – These values are suggested maxima and need to take account of existing light intrusion at the point of measurement. In the case of road lighting on public highways where building façades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.
3. Luminaire Intensity – This applies to each luminaire in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some sports lighting applications with limited mounting heights, may be difficult to achieve.
4. Building Luminance – This should be limited to avoid over lighting, and related to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires or luminaires fixed to the building but used to light an adjacent area.

Table 1: Environmental zone descriptions in ILP guidance

Category	Lighting environment	Examples
E0	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Intrinsically dark landscapes	National parks, areas of outstanding national beauty, etc
E2	Low district brightness areas	Rural, small village or relatively dark urban locations
E3	Medium district brightness areas	Small town centres or urban locations
E4	**High district brightness areas**	**Town/city centres with high levels of night-time activity**

UNESCO United Nations Educational, Scientific and Cultural Organization
IDA International Dark Sky Association

Table 2: ILP numerical guidance on obtrusive light

Obtrusive light limitations for exterior lighting installations

Environmental Zone	Sky glow ULR (Max %)	Light trespass into windows E_v (lux)		Source intensity I (kcd)		Building Luminance pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average L (cd/m²)
E0	0	0	0	0	0	0
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1.0	10
E4	**15.0**	**25**	**5**	**25**	**2.5**	**25**

* From public road lighting installations only.
ULR Upward light ratio of the installation, i.e. the proportion of light from the total installation that goes directly into the sky.
E Vertical illuminance in lux on nearby domestic windows.
I Light intensity in kilo-candelas in a potentially obtrusive direction, outside of the area being lit. The ILP guidelines state that these figures are for general guidance only and for some sports lighting applications with limited mounting heights may be difficult to achieve.
L Luminance in candelas per m². This guideline is intended to apply to buildings that are deliberately floodlit at night. L is a measure of how bright the building appears.

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