…sustainable building services solutions

mansfield bowling club

external lighting impact assessment – march 2015

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issue information…

CURRENT ISSUE			
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ISSUE	**DATE**	**STATUS**	**AUTHOR**	**CHECKED BY**
ISSUE ONE	**16.01.15**	**PLANNING**	**MJH**	**LN**

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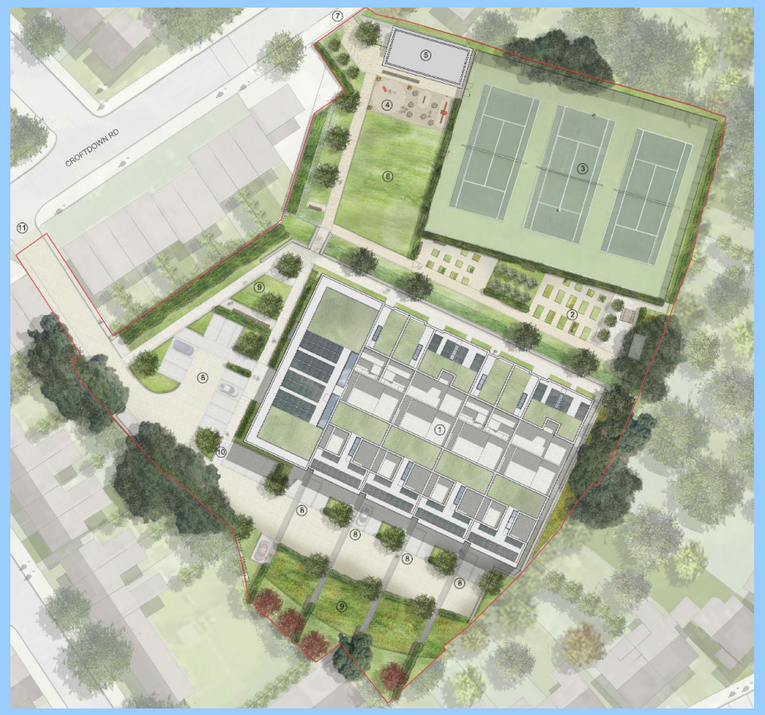
OBJECTIVE

This External Lighting Impact Assessment has been prepared by MTT/SUSTAIN Limited on behalf of Generator Group LLP and forms part of a detailed planning application for the Mansfield Bowling Club redevelopment, addressing sustainable development policies of the London Borough of Camden.

This report has been formulated to provide an overview of the exterior lighting design principles and assessment of the impact of the proposed external lighting for the development on the existing neighbouring building and to describe the primary artificial external lighting provision concepts for the proposed development.

PROJECT BACKGROUND

The proposals comprise the redevelopment of the indoor bowling club to provide 21 residential homes through a combination of houses and flats. In addition, a community tennis club will be retained and improved and publicly accessible open space will be provided.



Architects Indicative Plan of the Proposed Mansfield Bowling Club Redevelopment

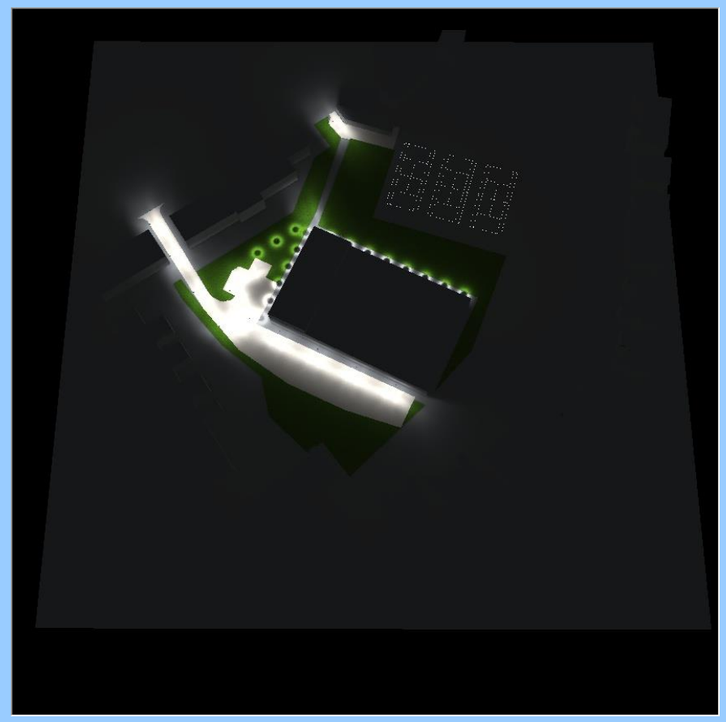
SUMMARY STATEMENT

Through careful luminaire selection and setting out, the impact of the proposed external lighting arrangements on the surrounding residential housing will be minimised in so far as is reasonable, in line with the London Borough of Camden's Policy DP 26 Managing the Impact of Development on Occupiers and Neighbours.

The design process will allow for worst case scenarios via disregard for the impact of boundary tree and hedge lines.

The proposed scheme will fall within the limits as set out within ILP Guidance Notes for obtrusive light limitations. Any light spill will be designed to be minimal at all existing residential housing facades and therefore windows, and the overall lighting scheme design will exhibit little or no detrimental effect on the existing residents.

The proposals do not cause harm to the amenity of neighbouring properties and are therefore compliant with Policy DP 26.



Lighting Engineer's Indicative Plan of the Proposed Mansfield Bowling Club Lighting Scheme

1.0 project background…

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SITE BACKGROUND

This document has been prepared to review the external lighting issues associated with the proposed redevelopment of the site known as Mansfield Bowling Club, Croftdown Road, London NW5 1EP. The site local planning authority is the London Borough of Camden.

Aerial View of the Existing Site

LOCATION

The surrounding area consists of primarily residential dwellings which are well screened by established landscaping and shrubbery. Specifically, the boundaries of the site sit adjacent to the rear gardens of properties on Croftdown Road, Regency Lawn, Dartmouth Park Avenue, Laurier Road and York Rise.

'The site is accessed via Croftdown Road and has a Public Transport Accessibility Level rating of 3. (moderate) although neighbouring properties have a PTAL rating of 4. The nearest underground station is Tufnell Park, located approximately 750m away.

Site Location Map

1.0 project background…

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EXISTING MANSFIELD BOWLING CLUB SITE DESCRIPTION

The application site comprises a vacant indoor bowling facility which consisted of a six rink indoor bowling green, part 2/part 3 storey clubhouse with associated changing rooms and function room (Class D2).

Two ancillary residential flats (Class C3) are also accommodated in the building. The remainder of the site is made up of associated car parking and hard standing for the aforementioned vacant building, areas of open space, an outdoor bowling green, two tennis courts and associated clubhouse, and a small allotment area.

The existing site area is approximately 0.85 hectares (ha) or 8,500 square metres.

Photograph of the Existing Mansfield Bowling Clubhouse

PROPOSED MANSFIELD BOWLING CLUB DEVELOPMENT DESCRIPTION

The application is formally for the Creation of a new publicly accessible open space; enhanced tennis facilities including the reconfiguration and extension of the courts to provide an additional court and increased playing area to accord with LTA requirements; the provision of a new ancillary pavilion (Class D2) to replace existing ancillary buildings and structures providing community and leisure space; a new community garden; and the demolition and replacement of the existing bowling club building with a new part three storey, part 2 storey building providing 21 residential dwellings (Class C3) with associated access, parking and landscaping.'

Architects Indicative View of the Proposed Mansfield Bowling Club Redevelopment

2.0 design criteria…

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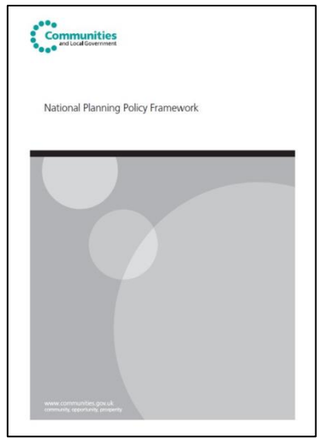
STATUTORY

The Clean Neighbourhoods and Environmental Act (2005) introduced light pollution as a form of statuary nuisance, within the Environmental Protection Act (1990) which defined it as 'a*rtificial light emitted from a premises so as to be prejudicial to health or nuisance*'.

The act provides no defined regulation or limits that determine appropriate assessment. However guidance is provided by the International Commission on Illumination (CIE), the Institute of Lighting Professionals (ILP) and CIBSE. Such guidance is therefore referred to throughout this assessment.

PLANNING

National – The National Planning Policy Framework



The National Planning Policy Framework was published in 2012 and outlines core policies to be applied to land use. The Framework describes key points in terms of prevention of pollution, planning policies and provides guidance to ensure due account of the natural environment to ensure designers are encouraged to limit the impact of light pollution from artificial lighting.

Such policies will be considered within this external lighting design assessment.

Local – London Borough of Camden

LONDON BOROUGH OF CAMDEN DEVELOPMENT POLICY 26 (DP 26)

DP 26 Managing the Impact of Development on Occupiers and Neighbours of the Core Strategy and the Development Policies DPD states that

'The Council will protect the quality of life of occupiers and neighbours by only granting permission for development that does not cause harm to amenity.

The factors we will consider include:

a) Visual privacy and overlooking;
b) Overshadowing and outlook;
c) Sunlight, daylight and artificial light levels;
d) Noise and vibration levels;
e) Odour, fumes and dust;
f) Microclimate;
g) The inclusion of appropriate attenuation measures.

We will also require developments to provide:

h) An acceptable standard of accommodation in terms of internal arrangements, dwelling and room sizes and amenity space;
i) Facilities for the storage, recycling and disposal of waste;
j) Facilities for bicycle storage; and
k) Outdoor space for private or communal amenity space, wherever practical.'

The supporting text of the policy highlights a concern that:

'*…poorly designed internal and external lighting or lighting that operates for an excessive period of time is a form of pollution that can harm the quality of life for those living nearby, affect wildlife and waste energy. Camden's dense character means that light pollution can be a bigger problem in the borough than in lower density areas where uses are not so close together '*

The London Borough of Camden provide planning guidance that encapsulates their requirements for new external lighting schemes within the built environment in order to mitigate the potential for such poor installations.

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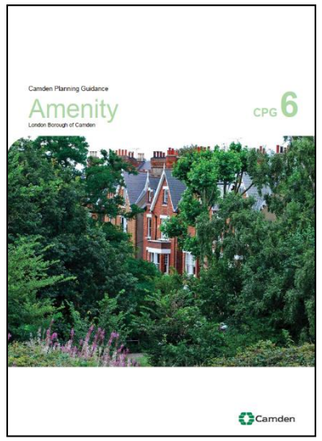

LONDON BOROUGH OF CAMDEN PLANNING GUIDE 6 (CPG 6

The finite detailed requirements for planning assessment are outlined within Camden Planning Guide 6 (CPG 6) for Amenity spaces.

This document is inclined toward the support of policies as described within Camden's local development framework (LDF) and in so doing is consistent with the Camden core strategy and development policies.

CPG 6 section 5 sets out the key items that will be considered where proposals for artificial are submitted. These are:

- The requirement for planning permission
- The requirement for the lighting
- The design of the lighting
- The potential impacts on biodiversity

CPG 6 goes on to outline the design considerations that are expected to be employed to ensure an acceptable scheme is achieved. This includes reference to the Institute of Lighting Professionals (ILP) guidance notes for the reduction of obtrusive light, which will form the basis on which the detailed assessment as set out herein is based.

OTHER CONSIDERATIONS

When assessing proposals the Council will take account the considerations set out in policy DP 26

THE REQUIREMENT FOR PLANNING PERMISSION

DP 26 identifies that planning permission will normally be required for the lighting proposals where it includes columns for its support. In this instance the proposals for the new residential street lighting will be pole supported through the vehicular drive and parking areas.

DP 26 states that external lighting proposals that are part of a commercial development scheme will require planning permission.

The Council promotes high standards of amenity and therefore lighting will be a major consideration when the Council assesses development proposals. Artificial light levels are a factor included in this assessment.

INFORMATION REQUIRED TO ACCOMPANY THE PLANNING APPLICATION

DP 26 outlines the information expected to accompany the planning submission in respect to the external lighting proposals which includes:

- A narrative supporting the requirement for the lighting proposals.
- The expected illumination levels
- The height of the lighting columns
- Identification of the areas that are to be lit.
- Luminaire proposals including lamp type, lumen output and wattage
- Proposed control system and time scheduling

All of the above outlined information is provided within this document.

2.0 design criteria…

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OTHER REFERENCE DOCUMENTATION

All external lighting arrangements described in this report will be designed to comply with the following:

- Latest Building Regulations
- Guidance Notes for the Reduction of Obtrusive light, the Institute of Lighting Professionals2005.
- BS 5489 – 9:1996 Road Lighting – Part 9 Code of Practice for the lighting of urban centres and public amenity areas.
- BSEN13201-2:2003
- Glare Evaluation System for use within outdoor sports and area lighting 1994.
- Environmental Protection Act 1990

All necessary actions will be undertaken to minimise detrimental impact of the external lighting arrangements on the surrounding environment and adjacent properties.

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THE NEED FOR LIGHTING

Overview

The proposed redevelopment of the Bowling Club includes the provision of new reduced car parking to serve predominantly the residential uses.

The provision of new residential accommodation necessitates the requirement improved access of Croftdown Road, and the requirements for illumination of the route adequately are referred to within the London Borough of Camden's guidance.

Adequate illumination is therefore required to ensure personal safety both in terms of visual impairment, safe traffic movement, personal safety and to deter the potential for criminal activity.

Whilst the requirement for lighting may appear self-evident, the process for the implantation of a suitable design philosophy encapsulate the Society of Light and Lighting initial considerations checklist, as set out below.

a) Should the space be lit?

As discussed briefly above the test for necessity for a residential roadway scheme is set out within BS EN 13201-2, and generally fall in line with Camden Borough Council street lighting policy statement for the provision of *'a safe environment during the hours of darkness in all public areas for road users and pedestrians alike.'*

The site car parking requirement for lighting is as laid out within recent planning meetings by the architect and the Crime Prevention Design Adviser, to '*be lit at night to a uniform level'*. Further consideration in this respect is made with the overriding consideration of nuisance illumination and stray light to be mitigated in so far as is reasonable.

b) Should all of the space be lit?

In terms of the residential street lighting, the requirements for illumination at the roadway as well as adjacent areas is clearly set out within BS EN 13201-2, CEN/TR 13201-1 and Camden's Development Policy 26 (DP 26). The roadway illumination is provided to aid vehicular and pedestrian travel through the space from the intersection with Croftdown Road right up to the new residential dwellings and associated parking area.

The site car parking will be illuminated evenly throughout and in line with the 'Secure by Design' recommendations to promote a feeling of safety and well-being. A balance between defined secure by design requirements and the need to mitigate trespass illumination has been made, and hence uniform illumination is provide at defined pedestrian routes, with less rigid even illumination considerations made near the un-pedestrianized planning site boundary.

c) How long does the space need to be illuminated?

Lighting on a 'when necessary' basis will minimise the energy usage of the site and the associated environmental impact through reduced CO_2 emissions, as well as any impacts on plant and animal species.

With the residential roadway and parking proposal, illumination will be provided only during hours of darkness, via photocell and time clock control mechanisms. Addition control features to allow system diming will be considered to ensure illumination levels are further controlled locally at curfew hours.

The car park lighting levels will provide adequate illumination for safe movement, facial recognition, and vehicular access through after dark hours.

It has also been determined that the northern section of the plot accommodating the tennis and pavilion will be secured at dusk, with access restricted via physical gating. This area of the site is intended to be unoccupied and remain idle and inaccessible to the public during hours of darkness and as such the necessity for artificial illumination is removed.

d) What form should the lighting take?

When considering the style and effectiveness of the external lighting design it has been necessary to focus upon the importance of minimising the light spill and light pollution to mitigate stray illumination onto the adjoining existing residential dwellings.

To that end precise control of the illumination source is proposed, throughout the development, car parking and access roadways.

The style of the lighting has been considered not only for its night time operation, but additionally for its impact on the visual scene during daylight hours. It is noted that Camden Borough Council street lighting policy allows for luminaire and pole style to provide a *'modern appearance that have not previously been used in the borough but which can make a positive contribution to the enhancement of the streetscape.'* Pole mounted luminaries have been selected through the pedestrian and vehicular access route onto the site and the car parking provide. Other areas where pedestrian only access is likely are proposed with bollard style.

A contemporary style has been selected on this basis to complement the architectural approach to the proposed redevelopment.

Whilst this style has been selected for consideration, final selection and approval will occur at the detailed design stage.

e) Where should the light come from?

Emphasis for lighting from above has been established through the design procedures, as this arrangement best offers minimised light spillage into the sky, and hence minimises direct upward light pollution.

Pole heights have been assessed in line with those of existing pole mounted street lighting forms in the local area, and are considered to provide a level of continuity in the lighting design approach to the proposed redevelopment scheme.

2.0 design criteria…

f) What lamps should be used?

It has been noted from the London Borough of Camden street lighting policy that white light is now to be utilised for all new street lighting installations. White light provides enhanced facial recognition and colour recognition when compared to monochromic light sources, and is considered beneficial for crime reduction and an increased feeling of safety.

Additionally it is recognised that monochromatic light sources appear more pronounced than white light within the street scene.

The light source considered and proposed utilises LED technology for all amenity and roadway lighting and provides reduced energy usage as well as providing a white light source with added potential dimming capabilities that may be utilised to further mitigate light spillage after curfew hours.

g) Choice of lighting levels

Generally the level of illumination centres around the need to provide minimum illumination standard to ensure the identified operational task and safe movement within the space can be achieved for both vehicles and pedestrians alike.

The application of CEN 13201-1 determined a lighting classification of 'S2'; requiring minimum average horizontal illumination at 10 lux. This classification is applied for subsidiary roadways of traffic speeds not exceeding 30mph, and on the basis that traffic may be busy at times where the sports facility is in use.

Avoidance of over illumination and light spillage is assessed utilising the Institution of Lighting Professionals' (ILP) Guidance Notes for The Reduction of Light Pollution, in line with the London Borough of Camden recommendations.

Table 3 — S-series of lighting classes

Class	Horizontal illuminance	
	$\overline{E}$ in lx [a] [minimum maintained]	E_{min} in lx [maintained]
S1	15	5
S2	10	3
S3	7,5	1,5
S4	5	1
S5	3	0,6
S6	2	0,6
S7	performance not determined	performance not determined

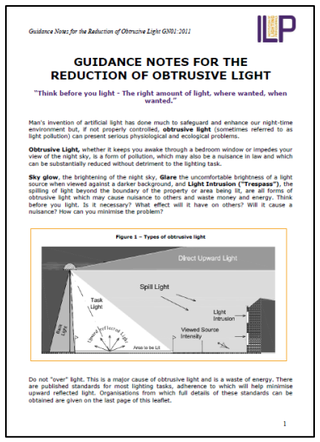
[a] To provide for uniformity, the actual value of the maintained average illuminance may not exceed 1,5 times the minimum $\overline{E}$ value indicated for the class.

Table 3 from CEN 13201-1

NB: The figures highlighted indicate the selected design criteria that will be adhered to.

2.0 design criteria…

LIGHT TRESPASS AND SKY GLOW


Guidance Notes for the Reduction of Obtrusive Light GN01:2011

GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

"Think before you light - The right amount of light, where wanted, when wanted."

Man's invention of artificial light has done much to safeguard and enhance our night-time environment but, if not properly controlled, **obtrusive light** (sometimes referred to as light pollution) can present serious physiological and ecological problems.

Obtrusive Light, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution, which may also be a nuisance in law and which can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky, **Glare** the uncomfortable brightness of a light source when viewed against a darker background, and **Light Intrusion ("Trespass")**, the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others and waste money and energy. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can you minimise the problem?

Figure 1 – Types of obtrusive light

Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light. Organisations from which full details of these standards can be obtained are given on the last page of this leaflet.

1

Overview

External lighting arrangements for the development have the potential to exhibit light trespass into local existing and proposed properties in the vicinity of the development envelope and to contribute to sky glow.

Parameters

ZONE CLASSIFICATION INDEX

An environmental Zone Classification index has been developed by the Institute of Lighting Professionals in their Guidance Notes for the Reduction of Obtrusive Light, as set out below:

Category	Description	Examples
E1	Intrinsically dark landscapes	National Parks, Areas of Outstanding Natural Beauty
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

Table 1 – Environmental Zone Classification – from the ILP Guidance Notes for the Reduction of Obtrusive Light

For each environmental zone, appropriate obtrusive light limitations have also been determined by the Institute of Lighting Professionals for external lighting installations, as set out in Table 2 below.

OBTRUSIVE LIGHT LIMITATIONS

Environmental Zone	Maximum Sky Glow (ULR)*[1] (%)	Light Trespass (into window) E_v (lux) *[2]		Source Intensity I (kcd)		Building Luminance Pre-curfew Average L*[3] (cd/m^2)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E1	0.00	2	1*4	2.5	0	0
E2	2.50	5	1	7.5	0.50	5
E3	5.00	10	2	10	1.00	10
E4	15.00	25	5	25	2.50	25

NB: *[1] Maximum permitted luminaire flux for the total installation directly into the sky
*[2] Vertical luminance measures at the glazing (centre of the window)
*[3] Luminance
*[4] From public road lighting installations only

Table 2 - Obtrusive Light Limitations – from the ILP Guidance Notes for the Reduction of Obtrusive Light

GLARE RATING LIMITS

Application	Risk	GR_{max}
Safety and Security	Low Risk	55
	Medium Risk	50
	High Risk	45
Movement and Safety	Low Risk	55
	Medium Risk	50
	High Risk	45
Work	Low Risk	55
	Medium Risk	50
	High Risk	45

Table 3 – Glare Rating Limits – from ILP Guidance Notes for the Reduction of Obtrusive Light

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Application at Mansfield Bowling Club

The development will be located within an urban environment but with special sensitivity due to the site's Conservation Area designation and hence can be seen to be an area with medium levels of night time activity. Therefore, environmental classification E3 as defined in Table 1, is appropriate.

The Obtrusive Light Limitations as detailed in table 2 and the Glare Rating Limits as set out in table 3 will be used to determine the relevant parameters for the external lighting design.

The design and provision of any external artificial lighting scheme associated with the development envelope has the potential to affect, impact and cause nuisance to neighbouring existing as well as the new proposed residential accommodation.

Through considered design, careful product selection and application of good design practice in keeping with recognised design lighting limitations the potential for disturbing trespass illumination as well as light pollution will be mitigated.

Based upon an Environmental Zone classification E3 together with associated relevant guidance criteria the following design criteria will be adhered to.

Environmental Zone	Maximum Sky Glow (ULR)*[1] (%)	Light Trespass (into window) E_v (lux) *[2]		Source Intensity I (kcd)		Building Luminance Pre-curfew Average L*[3] (cd/m^2)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E3	5.00	10	2	10	1	10

Table 4 Obtrusive Light Limitations – from the ILP Guidance Notes for the Reduction of Obtrusive Light

A Glare rating limit of 50 is also considered appropriate for the design criteria.

Design compliance with the above set out design parameters and criteria will control the influence and mitigate any negative impact the external lighting may have otherwise created.

2.0 design criteria…

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SITE WIDE KEY PLAN

3.0 lighting design proposals…

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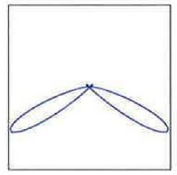
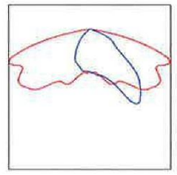
PROPOSED LUMINAIRE DATA SHEET

Mansfield Bowling club / Luminaire parts list

BEGA 8554 K4 LED 18,2W
Article No.: 8554 K4
Luminous flux (Luminaire): 603 lm
Luminous flux (Lamps): 1530 lm
Luminaire Wattage: 24.0 W
Luminaire classification according to BZ: BZ 10/1.75/BZ 9/2.25/BZ 8
CIE flux code: 00 33 88 93 39
Fitting: 1 x LED 18,2W (Correction Factor 1.000).



BEGA 9491 LED 25,2W
Article No.: 9491
Luminous flux (Luminaire): 2265 lm
Luminous flux (Lamps): 2265 lm
Luminaire Wattage: 31.0 W
Luminaire classification according to BZ:
CIE flux code: 36 74 96 100 100
Fitting: 1 x LED 25,2W (Correction Factor 1.000).



COMMENTARY

As stated earlier, the selection of the proposed luminaires is primarily based upon the need for carful lighting control in terms of potential obtrusive light and also for the allowance of dimming control. The style of the luminaire itself is considered as complimenting the modern architectural approach to the development; however the final selection of light source and mounting pole is subject to architectural agreement, and therefore remains an item for detailed discussion and agreement.

The selection made here is therefore provided to indicate the style of luminaire that is proposed and, the final luminaire selection will follow from the detailed design.

4.0 design conclusions…

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SUMMARY STATEMENT

Through careful luminaire selection and setting out, the impact of the proposed external lighting arrangements on the surrounding residential housing will be minimised in so far as is reasonable, in line with the London Borough of Camden's Policy DP 26 Managing the Impact of Development on Occupiers and Neighbours.

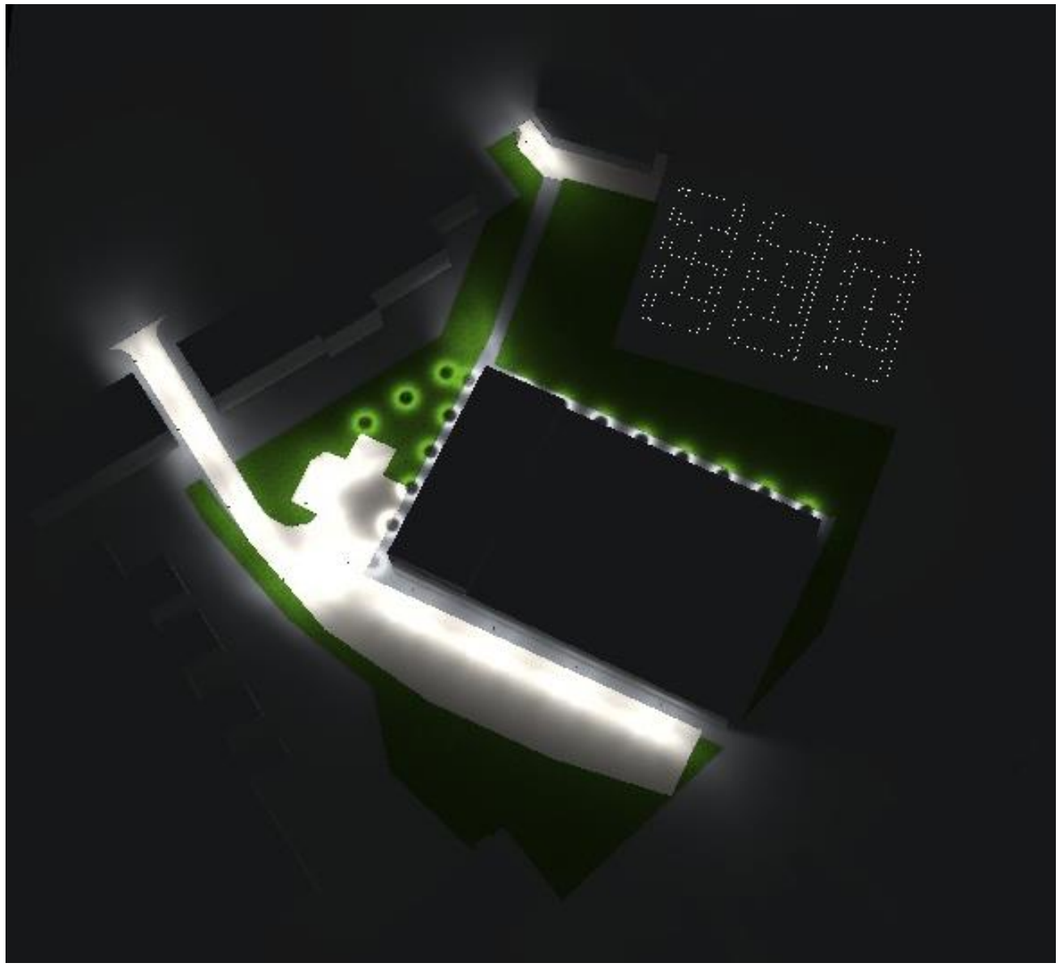
The design process will allow for worst case scenarios via disregard for the impact of boundary tree and hedge lines.

The proposed scheme will fall within the limits as set out within ILP Guidance Notes for obtrusive light limitations.

Any light spill will be designed to be minimal at all existing residential housing facades and therefore windows, and the overall lighting scheme design will exhibit little or no detrimental effect on the existing residents.

The proposals do not cause harm to the amenity of neighbouring properties and are therefore compliant with Policy DP 26.

SUMMARY INDICATIVE PLAN



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