EST. 1962
HALLIDAY LIGHTING

LIGHTING IMPACT REPORT & OVERSPILL READINGS

Ref: 7381

Dorothy Hyman Sports Centre

Snydale Rd

Cudworth

S72 8LH

Introduction

This report has been commissioned by Halliday Lighting to examine the proposed lighting installation at Dorothy Hyman Sports Centre. The proposed lighting consists of six number Siteco FL11 3 Module BLC LED's and four number Siteco FL11 2 Module BLC LED's to light the pitch for recreational play and general games to allow safe playing conditions in the winter months. There are also 4 number Siteco SL21 Micro LED's to light the access path to the pitch. The report has been produced by Halliday Lighting, a specialist Sports Lighting Contractor with over 60 years of experience in Sports Lighting Engineering.

Site Location

The sports pitch is located in Cudworth and is indicated on the aerial view below.

The surrounding land consists of rural locations and roads on which are residential properties. The nearest surrounding residential properties are to the North of the pitch (Approx. 140m away).

Summary

The lighting proposals have been assessed using the design guidance outlined in the *Sport England Artificial Sports Lighting Guidelines 2021* installation for a football pitch. This recommends a maintained average lighting level of 200Lux, with uniformity (min/ave) of 0.60. Details of how to calculate the optimum mast height are also shown and this should be 15m for a pitch of this size.

In order to ensure compliance with recommended light containment limitations the *ILP 'Guidance notes for the reduction of obtrusive light'* have been consulted. This document categorises the environment into five zones according to the degree of urbanisation and background illumination. The environmental zones categories are shown in Table 1 along with the allowances for spill light and glare in Table 2.

Table 1 – Environmental Zones

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 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

Environmental Zone	Sky Glow ULR [Max %] (1)	Light Intrusion (into Windows) E_v [lux] (2)		Luminaire Intensity I [candelas] (3)		Building Luminance Pre-curfew (4)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m^2]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

The site at Dorothy Hyman Sports Centre is in a rural area with low district brightness, the recommendations for an environmental zone E2 have therefore been applied.

Proposed Lighting System

The lighting design details are shown on Halliday report Ref HLS7381. The drawing shows the proposed mast locations, light fitting orientation, pitch lighting levels and overspill predictions.

The proposals that have been designed are using an independent lighting software package Calculux and confirmed as producing 99.999% correlation to the SI Standard Calculation. The proposed masts are 15m high in line with the calculated optimum resulting in light fitting beam elevations of 10°

maximum taking into account the internal beam angle of the fitting which is 60°. This complies with the ILP recommended maximum of 70°.

Conclusion

The proposed lighting system has been designed to meet the specific lighting requirements for recreational play of large ball sports, whilst ensuring that nationally recognized environmental lighting standards are adhered to and sufficient measures are put in place and are adhered to.

The proposed system will therefore allow participants to play in safety whilst maintaining the amenity of neighboring dwellings.

For and on behalf of

Halliday Lighting

Standards and Guidance

The following lighting guides and documents have been used for reference:

ILP 'Guidance notes for the Reduction of Obtrusive Light' 2021

The Society of Light and Lighting (CIBSE), Lighting Guide 4 "Sports Lighting" 2006

BS EN 12193 'Sports Lighting'.

Clean Neighbourhoods and Environment Act 2005

Railway Group Standards

Glossary

Lumen
The standard unit of light (luminous flux) used in describing light emitted by a source or received by a surface.

Iluminance and Maintained Illuminance (lumens/m2 or lux)
Illuminance is the term used to describe the level of light on a surface in lumens/square metre or lux. Maintained illuminance is the term used to describe the average illuminance on a reference surface e.g. desktop, at the time maintenance has to be carried out.

Horizontal Illuminance
The level of light falling on to a horizontal plane (ie The Ground).

Vertical Illuminance
The level of light falling on to a vertical plane (ie The walls of a house).

Light Output Ratio (LOR)

This is the ratio of the total light output of a luminaire, relative to the total light output of the lamp/s under reference conditions. Total LOR can be divided into downward (DLOR) and upward (ULOR) light output ratios if appropriate.

Light Intrusion (Light trespass, Overspill, Light into windows)

The flow of light spilling outside the location boundary. With inadequate control Intrusive light may be sufficiently great as to provide a serious nuisance and disturbance to adjacent areas.

Glare

Glare may be divided into 2 types known as disability and discomfort glare. In a Sports Lighting context it relates primarily to direct viewing of the light fittings. Only in severe situations would disability glare be experienced. In most instances it is discomfort glare that may result, causing annoyance to the viewer if adequate screening of light fittings is not provided.

Sky glow

The general term for the Halo-effect caused by upwardly directed light, forming a glow in the night sky. It can cause diminished contrast of stars against their dark background making astronomical observations difficult and often impossible. The upwardly directed light can be caused by direct waste light from light fittings or indirect redirected light from the sports surface.

ILP

The Institution of Lighting Professionals.

ILP ‘Guidance notes for the reduction of light pollution’

A booklet produced by the ILP providing advice on reducing the impact of exterior lighting installations on the environment. The degree of permissible overspill & ULOR varies depending on the environmental zone as categorized in the guidance notes. Due to the higher ambient lighting levels in built up areas the restrictions are not as stringent in city centres, were as dark landscapes & rural areas require tighter control