

Seven Sisters Onllwyn AFC – Light Impact Assessment

Site Location

Wembley Ave, Onllwyn, Neath SA10 9HL



Introduction

Proposed installation of purpose built floodlighting system on the existing pitch located at the club.

Abacus Design Outline

In designing a suitable floodlighting solution key specification issues had to be considered. These included the illuminance level required, the environmental zone category for the site, the minimum mast height & the number type of floodlights. Details of how these issues were resolved are as follows:-

1. The illuminance level was determined and provided by the end user and the relevant sport governing body. The proposed lighting is the minimum required to perform the relevant lighting task (as per the WFA specification for match play) and has been specifically designed to minimise the risk of light spillage beyond the development site boundary.
2. For the relevant environmental zone reference was made The Institution of Lighting Professionals GN01: *Guidance Note for The Reduction of Obtrusive Light 2021*. This document categorises the environment into five zones ranging from UNESCO Starlight Reserves to City Centres. This site would fall into Zone E3 location.
3. The mast height was calculated using the method detailed in the CIBSE guide LG4 "Sports Lighting". This uses angles projected from the centre of the pitch & the touch line to produce a head frame location zone. A 15m mast has been used to take into consideration the ground levels to be mounted horizontally. This will result in low vertical overspill & good uniformity on the playing surface, without compromising cost. The masts will offer a slim line profile which will minimise daytime impact. If the mounting height was reduced to any lower than proposed on our design, the floodlights would need be elevated above the horizontal to maintain compliant lighting levels which consequently increases overspill and glare.
4. In order to meet the requirements of The Institution of Lighting Professionals GN01: *Guidance Note for The Reduction of Obtrusive Light 2021*, the Abacus Challenger 1 LED floodlight was chosen as being suitable with the addition of overspill limiting shields. Details of the main features of this product are highlighted below.

Abacus Challenger 1 LED Floodlight.

Specifications and Features:

Housing:

Die-cast/profiled aluminium and steel are used to produce an elegant and unobtrusive low profile design. 29.6kg in weight (6 module) with an IP66 rating.

Ratings:

UKCA, CE, CB, SAA, IP66

Finish:

Powder coated Black/Red

Driver:

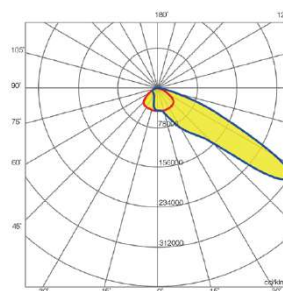
1500W driver is 3ch. DALI2/DMX driver, 5.6kg, IP66
400W - 1200W data available on request
Integral or remote options available

Full dimensions, and an image containing shielding/cowls, is as follows:

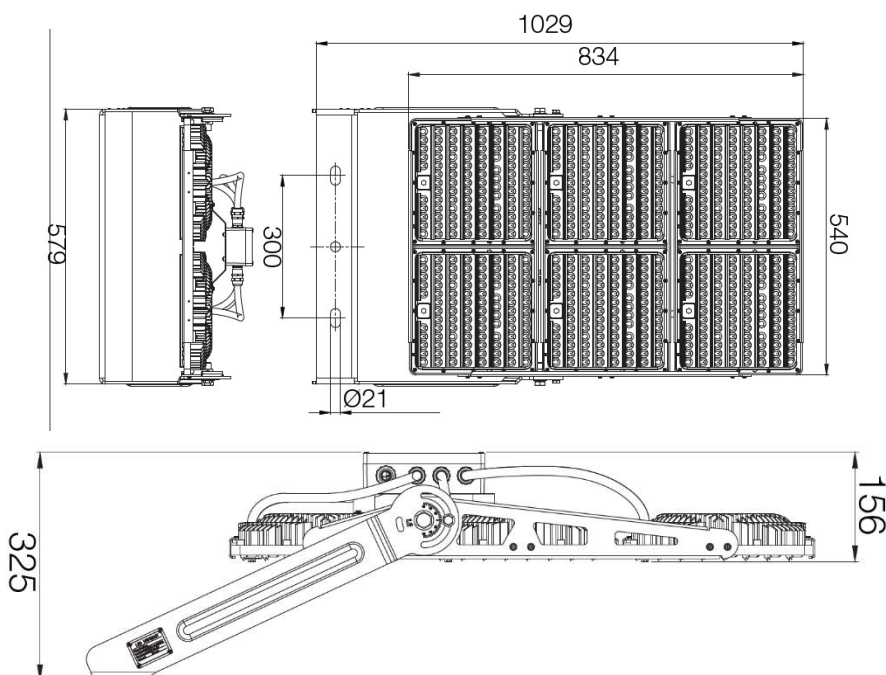
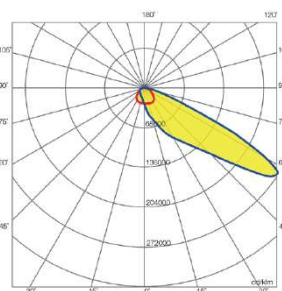


Photometric Output

AL6101 Distribution:



AL6102 Distribution:



Please see pictures below of recent installations using the above floodlight.



Abacus Lighting Design

Our proposals can be seen on the lighting scheme which is attached.

The Abacus lighting proposals are detailed on the design, these show the mast locations, floodlight orientations, illuminance levels on the pitch & projected overspill values. Also included is the obtrusive light compliance report which shows the results of the vertical overspill calculations taken on the surrounding properties, you can see that results show compliance to the obtrusive light guidelines for the location.

The design parameters for each area is shown to the right, the maintained illuminance values are calculated using a maintenance factor of 0.90. This takes into account light losses due to dirt accumulation on the floodlight front glass & lamp lumen depreciation, ensuring that the minimum requirements for safe play are achieved. The obtrusive light calculations are calculated using a maintenance factor of 1.0, to reflect the lamps condition when brand new.

Horizontal Illuminance Levels				
Welsh FA Men's Tier 3 Specification				
Label	CalcType	Units	Avg	Min/Avg
Football Pitch	Illuminance	Lux	250	0.60

Calculation Summary							
Initial Calculations							
Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Football Pitch	Illuminance	Lux	282	394	213	0.75	0.54

Calculation Summary							
Maintained Calculations							
Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Football Pitch	Illuminance	Lux	254	355	192	0.76	0.54

The use of the floodlight ensures that horizontal & vertical overspill containment is excellent. As less than 5 Lux vertical illuminance will be projected towards any residential property windows the system will exceed the requirements for an environmental zone E2 location. Upward waste light will also be minimised & at the floodlight elevations used 0% will be projected into the atmosphere. This will meet the recommendations of The Campaign For Dark Skies, an organisation who lobby for low light pollution systems & recommend the use of Abacus systems.

All design calculations have been undertaken using an open, unobstructed site, the values of overspill will be further reduced any existing buildings, mature trees or natural screening.

We have completed illuminance calculations into all the surrounding properties, and can confirm they meet the requirements on the ILP guidance notes for E2 location (maximum 5 lux into any property window). Please refer to the 'Obtrusive Light – Compliance Report' for the results for each specific property.

Conclusion

The proposed system would be suitable for installing in an environmental zone E2, meeting the most stringent of light control parameters whilst maintaining the specified illuminance levels for the sports pitch.

The impact on residents will be minimised as overspill values into gardens will be no more than moonlight & vertical illuminance into windows before curfew are below the values recommended by the ILP. Daytime visual impact will also be minimised by using slim line masts & grey floodlights which do not stand out against the skyline.

Once installed the light control system will provide the optimum sports lighting solution, ensuring that light reaches the sports surface & not into the sky or polluting the environment. Our scheme will significantly reduce overspill light, decrease glare and fundamentally reduces the impact on the environment and local residents.

Abacus Lighting Limited are world leaders in the design & manufacture of low pollution exterior lighting solutions. For further information regarding Abacus low light pollution products please contact our Head Office on 01623 511111 or visit www.abacuslighting.com.

For and on behalf of Abacus Lighting Ltd

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Obtrusive Light - Compliance Report

CIE 150:2017, E2-Low District Brightness, Pre-Curfew
Filename: LS4063540 Seven Sisters Onliwyn AFC
06/12/2023 07:48:17

Illuminance

Maximum Allowable Value: 5 Lux

Calculations Tested (6):

Calculation Label	Test Results	Max. Illum.
1-2 Wembley Avenue	PASS	5
3-4 Wembley Avenue	PASS	5
5-6 Wembley Avenue	PASS	5
7-8 Wembley Avenue	PASS	4
9-10 Wembley Avenue	PASS	4
11-12 Wembley Avenue	PASS	3

Notes:

This scheme has been designed based upon a flat and open area.
Shadowing from obstructions have not been taken into account.