

**Appendix G: Visual Impact Assessment of Floodlighting  
(01/05/13)**



Alan Tulla Lighting  
12 Minden Way  
Winchester  
SO22 4DS



T +44 (0) 1962 855720  
M +44 (0) 771 364 8786  
alan@alantullalighting.com  
www.alantullalighting.com

**Client**

St James Group

**Survey Report**

VIA of floodlighting at proposed residential development at the Twickenham Sorting Office

**Date** 1 May 2013

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*The author of this report is Alan Tulla, FSLL, FILP. He is a Fellow and Past President of the Society of Light and Lighting and has been awarded the CIBSE/SLL Lighting Diploma. He is also a Fellow of the Institution of Lighting Professionals, ILP and lectures for them on the topic of exterior and amenity lighting.*

## Site survey

Alan Tulla visited site on the afternoon and evening of 30 April 2013. The Heatham House Youth centre was very busy and the 5-a-side pitch was in use throughout our visit.

The purpose of the visit was to ascertain whether the existing floodlighting on the 5-a-side pitch would interfere with the proposed residential development on the Eastern and Southern boundaries.

The skatepark was not in use and neither was the floodlighting. Both of these are in a poor state of repair. The basketball court was frequently in use but does not have any floodlighting.

The generally accepted standard for obtrusive light is the guidance from the Institution of Lighting Professionals, ILP, document GN01 2011. This specifies upper limits to two main criteria: light falling on the windows (vertical illumination) and source intensity (whether the lamp or reflector can be seen and how bright it is).

The limits are dependent on Environmental Zones where E1 is an intrinsically dark area to E4 which is a city centre with high levels of night-time activity. Although London Road and Whitton Road would be considered E4, since the housing faces away from the road and the area concerned has a lot of trees, no nearby roads and the river Crane flowing along a boundary, we consider that for the purposes of this assessment, the E3 criteria should apply.

The E3 criteria limit the vertical illumination on windows to 10 lux and a maximum intensity of 10,000 Cd towards the viewer. The value is measured at the centre of the window and applies to all windows facing the floodlighting.

These values are normally calculated by the floodlight supplier but, in this instance, we understand the data is not available. As such, we measured the vertical illumination at 1.5m above ground which is typical for a development such as this. For practical reasons, the vertical illumination could not be measured at greater heights above ground.

From the site plan supplied from St James MP03 Rev P1, the nearest housing is the Apartment Block on the Eastern side which is about 8m from the edge of the pitch at its closest point.

Note that the Terrace Blocks on the Southern boundary are almost as close, but the end elevation is not glazed (apart from one window 10m above ground) and hence should not be affected by light intrusion. There are N-S facing windows where it might be possible to just see the floodlights, but light intrusion would be minimal.

## **Illuminance survey**

The floodlights are of the “flat glass” type and so no light is emitted upwards; thus avoiding any contribution to skyglow.

We measured horizontal illumination at ground level and vertical illumination at 1.5m. The values shown are included at the end of this report.

The Eastern boundary path is 2m – 3m from the end of the pitch and the average vertical illumination is in the region of 17 lux although this measured value may be slightly low since there was some shadowing from the foliage overhead.

In order to gain a better indication of the rearward spill, we measured values at the fence-line of the basketball court which is some 6m (remember that the apartment block is 8m) from the edge of the 5-a-side pitch. Here, the average vertical value at 1.5m above ground is 22 lux but, in places, exceeds 40 lux.

You can see from the photos that there is some spill light across the whole of the building, albeit the level is quite low.

### Vertical illumination on the widows

In terms of light intrusion into windows, the measured values exceed those recommended by the ILP. However, it is likely that fitting rear baffles to the floodlights will lead to a significant improvement and may cut off the light completely. Note that fitting rear baffles will not adversely affect the lighting on the pitch. We recommend that baffles are fitted.

### Source intensity

This refers to residents having a direct view of the lamp and/or reflector. Obviously, windows higher than the floodlights will not be affected because they cannot view the lamp. Also, depending on the location of the 3m high acoustic fence, residents in Ground Floor apartments may not be able to view the lamp/reflector.

Point source intensity can only be measured in a laboratory. It can be calculated but this is done by the manufacturer using photometric data obtained from laboratory measurements. A request to the manufacturer should be able to confirm conformance to the 10,000 Cd limit, or not.

Currently, some windows do receive a direct view. This can be seen in the photograph where there is a reflection of the floodlight in the window. However, it is quite possible that this is below the 10,000 Cd limit.

Direct view of the lamp/reflector from the rear can be eliminated by using a visor. It is sometimes possible to view the lamps from the front and some manufacturers offer front visors. Tilting the floodlight downwards can ameliorate the situation but risks adversely affecting the lighting on the pitch.

Again, it is quite possible that the direct view of the floodlights is below the 10,000 Cd limit.

### **Conclusion and mitigation methods**

Due to the proximity of the apartment block, some mitigation measures need to be taken.

We recommend fitting rear visors on the two floodlights closest to the apartment block. The deeper the visors, the greater the reduction in rearward light. Similarly, if possible, front visors should be fitted to the floodlights further away.

Fitting visors may well ensure total compliance with the ILP guidance.

The implementation of a curfew time, typically 21.30 – 22.00 hrs, during the week can help promote a scheme that is acceptable to both residents and players.

<b>Twickenham Sorting office</b>																				
<b>Measured lux levels on 5 a side pitch</b>			30 April 2013																	
Values below taken 6m from end of pitch i.e. Boundary with basketball court																				
Eh			Eh path			Allotment			Allotment			Allotment			Eh path			Eh path		
15			210			100			257			90			137			96		
12			150			45			90			30			54			26		
25																				
25			Goal mouth			Playing Area			Area			18m x 36m			Goal mouth					
40																				
15																				





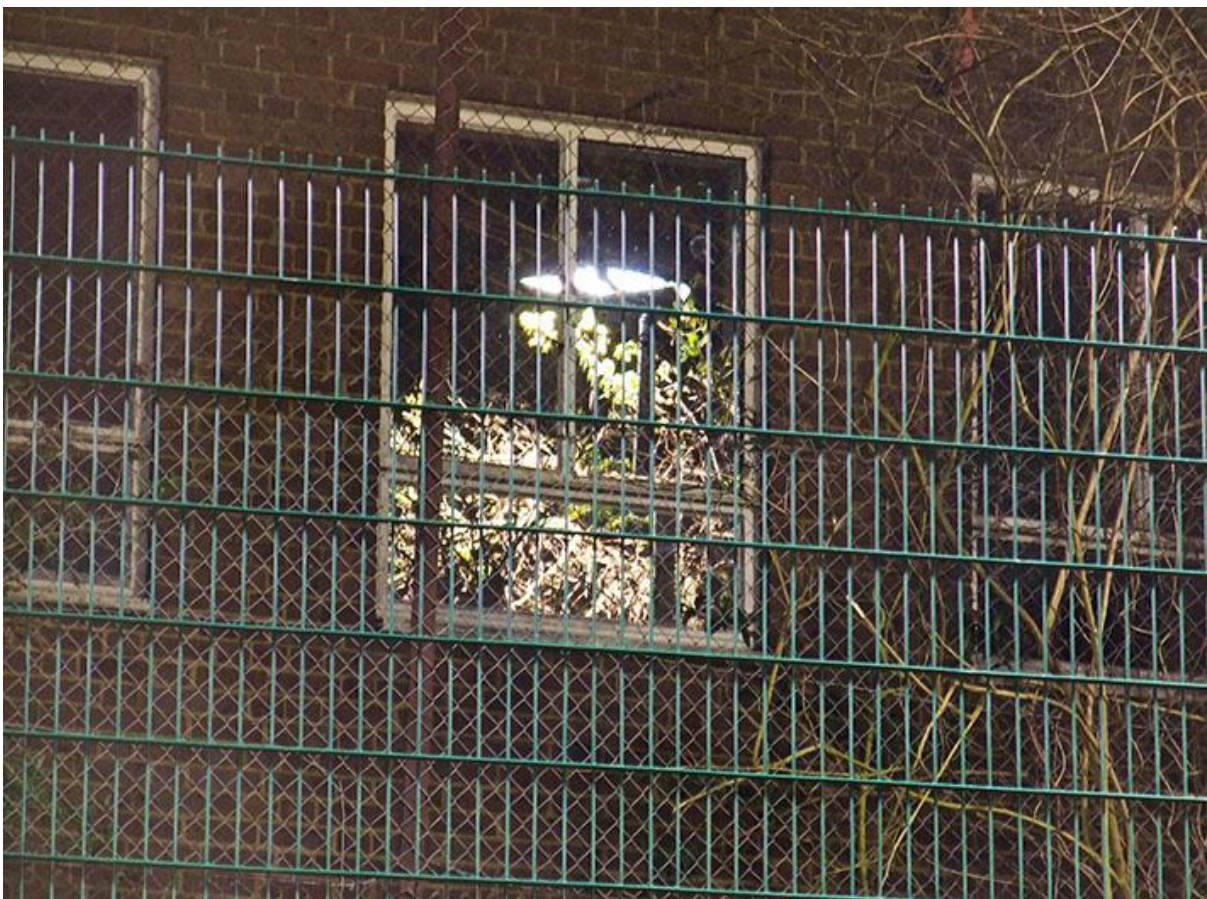


**View towards Eastern end of pitch**





**View showing some spill light on vertical face of Sorting Office (at end).**



**Closeup view of reflection in window**



**View showing source intensity**

## **Standards and Guidance**

The guidance documents and standards that should be referenced are:

ILP Guidance notes for the Reduction of Obtrusive Light 2011

ILP PLG 04 "Guidance on undertaking environmental impact assessments"

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

BSEN 12193 "Sports Lighting".

Clean Neighbourhoods and Environment Act 2005 – Light can be classified as a statutory nuisance.

## **Glossary of Lighting Terms**

Illuminance: this is the SI term for what is normally referred to as Illumination level. It is measured in lux. It refers to the light falling on a surface. Normally this is a horizontal plane such as the ground or desktop. It can also refer to vertical surfaces such as windows and building facades. Illuminance is measured in lux.

Lumen: is the SI term for luminous flux or quantity of light. A typical 60w tungsten filament lamp emits 700 lumens; a 1.5m fluorescent lamp emits around 5,500 lm.

Lux: is defined as an illuminance of 1 lumen/m<sup>2</sup>. A typical tennis court would measure 300 - 500 lux, a major traffic route 20 – 30 lux, a residential road 5 – 10 lux. Note that lux is normally taken to be the horizontal value but the vertical value is often relevant. E.g. vertical illuminance is important in recognising faces or tracking a ball in flight.

Luminance: This term is included in the glossary simply for completeness. It is a measure of objective brightness and is a function of how much light is reflected off a surface. There are many factors involved but the major one is the reflectance of the surface. For a given level of illuminance, dark surfaces have lower luminance than light coloured surfaces.

Luminaire: is the term for what is usually referred to as a light fitting. A fixture or lantern are other commonly used terms. These terms are used to distinguish them from the light source or lamp.