





Luminaire Location Summary for Public Realm Lighting by iGuzzini						
Agi32 Luminaire Reference No:	Label	X	Y	Z	Orient	Tilt
569	BV13_LV34	336093.7	393056.2	69.67	29.755	20
570	BV13_LV34	336093	393056.4	69.67	119.709	20
152	BV13_LV34	336085.9	393084.1	69.74	319.012	20
150	BV13_LV34	336085.2	393084.8	69.74	319.012	20
151	BV13_LV34	336086.5	393084.9	69.74	319.012	20
149	BV13_LV34	336085.8	393085.6	69.74	319.012	20
144	BV13_LV34	336095.1	393102	69.72	319.012	20
142	BV13_LV34	336094.4	393102.7	69.72	319.012	20
143	BV13_LV34	336095.7	393102.8	69.72	319.012	20
141	BV13_LV34	336095	393103.5	69.72	319.012	20
136	BV13_LV34	336102	393123.1	69.6	319.012	20
134	BV13_LV34	336101.3	393123.7	69.6	319.012	20
135	BV13_LV34	336102.7	393123.8	69.6	319.012	20
133	BV13_LV34	336102	393124.5	69.6	319.012	20
128	BV13_LV34	336103.7	393148.1	69.7	319.012	20
126	BV13_LV34	336103	393148.8	69.7	319.012	20
127	BV13_LV34	336104.4	393148.9	69.7	319.012	20
125	BV13_LV34	336103.7	393149.6	69.7	319.012	20
120	BV13_LV34	336116.3	393162.8	70	319.012	20
118	BV13_LV34	336115.6	393163.4	70	319.012	20
119	BV13_LV34	336116.9	393163.5	70	319.012	20
117	BV13_LV34	336116.2	393164.2	70	319.012	20
112	BV13_LV34	336128.2	393176.8	70.4	319.012	20
110	BV13_LV34	336127.5	393177.5	70.4	319.012	20
111	BV13_LV34	336128.9	393177.6	70.4	319.012	20
109	BV13_LV34	336128.2	393178.3	70.4	319.012	20
104	BV13_LV34	336141.5	393192.5	70.8	319.012	20
102	BV13_LV34	336140.8	393193.1	70.8	319.012	20
103	BV13_LV34	336142.2	393193.2	70.8	319.012	20
101	BV13_LV34	336141.5	393193.9	70.8	319.012	20
96	BV13_LV34	336154.9	393208.1	71.38	319.012	20
94	BV13_LV34	336154.2	393208.8	71.38	319.012	20
95	BV13_LV34	336155.6	393208.9	71.38	319.012	20
93	BV13_LV34	336154.9	393209.6	71.38	319.012	20
88	BV13_LV34	336168.2	393223.7	71.65	319.012	20
86	BV13_LV34	336167.5	393224.3	71.65	319.012	20
87	BV13_LV34	336168.9	393224.4	71.65	319.012	20
85	BV13_LV34	336168.2	393225.1	71.65	319.012	20
80	BV13_LV34	336181.6	393239.5	72.07	319.012	20
78	BV13_LV34	336180.9	393240.1	72.07	319.012	20
79	BV13_LV34	336182.2	393240.2	72.07	319.012	20
77	BV13_LV34	336181.5	393240.9	72.07	319.012	20
164	BV13_LV34	336194.3	393254.8	72.4	319.012	20
162	BV13_LV34	336193.6	393255.5	72.4	319.012	20
163	BV13_LV34	336195	393255.6	72.4	319.012	20
161	BV13_LV34	336194.3	393256.3	72.4	319.012	20
72	BV13_LV34	336211.4	393274.5	71.82	319.012	20
70	BV13_LV34	336210.7	393275.2	71.82	319.012	20
71	BV13_LV34	336212	393275.3	71.82	319.012	20
69	BV13_LV34	336211.3	393275.9	71.82	319.012	20
64	BV13_LV34	336225.7	393291.6	70.9	319.012	20

62	BV13_LV34	336225	393292.3	70.9	319.012	20
63	BV13_LV34	336226.4	393292.4	70.9	319.012	20
61	BV13_LV34	336225.7	393293	70.9	319.012	20
571	BV13_LV34	336093.5	393055.6	69.67	300.885	0
572	BV13_LV34	336092.8	393055.7	69.67	206.234	0
TOTAL NUMBER OF LUMINAIRE TYPE					56	
561	BV13_LV34	259.01	336177.8	393018.2	67.07	10
560	BV13_LV34	318.918	336178.2	393018.3	67.07	10
562	BV13_LV34	199.009	336177.4	393018.5	67.07	10
559	BV13_LV34	19.009	336178.2	393018.7	67.07	10
563	BV13_LV34	138.999	336177.5	393018.9	67.07	10
558	BV13_LV34	78.99	336177.9	393019	67.07	10
555	BV13_LV34	259.01	336161.6	393032.2	67.3	10
554	BV13_LV34	318.918	336162	393032.4	67.3	10
556	BV13_LV34	199.009	336161.2	393032.5	67.3	10
553	BV13_LV34	19.009	336162	393032.8	67.3	10
557	BV13_LV34	138.999	336161.3	393033	67.3	10
552	BV13_LV34	78.99	336161.7	393033.1	67.3	10
204	BV13_LV34	259.01	336123.2	393047.3	67.62	10
203	BV13_LV34	318.918	336123.6	393047.5	67.62	10
205	BV13_LV34	199.009	336122.8	393047.6	67.62	10
202	BV13_LV34	19.009	336123.6	393047.9	67.62	10
206	BV13_LV34	138.999	336122.9	393048.1	67.62	10
201	BV13_LV34	78.99	336123.3	393048.2	67.62	10
198	BV13_LV34	259.01	336141	393063.9	67.93	10
197	BV13_LV34	318.918	336141.4	393064.1	67.93	10
199	BV13_LV34	199.009	336140.5	393064.2	67.93	10
196	BV13_LV34	19.009	336141.4	393064.5	67.93	10
200	BV13_LV34	138.999	336140.7	393064.7	67.93	10
195	BV13_LV34	78.99	336141.1	393064.8	67.93	10
174	BV13_LV34	259.01	336105	393069.1	68	10
173	BV13_LV34	318.918	336105.4	393069.3	68	10
175	BV13_LV34	199.009	336104.6	393069.4	68	10
172	BV13_LV34	19.009	336105.4	393069.7	68	10
176	BV13_LV34	138.999	336104.7	393069.9	68	10
171	BV13_LV34	78.99	336105.1	393070	68	10
192	BV13_LV34	259.01	336154.7	393079.6	68.2	10
191	BV13_LV34	318.918	336155	393079.8	68.2	10
193	BV13_LV34	199.009	336154.2	393079.9	68.2	10
190	BV13_LV34	19.009	336155.1	393080.2	68.2	10
194	BV13_LV34	138.999	336154.4	393080.4	68.2	10
189	BV13_LV34	78.99	336154.7	393080.5	68.2	10
180	BV13_LV34	259.01	336117.8	393084.1	68.4	10
179	BV13_LV34	318.918	336118.2	393084.2	68.4	10
181	BV13_LV34	199.009	336117.4	393084.4	68.4	10
178	BV13_LV34	19.009	336118.2	393084.6	68.4	10
182	BV13_LV34	138.999	336117.5	393084.8	68.4	10
177	BV13_LV34	78.99	336117.9	393084.9	68.4	10
186	BV13_LV34	259.01	336131.5	393099.8	68.64	10
185	BV13_LV34	318.918	336131.8	393099.9	68.64	10
187	BV13_LV34	199.009	336131	393100.1	68.64	10
184	BV13_LV34	19.009	336131.9	393100.3	68.64	10
188	BV13_LV34	138.999	336131.2	393100.5	68.64	10
183	BV13_LV34	78.99	336131.5	393100.6	68.64	10
TOTAL NUMBER OF LUMINAIRE TYPE					48	

67	BV13_LV34	336209.3	393276.1	71.82	139.012	0
65	BV13_LV34	336210	393276.9	71.82	139.012	0
59	BV13_LV34	336223.7	393293.2	70.9	139.012	0
57	BV13_LV34	336224.4	393294	70.9	139.012	0
TOTAL NUMBER OF LUMINAIRE TYPE					4	
47	BH39_LK35	336382.5	393140.9	66.79	141.434	0
46	BH39_LK35	336350.4	393144.1	66.9	51.434	0
45	BH39_LK35	336333.5	393158.4	67.09	51.434	0
48	BH39_LK35	336372.7	393170.4	67.09	231.434	0
44	BH39_LK35	336316.7	393172.6	67.61	51.434	0
49	BH39_LK35	336355.8	393184.8	67.24	231.434	0
43	BH39_LK35	336300	393186.8	67.3	51.434	0
50	BH39_LK35	336339	393198.9	67.3	231.434	0
42	BH39_LK35	336283.3	393201.2	67	51.434	0
51	BH39_LK35	336322.3	393213.2	66.47	231.434	0
41	BH39_LK35	336266.5	393215.8	67.8	51.434	0
40	BH39_LK35	336255.6	393226.4	68.1	51.434	0
52	BH39_LK35	336305.6	393227.6	66.64	231.434	0
39	BH39_LK35	336239.3	393240.1	68.4	51.434	0
53	BH39_LK35	336289	393242.1	66.75	231.434	0
38	BH39_LK35	336223.6	393252.9	68.9	51.434	0
54	BH39_LK35	336277.8	393254.3	66.9	231.434	0
55	BH39_LK35	336262.1	393267	67.17	231.434	0
56	BH39_LK35	336245.9	393280.6	67.68	231.256	0
TOTAL NUMBER OF LUMINAIRE TYPE					19	
31	BH38_LK17	336059.8	393072.8	64	337.825	10
32	BH38_LK17	336068.5	393093	64.28	337.825	10
546	BH38_LK17	336076.6	393113.3	64.47	337.825	10
573	BH38_LK17	336085	393134.5	64.47	337.825	10
33	BH38_LK17	336091.8	393160.3	65	318.909	10
547	BH38_LK17	336106.3	393178.6	65	318.909	10
548	BH38_LK17	336120	393194.7	64.85	318.909	10
549	BH38_LK17	336137.6	393215.4	65.85	318.909	10
550	BH38_LK17	336155.2	393236.1	66.6	318.909	10
551	BH38_LK17	336172.3	393255.6	67.7	318.909	10
TOTAL NUMBER OF LUMINAIRE TYPE					10	

## Appendix E. On-Site Assessment Notes

### E.1 Non-Match Day Survey Results

Table E.1: Non-match day survey results

Survey Viewpoint Location No:	Time of reading	Lux level on the ground	Lux level at 1.5m
1	21:19	16.1	14.5
2	21:21	28.5	32.6
3	21:22	75.6	86
4	21:24	10	10.7
5	21:24	30.1	30.5
6	21:25	27.3	59
7	21:26	5	5
8	21:27	6.5	5.6
9	21:27	24.3	29.6
10	21:29	11	10
11	21:30	9.5	8.1
12	21:31	16.6	19.3
13	21:32	6.5	6.7
14	21:34	26.4	35.9
15	21:35	3.5	3.6
16	21:36	20.2	26
17	21:32	8.7	6.6
18	21:33	1.7	1.2
19	21:34	31.4	47.9
20	21:38	27.5	42.1
21	21:41	6	6.3
22	21:42	6	6.3
23	21:43	4.6	5.3
24	21:44	10.8	16
25	21:46	11.6	9.6
26	21:48	20.6	30.6
27	21:50	19	22.1
28	21:52	0.3	0.3
29	21:55	0.3	0.3
30	21:56	0.4	0.2
31	21:00	32	62.9
32	21:15	19.8	46.9
33	22:00	<1	<1
34	22:00	<1	<1
35	22:00	<1	<1

Survey Viewpoint Location No:	Time of reading	Lux level on the ground	Lux level at 1.5m
36	22:00	<1	<1
37	22:00	<1	<1
38	21:12	1.5	1.4
39	21:09	14.8	32.2
40	21:08	3.1	2.4
41	21:05	3.6	3.6

## E.2 Match Day Survey Results

Table E.2: Match day survey results

Survey Viewpoint Location No:	Time of reading	Lux level on the ground	Lux level at 1.5m
1	21:01	14.6	13
2	21:02	36	33
3	21:03	75	87
4	21:04	10.1	10.7
5	21:05	30	28.2
6	21:06	27.4	48.2
7	21:07	5.1	4.5
8	21:08	7	6.5
9	21:09	15.5	18.1
10	21:10	11	10.1
11	21:11	9.1	8.5
12	21:15	21.2	26.1
13	21:17	6.5	6.1
14	21:19	7.3	6.5
15	21:21	9.1	8.5
16	21:23	5	4.5
17	21:25	7.1	4.5
18	21:27	1.4	1
19	21:29	29	42
20	21:30	29.1	43.2
21	21:31	5.2	5
22	21:31	6.3	8.3
23	21:32	4.5	4.8
24	21:33	8.4	12.4
25	21:34	11	9.4

Survey Viewpoint Location No:	Time of reading	Lux level on the ground	Lux level at 1.5m
26	21:35	21	32.1
27	21:36	18.3	21
28	21:38	1.4	4
29	21:40	2.1	7.1
30	21:41	1.3	1.4
31	21:45	42.3	48.1
32	20:53	22	43
33	22:01	7.5	9.51
34	22:03	13.6	14.5
35	22:05	9.2	10.12
36	22:07	6.5	6.2
37	22:09	4.5	4.1
38	20:54	1.3	1
39	20:58	6.2	6.8
40	20:59	2.4	2
41	21:00	3.5	3.6





## Appendix F. Certificate of Calibration

### **F.1 Certificate of Calibration**

# CERTIFICATE OF CALIBRATION



ISSUED BY: **PowerKut Limited** (AJ Mare Laboratory)

DATE ISSUED: **15 October 2013**

CERTIFICATE NUMBER: **C707436**

Engineering Excellence since 1974



## PowerKut Limited

110 CHURCH ROAD  
PERRY BARR  
BIRMINGHAM  
WEST MIDLANDS  
B42 2LF

Tel: **(0121) 356 8511**  
Fax: **(0121) 344 3644**  
E-mail: **sales@powerkut.co.uk**

T3085

Page 1 of 2

Approved Signatory

☐ A K Glover

☒ P Bennett

Web: **www.powerkut.co.uk**

Company: **TEST & MEASUREMENT HIRE LIMITED**  
**16 SWORDFISH CLOSE**  
**SWORDFISH BUSINESS PARK**  
**BURSCOUGH**  
**L40 8JW**

Order No: **50904**

Date Calibrated: **15 October 2013**

### Equipment Information

Description: **LIGHT METER**  
Manufacturer: **TES**  
Model Number: **1330A**  
Serial Number: **040630008**  
Asset Number:

### Environmental Conditions

Temperature: **20 °C ± 2 °C**  
Relative Humidity: **50% ± 20%**

Power was from internal battery/batteries

Procedure Name: **CP 508**

Version Number: **1.00**

Last Modified: **21 September 2007**

Basis of Test: **MANUFACTURERS SPECIFICATION**

Specification Date: **DECEMBER 2006**

Cal. Interval: **12 MONTHS**

Cal. Due Date: **15 October 2014**

Performed By: **PAUL BENNETT**

Calibration Result: **PASSED.**

PowerKut Limited standards are directly traceable to National Standards. Certificates of Calibration for our standards are available for inspection upon request.

Reference Type.	Serial Number.	Asset Number.	Cal. Due Date
MEGATRON DL5 DIGITAL LIGHT METER	X031/R8	AJM012	22 February 2014
RADIOMETER	041701-01	RI 197	18 May 2014
VISIBLE LIGHT SENSOR	050300-01	RI 198	18 May 2014

# CERTIFICATE OF CALIBRATION

CERTIFICATE NUMBER

C 707436

Page 2 of 2

ISSUED BY: **PowerKut Limited** (AJ Mare Laboratory)Manufacturer: **TES**  
Serial Number: **040630008**Model Number: **1330A**  
Asset Number:

The results of the comparison between PowerKut Limited Standards and the Unit Under Test Were as follows.

Range	Applied Value	Tolerance -	Tolerance +	Indicated Value
20	0.00 Lux	-0.10 Lux	0.10 Lux	0.00 Lux
	10.00 Lux	9.60 Lux	10.40 Lux	10.11 Lux
200	100.0 Lux	96.0 Lux	104.0 Lux	100.1 Lux
2000	300 Lux	281 Lux	319 Lux	297 Lux
	500 Lux	475 Lux	525 Lux	500 Lux
	700 Lux	669 Lux	731 Lux	700 Lux
	1000 Lux	960 Lux	1040 Lux	1000 Lux
	1500 Lux	1445 Lux	1555 Lux	1509 Lux
20000	5000 Lux	475 Lux	525 Lux	500 Lux X 10

The Uncertainty of Measurement did not exceed:

0 - 1999 Lux  $\pm 5\%$   
2000 - 5000 Lux  $\pm 10\%$ 

\*\*\*\*\* END \*\*\*\*\*





## Appendix G. Ian Rushforth Confirmation

### 10.2 Ian Rushforth Confirmation Email



## Hawkins, Dean L

---

**From:** Rushforth, Ian <Ian.Rushforth@liverpool.gov.uk>  
**Sent:** 02 May 2014 16:17  
**To:** McKay, Jamie M  
**Subject:** RE: Liverpool Football Club - Light pollution limits etc...

Jamie,

That is fine.

Regards,  
Ian

---

**From:** McKay, Jamie M [mailto:Jamie.McKay@mottmac.com]  
**Sent:** 02 May 2014 15:33  
**To:** Rushforth, Ian  
**Cc:** Lawrance, Andrew L; Jenkins, Hattie E; Ellen Freegard (ellen.freegard@christolmanagement.co.uk); Clibborn, Richard W  
**Subject:** Liverpool Football Club - Light pollution limits etc...  
**Importance:** High

Mr Rushforth,

As discussed I have summarised your requirements with regard to environmental zones and the associated light pollution restrictions to be implemented for the Liverpool Football Club development.

### Environmental Zone Classification for Liverpool Football Club

To assess the levels of obtrusive light an appraisal was carried out to classify the site in terms of its 'Environmental Zone' which equates to the district brightness of the surroundings, see Table 1.1 for environment zone information.

In the case of a site being between two possible environmental zones, ILP guidance recommends that the most difficult environmental zone of the two options to achieve is assigned for assessment purposes.

In this case it could be argued that the site lies between an E3 and E4 zone. Therefore in line with ILP guidance, we have applied E3.

### Site – Environmental Zone Categorised as E3 – Suburban

Table 1.1: Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark areas	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

Source: ILP guidance notes for the reduction of obtrusive light – 2011

## Obtrusive Light Limitations for an E3 zone

It can be seen from Table 1.2 below that a lighting installation located in an area deemed to be more sensitive will understandably equate to greater constraints with regards to obtrusive light. Based on our appraisal, see below for maximum levels of obtrusive light associated with an E3 Zone.

Table 1.2: Obtrusive Light Limitations (ILP guidance notes for the reduction of obtrusive light 2011)

Environmental Zone	Sky Glow ULR (Max %)	Light Intrusion (onto Windows) Ev (Lux)		Luminaire Intensity (Candelas)		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E0	0	0	0	0	0	0
E1	0	2	0	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	2,5000	25

Source: ILP guidance notes for the reduction of obtrusive light - 2011

**You have also stated that Liverpool Council require the Pre-Curfew limit for light intrusion onto windows to be reduced from 10 Lux to 6 Lux.**

You have also kindly confirmed that the curfew for control of obtrusive light is 23:00 hrs.

Please confirm your agreement of the classification, limits and curfew within this e-mail to enable us to complete the lighting impact assessment.

Thanks you for your assistance with this matter.

Kind Regards

**Jamie McKay**

Senior Lighting Engineer



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### Mott MacDonald

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69-75 Thorpe Road  
Norwich  
NR1 1UA  
United Kingdom

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## Appendix H. Stephen Judge Confirmation



## McKay, Jamie M

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**Sent:** 20 May 2014 10:54  
**Subject:** FW: LFC - External Column lighting design

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**From:** Stephen Judge [mailto:Stephen.Judge@iguzzini.co.uk]  
**Sent:** 16 May 2014 10:03  
**To:** McKay, Jamie M  
**Subject:** RE: LFC - External Column lighting design

Dear Jamie,  
I am happy to confirm the following ULOR percentage values.

- 1> BV13 (TYPE A1) angled by 20 degrees = ULOR 5.46%
- 2> BH38 (TYPE D1) angled by 10 degrees = ULOR 0.3%

I trust this information meets with your approval.

Steve

Light first. Stephen.



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**From:** McKay, Jamie M [mailto:Jamie.McKay@mottmac.com]  
**Sent:** 16 May 2014 08:48  
**To:** Stephen Judge  
**Subject:** RE: LFC - External Column lighting design

Great, Thanks...

Jamie

---

**From:** Stephen Judge [mailto:Stephen.Judge@iguzzini.co.uk]  
**Sent:** 16 May 2014 08:35

**To:** McKay, Jamie M  
**Subject:** RE: LFC - External Column lighting design

Dear Jamie,  
I am on the case this morning.

Light first. Stephen.



Light first. Join the [driftbar.co.uk](http://driftbar.co.uk) — Light First. **iGuzzini**

**Stephen Judge**  
Senior Lighting Designer

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**From:** McKay, Jamie M [<mailto:Jamie.McKay@mottmac.com>]  
**Sent:** 15 May 2014 17:33  
**To:** Stephen Judge; [lh@planit-ie.com](mailto:lh@planit-ie.com); Andrew Taylor  
**Cc:** Wilson, Craig K; Hilton, Allan ([AHilton@globalskm.com](mailto:AHilton@globalskm.com))  
**Subject:** RE: LFC - External Column lighting design

Hi Stephen,

I need a little assistance if possible, basically I need the Upward Light Ratio (ULR) % for the attached luminaires at a 20 degree and 10 degree tilt.

Our software seems to be struggling with these two fittings for some reason, can you help?

Kind Regards

**Jamie McKay**

Senior Lighting Engineer



**Mott MacDonald**

1<sup>st</sup> Floor  
69-75 Thorpe Road  
Norwich

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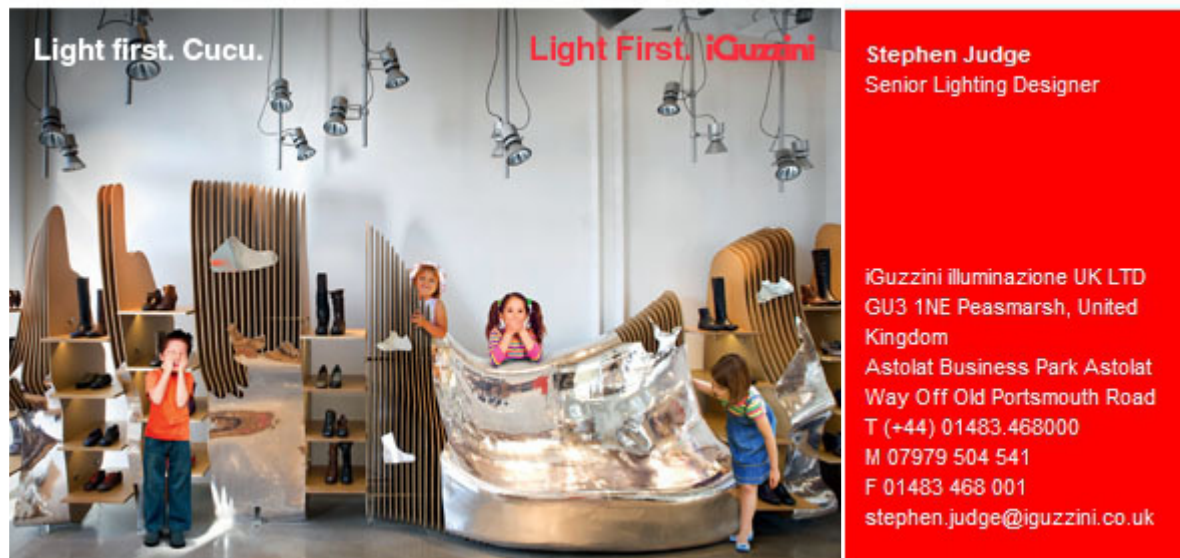
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**From:** Stephen Judge [<mailto:Stephen.Judge@iguzzini.co.uk>]  
**Sent:** 09 May 2014 17:24  
**To:** Wilson, Craig K  
**Subject:** FW: LFC - External Column lighting design

Light first. Stephen.



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---

**From:** Stephen Judge  
**Sent:** 09 May 2014 13:42  
**To:** [lh@planit-ie.com](mailto:lh@planit-ie.com); [ahilton@globalskm.com](mailto:ahilton@globalskm.com); Andrew Taylor ([andrew.taylor@iguzzini.co.uk](mailto:andrew.taylor@iguzzini.co.uk))  
**Subject:** LFC - External Column lighting design

Dear All,

Further to the stadium forecourt lighting design I have submitted to date. We have recently been informed that the stadium is now deemed to be located within a E3 environment as detailed in the ILE Guidance for the reduction of Obtrusive light GN01:2011. To this end we have had to modify our lighting layout in order to attempt to comply with the revised requirements. The challenge I have found has been to limit the amount of light evident on the residential façade along Alroy street while still providing sufficient lighting and uniformity within the grounds of the stadium. To this end I have provided an up to date plan which I have tried to keep as close to the original design intent as envisaged by Planit.

I have also provided a detailed Excel spread sheet which lists the requirements as stated in the ILE Guidance document and our results both post and pre-curfew. The boxes which are coloured in green show compliance whereas the red filled boxes show where we fall short of the aforementioned requirement. The only area of concern I see is the maximum illuminance evident on the vertical reference plane (part2) of Alroy Street. The issue we have is that there are lanterns just 1.5m away from this façade, dedicated to lighting this section of Alroy street. As the ILE document acknowledges *'In the case of road lighting on public highways where building façades are adjacent to the lit highway, these levels may not be obtainable'*. I would like to mention that the WoW optic used in this location is both asymmetric so that the light is thrown away from the building and also LED in source. LED's offer by far the best optical light control where by the light can be directed in the intended location whereas, a conventional lamp source will always have a degree of 'general light scatter' which cannot be designed out through reflector design. To this end I am convinced that there is very little chance of improving this situation. I would also hasten to mention that we are attempting to comply with a maximum illuminance of 2lux akin to moon light. The actual value calculated is a mere 3.26lux maximum which I believe to be very good given location of a major sporting stadium just across the road. Please also consider that in the absence of suitable façade elevation drawings I have had to base my study of a 5m high vertical band running the length of the facades, starting 1m above pavement level. To this end there is a good possibility that there simply will not be a window in the location where the 3.26 lux peak is measured.

#### **General summary of illuminance results – Horizontal.**

Car Park >20lux 0.25Uo (compliant with BSEN12464-2)

TV Car Park >20lux 0.25Uo (compliant with BSEN12464-2)

Alroy Road >10lux 0.30Uo (compliant with BS5489-1 table 5 Class S2)

Forecourt Zones Matchday (pre-curfew) >20lux 0.30Uo

Forecourt Zones (post-curfew) >10lux 0.34Uo

#### **Next Step.**

The attached represents a large body of work which is, in my opinion the best option we can provide when considering the aesthetical design as proposed by Planit while considering the illuminance levels, uniformity and the ILE Obtrusive light guidance document. If I can receive general approval by the wider design team and interested parties I can look to update the column / lantern arrangement drawings I have issued before and finalise the luminaire specification in document form for you all.

I will be out of the office all day Monday and Tuesday with limited access to e-mails. If you need to discuss in detail please contact me on Wednesday.

I trust this information meets with your understanding.

**Light first. Stephen.**





**Stephen Judge**  
Senior Lighting Designer

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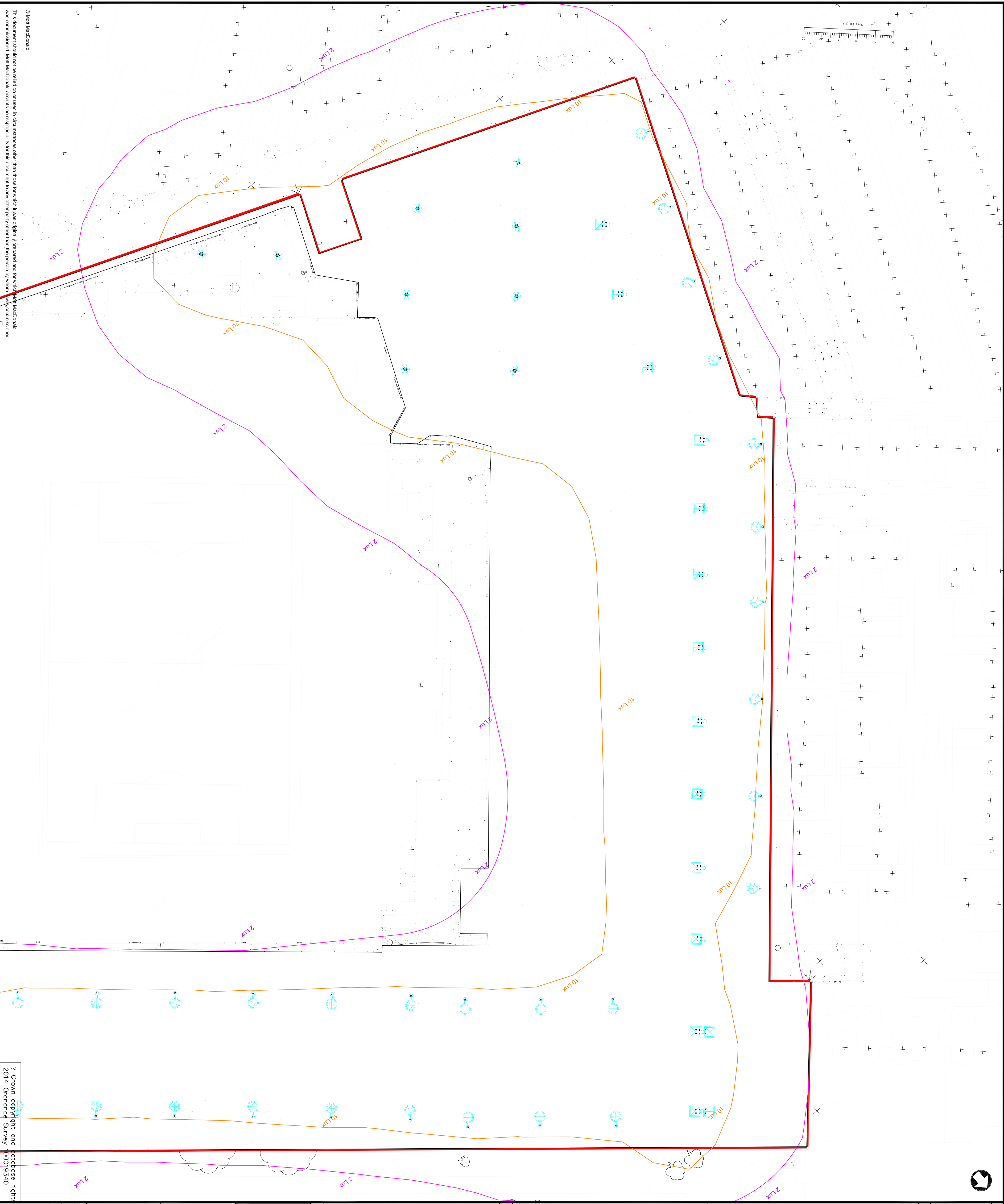
## Appendix I. Spill Light Contour Plans

Notes

LIGHTING SYMBOLS ARE INDICATIVE AND ARE NOT TO SCALE.  
DO NOT SCALE FROM THIS DRAWING.  
FOR DETAILS OF LUMINAIES, REFER TO APPENDIX D.2

Key to symbols

- Site Boundary
- 10 Lux Contour Line
- 2 Lux Contour Line



Reference drawings

Rev	Date	Drawn	Description	Chk'd	App'd



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Client

LFC EIA - Lighting Assessment  
Spill Light Countour Plan  
Pre Cufew Worst Case Scenario  
Drawing 1 of 2

Designed	Ian Hearnsum	U/H	Eng check	Jamie Mckay	JMM
Drawn	Ian Hearnsum	U/H	Coordination	Hattie Jenkins	
Dwg check	Jamie Mckay	JMM	Approved	A. Lawrence	
Scale at A1	1:500	Status	PRE	Rev	P1

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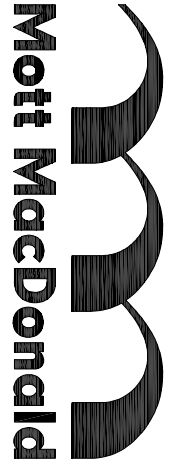
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FOR DETAILS OF LUMINAIRE, REFER TO APPENDIX D.3.

Key to symbols

- Site Boundary
- 10 Lux Contour Line
- 2 Lux Contour Line

Reference drawings

Rev	Date	Drawn	Description	Chk'd	App'd



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Client

Title

LFC EIA - Lighting Assessment  
Spill Light Contour Plan  
Pre Currew Worst Case Scenario  
Drawing 2 of 2

Designed	Ian Heasum	LJH	Eng check	Jamie Mckey	JMM
Drawn	Ian Heasum	LJH	Coordination	Hattie Jenkins	
Dwg check	Jamie Mckey	JMM	Approved	A.Lawrance	
Scale at A1	1:500	Status	PRE	Rev	P1

Drawing Number

317415 - EIA - 004

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P:\Mott\MM Projects\001 - General External Lighting\002 - Project Folder\317415 - Airfield - Liverpool\CD\Contour Plan.dwg May 22, 2014 - 4:48PM 00069864

## 2. TV Reception and Telecommunications

