Kidderpore Avenue, Phase 2

External Lighting Report

Prepared for Barratt London

9596-REP-002 Revision I1

04 October 2016

WHITECODE DESIGN ASSOCIATES

BUILDING SERVICES DESIGN CONSULTANTS

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Contents

Revisions:

Rev No.:	Date:	Status/Comments:	Prepared by:	Checked by:
1	04/10/2016	Issue for information.	JM	RS

1.0 Introduction

This report has been prepared to provide commentary on the design philosophy behind the external lighting scheme at the Kidderpore Avenue Phase 2 site.

The report focuses on the imposed planning conditions and aims to demonstrate that these conditions will be met and what measures have been taken to ensure the lighting design is within the constraints of the conditions.

The scheme has been designed to comply with the recommendations of BS 5489 Code of Practice for the Design of Road Lighting, Secured by Design New Homes 2010, CIBSE Lighting Guide 6: The exterior environment, Institute of Lighting Professional's (ILP) Lighting against crime guide and the ILP guidance notes for the reduction of obtrusive light.

This document details the obtrusive light limitations for exterior lighting installations.

The report also details the relevant Secure by Design requirements, which the external lighting has been designed in accordance with, as far as reasonably practicable.

Appendix A comprises the external lighting calculation results produced using Dialux lighting calculation software to demonstrate compliance with the above.

Appendix B comprises of the external lighting drawings.

2.0 Light Spill

2.1 Compliance with ILP Guidance Notes for Reduction of Obstructive Light (GNO1:2011

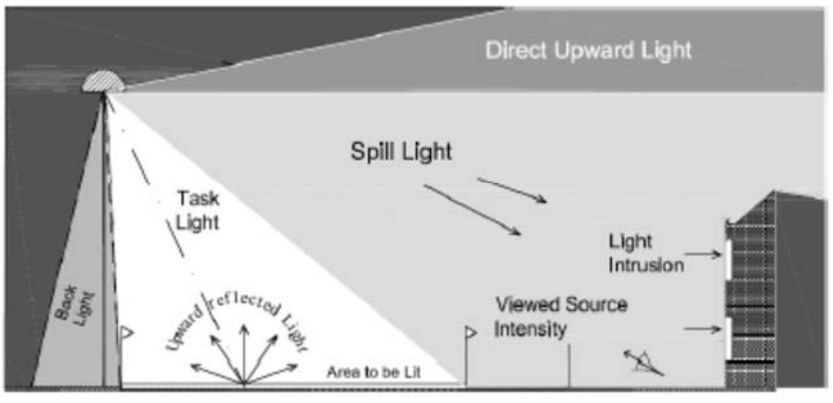
The external lighting scheme has been designed to minimise glare into surrounding houses while illuminating the external areas for security and safety purposes, as economically possible.

This will be achieved by using luminaires with directional beams illuminating the communal walkways and access routes, either column mounted at a height of 4 metres, wall-mounted at a height to reduce light spill into resident's windows or recessed into the soffit above.

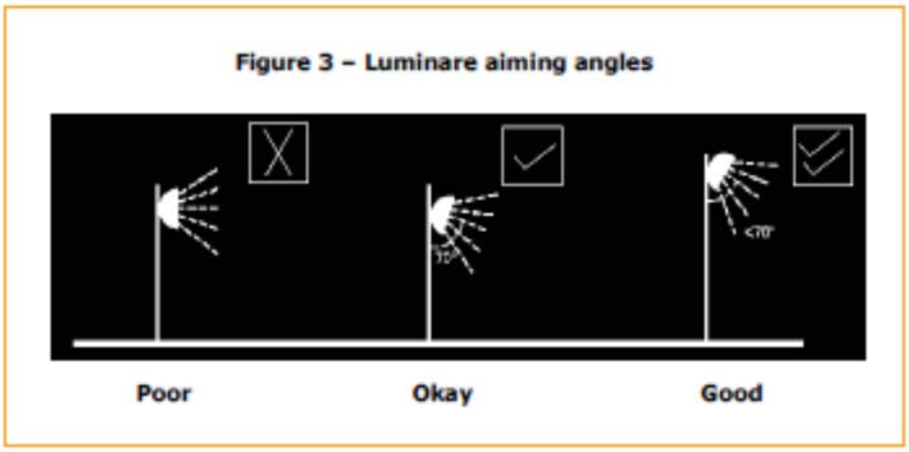
In all areas where there is a high risk of light intrusion into resident's windows, fittings with a main beam angle of less than 70° have been specified. This is to ensure they can be categorised as task lights as indicated by figure 1 below, from GN01:2011. This is appropriate to all fittings except any decorative up-lights, downlights and recessed strip lights that are at an irrelevant position from dwellings.

Full details of the luminaires are shown in the Dialux calculation results.

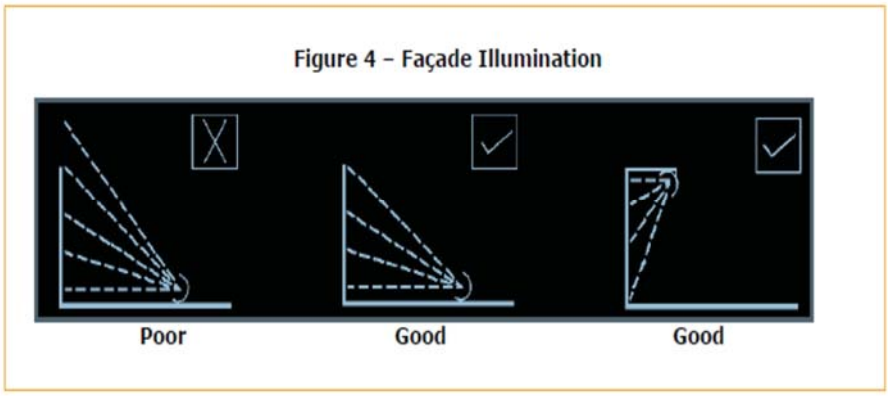
Figure 1 – Types of obtrusive light



(Figure 1 extracted from Guidance Notes for the reduction of Obtrusive Light GN01:2011

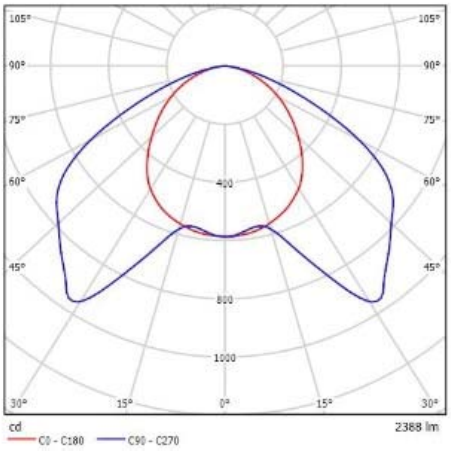


(Figure 3 extracted from Guidance Notes for the reduction of Obtrusive Light GN01:2011)



(Figure 4 extracted from Guidance Notes for the reduction of Obtrusive Light GN01:2011)

The images below provide an example of the details of the type of fittings specified on the site. The example is of a Bega column mounted luminaire, with a directional downwards facing beam of no more than 70°. This demonstrates the luminaire has been selected to reduce light spill and complies with ILP Guidance Notes for Reduction of Obtrusive Light GN01:2011.



2.2 Horizontal Illuminance on Surrounding Houses

According to the guidance notes for the reduction of obstructive light Kidderpore Avenue Phase 2 is deemed an E3 area, as indicated on extract below.

ENVIRONMENTAL ZONES

It is recommended that Local Planning Authorities specify the following environmental zones for exterior lighting control within their Development Plans.

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 1 extracted from Guidance Notes for the reduction of Obtrusive Light GN01:2011)

Table 1 indicates the type of scheme 'E3' designation covers.

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

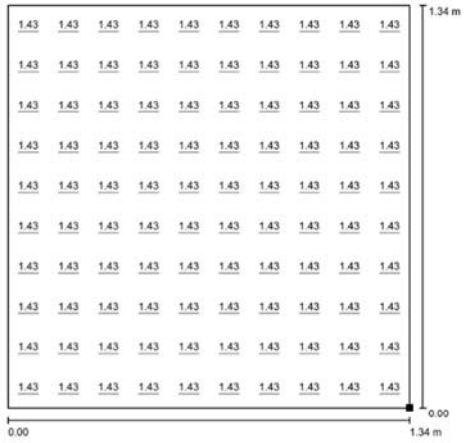
(Table 2 extracted from Guidance Notes for the reduction of Obtrusive Light GN01:2011)

According to table 2, a maximum illumination level of 2 lux is permissible into windows.

The following calculations show examples of where light intrusion into resident's windows is most likely. The first is plot 86 in block K and the second is plot 102 on block L. These areas have been chosen as they are situated on the lowest level on these blocks where there are dwellings and also facing areas where beams of fittings on opposing buildings could cause light intrusion. As

demonstrated in the below calculations, the illumination levels meet the criteria detailed in table 2 of GN01:2011 which states that a post-curfew lux level of 2 is acceptable.

Exterior Scene / K-02 Plot 86 / Value Chart (E, Perpendicular)

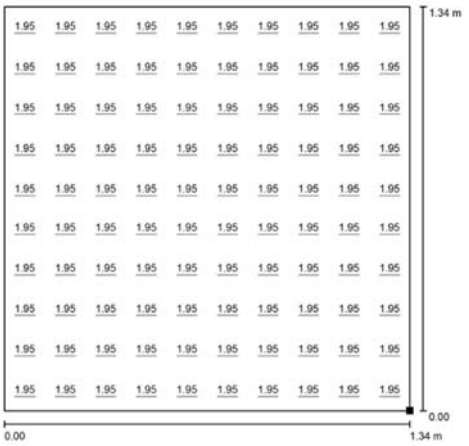


Values in Lux, Scale 1 : 11

Position of surface in external scene:
Marked point:
(-4.781 m, 32.661 m, 0.830 m)

Grid: 10 x 10 Points

Exterior Scene / L-01 Plot 102 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 11

Position of surface in external scene:
Marked point:
(6.165 m, 31.320 m, 4.330 m)

Grid: 10 x 10 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
1.95	1.95	1.95	1.000	1.000

Secured by Design

The external lighting design has been developed to comply with Secured by Design New Homes 2010 to achieve the required illumination levels and uniformity values.

Lighting has been designed and modelled in order to assess the illumination levels likely to be achieved.

The illumination levels recommended for urban pathways and amenity areas are 5-10 lux and this has been met in all areas of the site with the addition of a good level of uniformity.

All luminaires have a minimum colour rendering index of 60Ra.

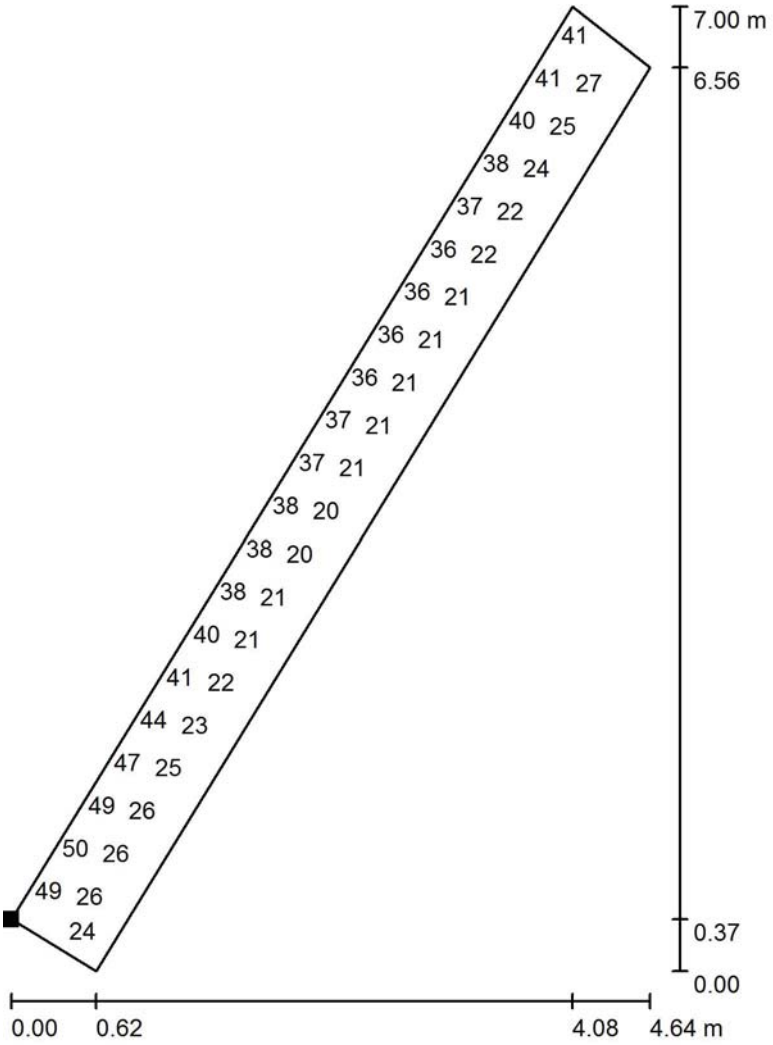
Conclusion

The calculations undertaken indicate that if the lighting is installed as indicated on the drawings, light spill will be minimised, whilst still providing the minimum amount of illumination to provide a safe environment for compliance with Secured by Design. The scheme proposed therefore meets the planning constraints and the relevant planning conditions should be discharged.

Appendix A Dialux Calculations Results

Operator
Telephone
Fax
e-Mail

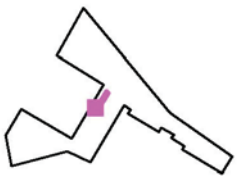
External lighting / 1 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 55

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(1.019 m, 38.569 m, 0.000 m)

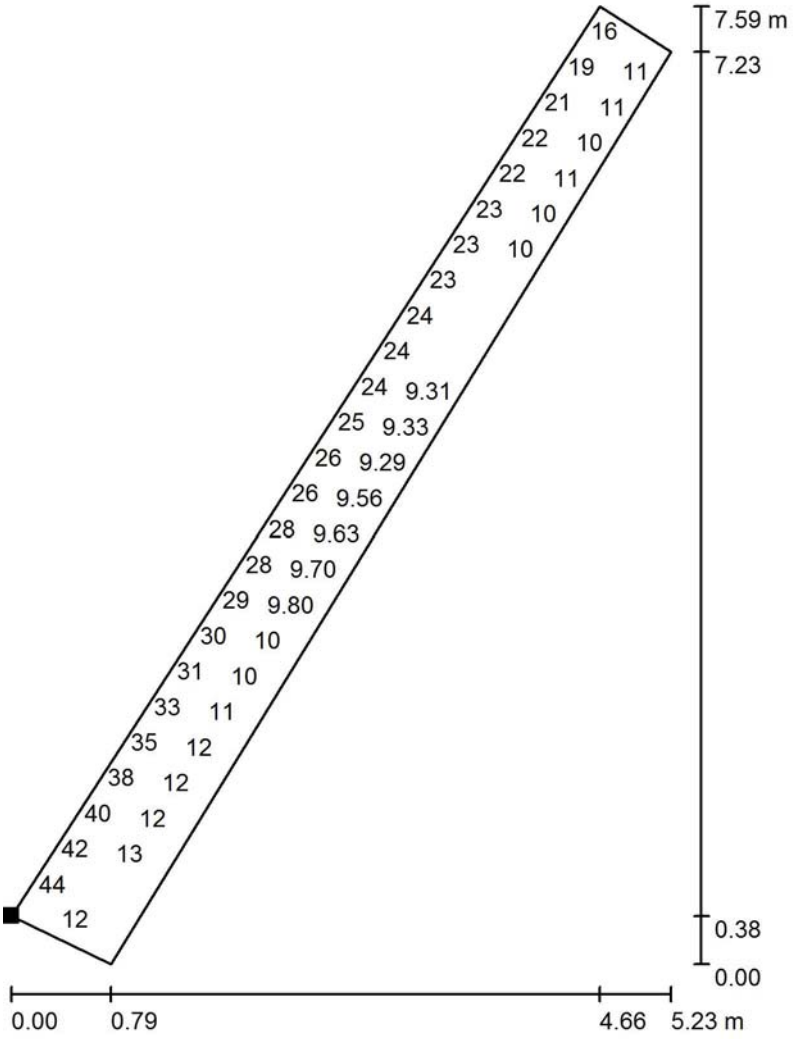


Grid: 64 x 8 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
29	16	65	0.551	0.250

Operator
Telephone
Fax
e-Mail

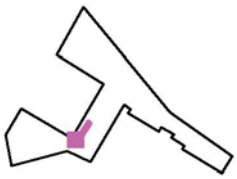
External lighting / 2 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 60

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-6.761 m, 25.714 m, 0.000 m)

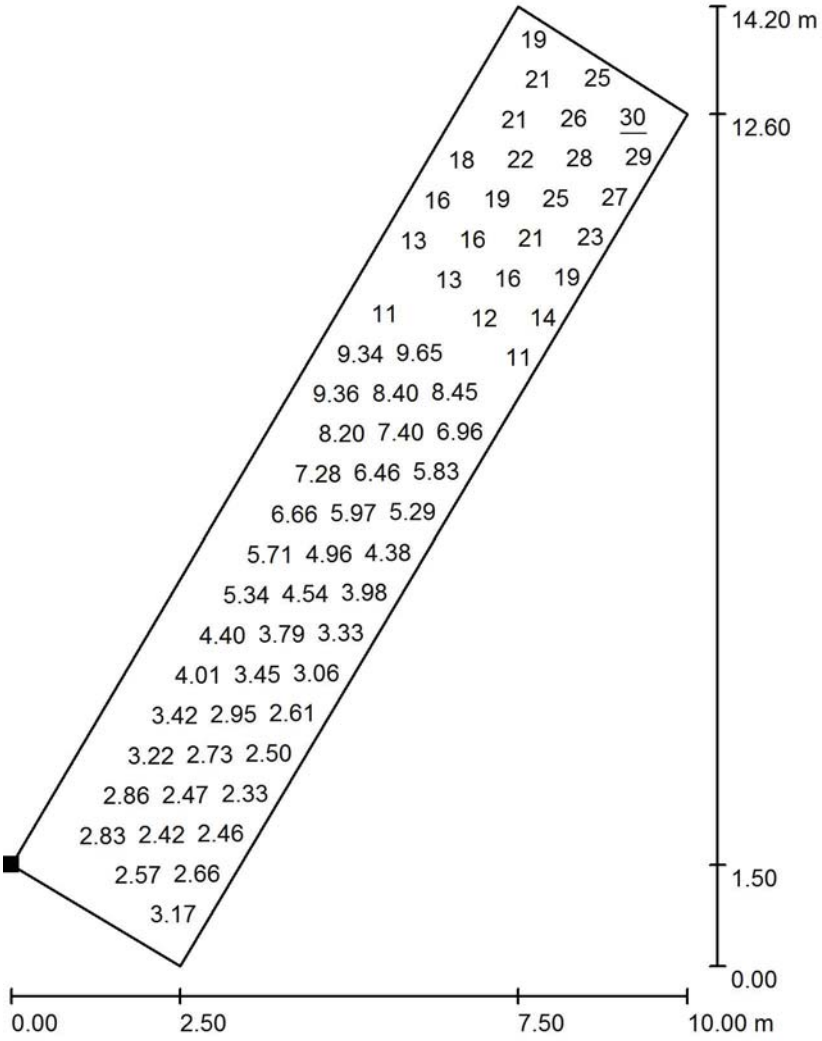


Grid: 128 x 32 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
18	6.56	71	0.355	0.092

Operator
Telephone
Fax
e-Mail

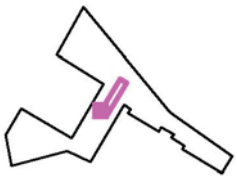
External lighting / 3 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 112

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(2.900 m, 37.300 m, 0.000 m)

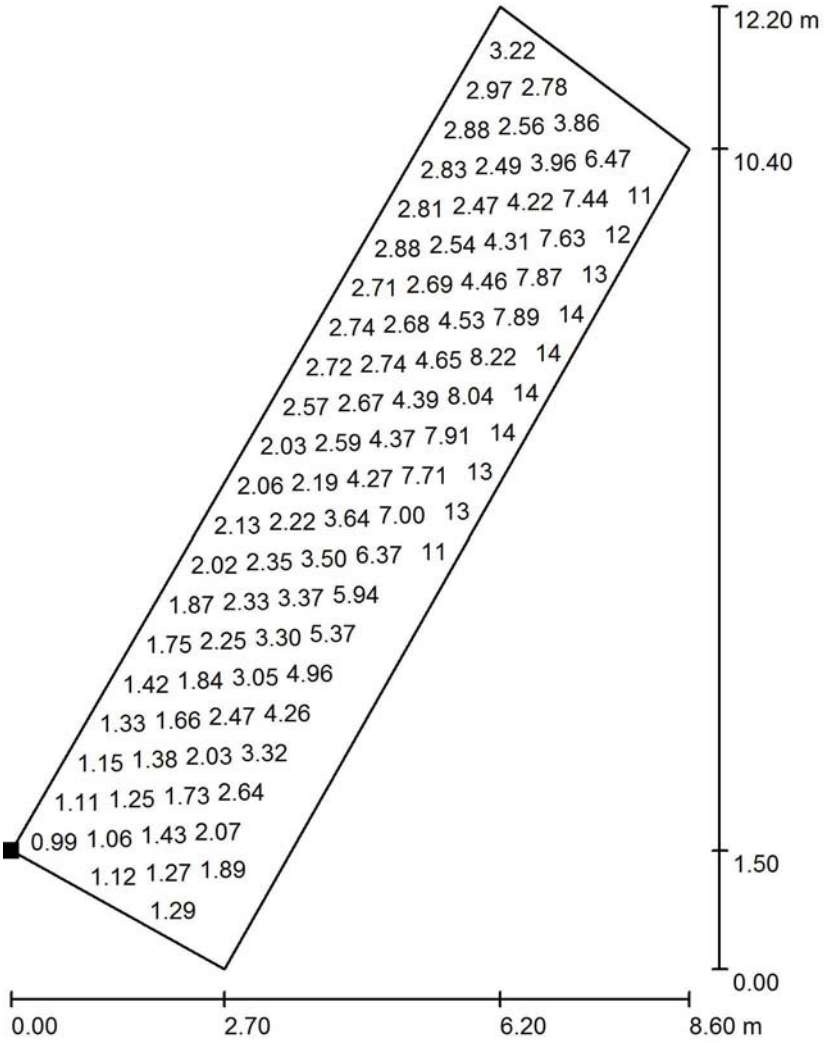


Grid: 64 x 16 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
9.86	2.27	30	0.230	0.075

Operator
Telephone
Fax
e-Mail

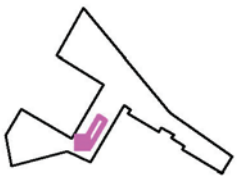
External lighting / 4 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 96

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-4.087 m, 24.850 m, 0.000 m)

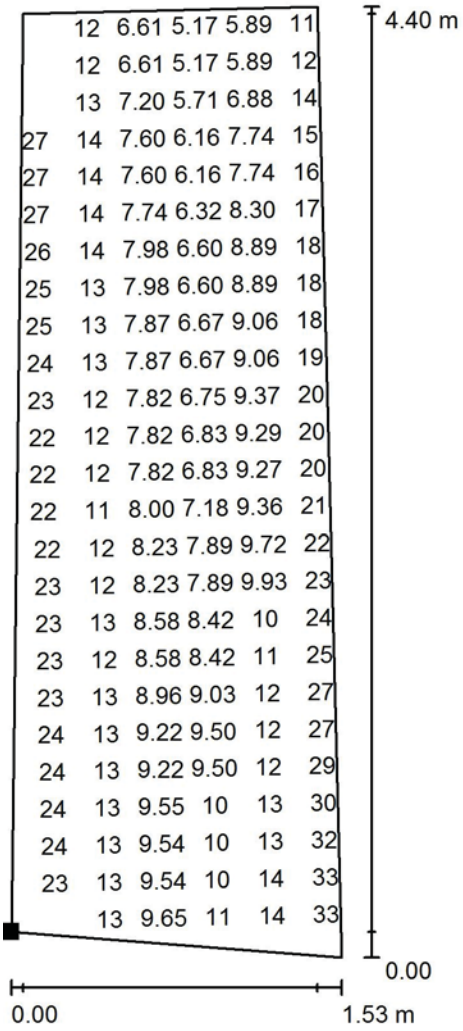


Grid: 128 x 32 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
4.33	0.95	18	0.219	0.052

Operator
Telephone
Fax
e-Mail

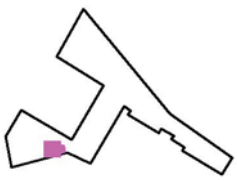
External lighting / 5 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 35

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-15.951 m, 22.679 m, 0.646 m)

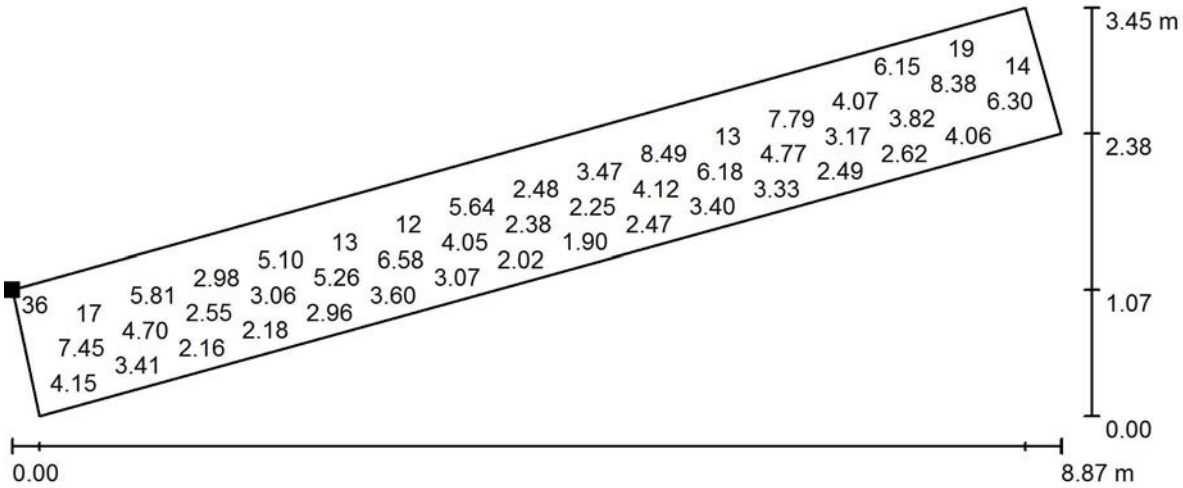


Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
14	4.85	46	0.343	0.106

Operator
Telephone
Fax
e-Mail

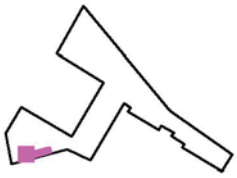
External lighting / 6 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 64

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-26.077 m, 19.457 m, 0.000 m)

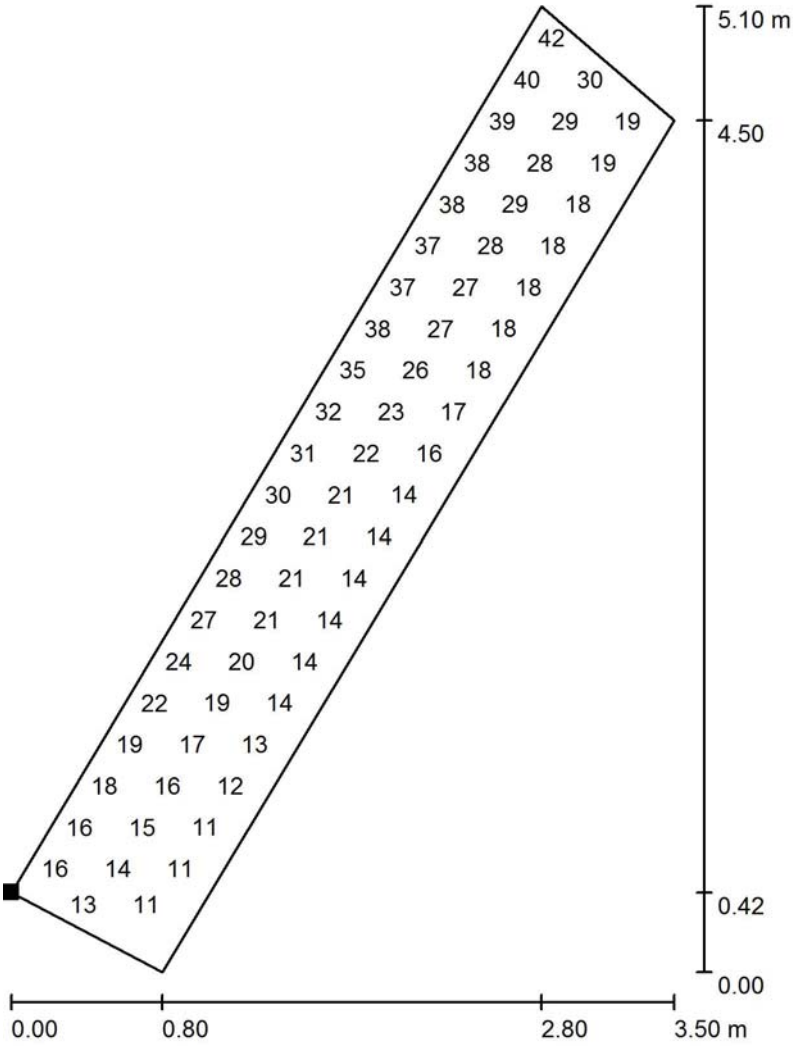


Grid: 64 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
9.01	1.84	115	0.204	0.016

Operator
Telephone
Fax
e-Mail

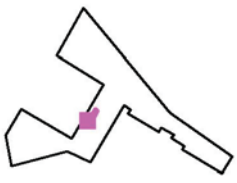
External lighting / 7 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 40

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-2.100 m, 33.520 m, 0.000 m)

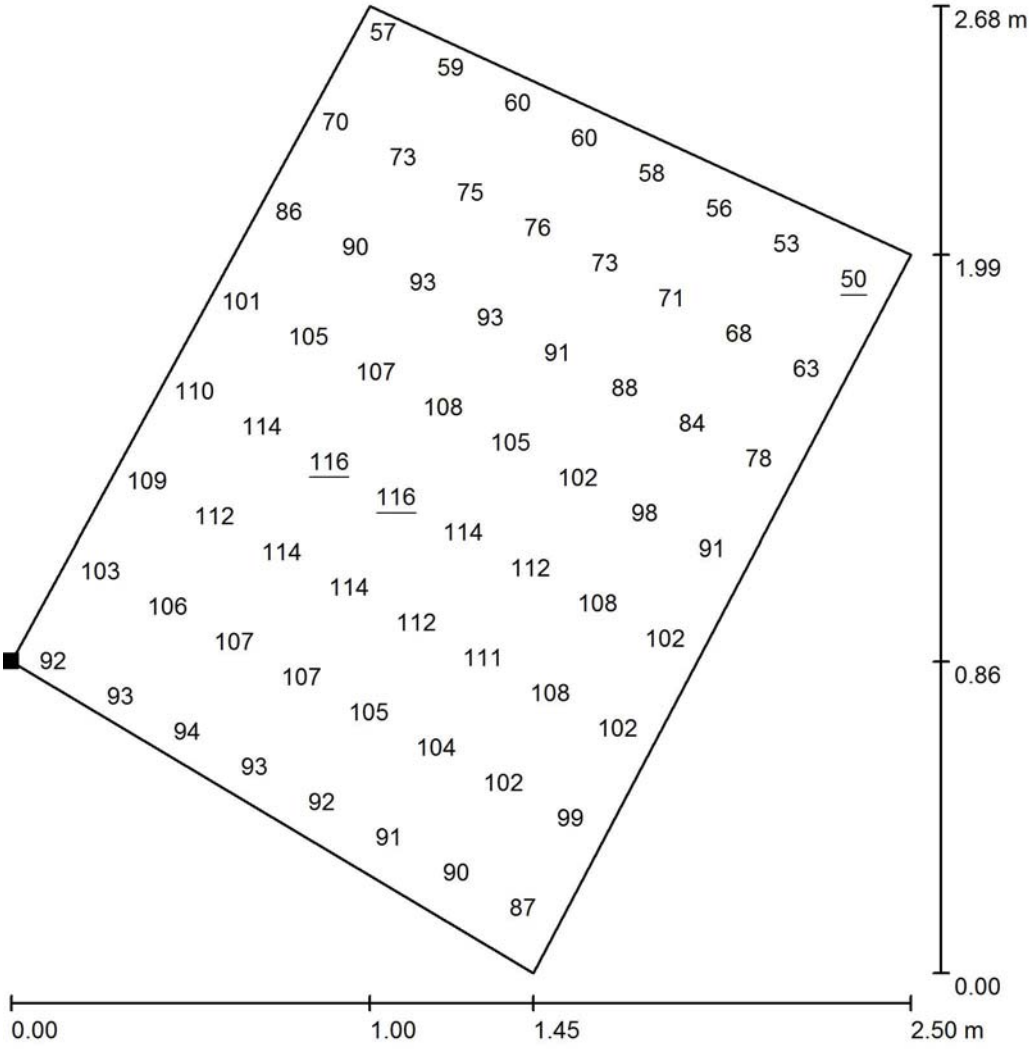


Grid: 64 x 16 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
22	9.44	51	0.429	0.183

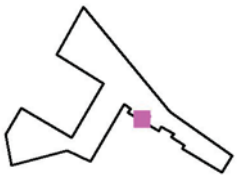
Operator
Telephone
Fax
e-Mail

External lighting / 8 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 21

Position of surface in external scene:
Marked point:
(19.104 m, 33.772 m, 0.750 m)

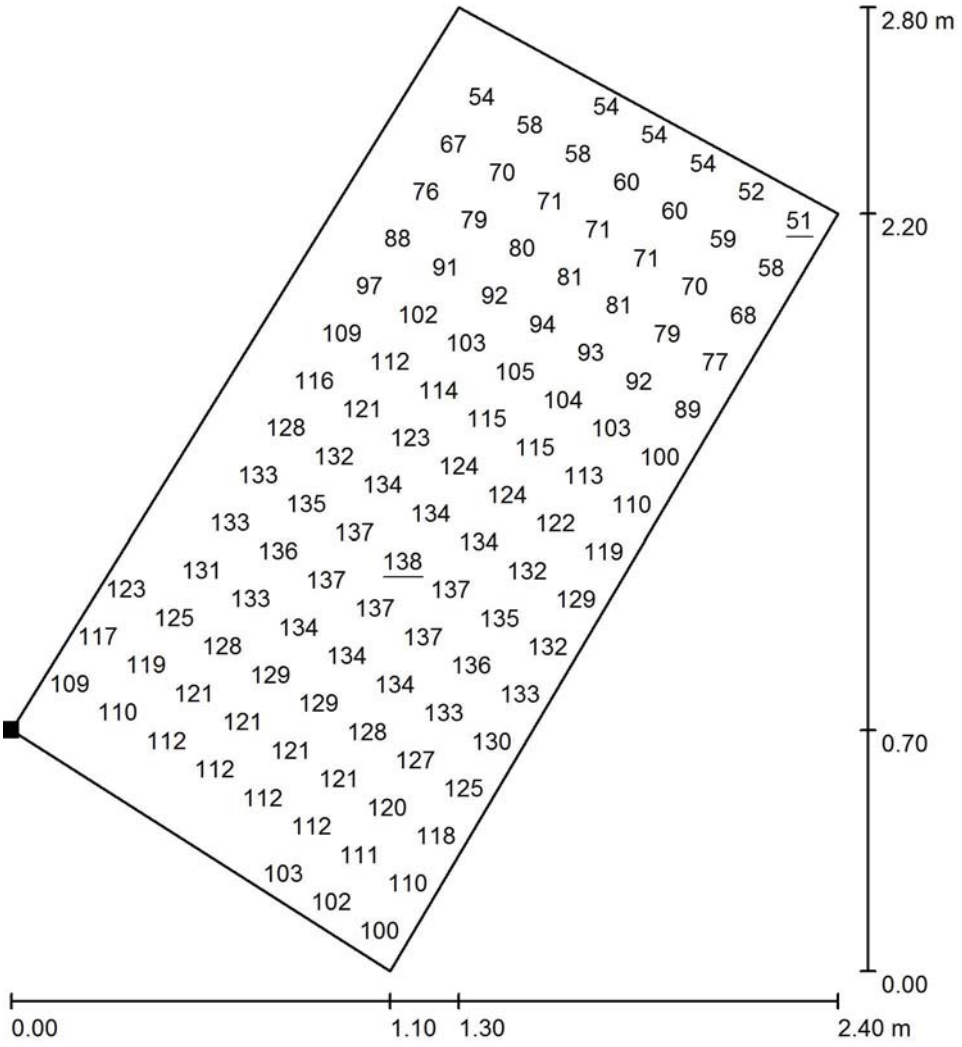


Grid: 8 x 8 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
92	50	116	0.543	0.429

Operator
Telephone
Fax
e-Mail

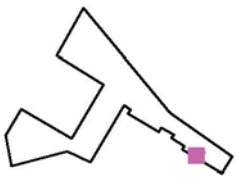
External lighting / 9 / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 22

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(40.500 m, 19.600 m, 0.750 m)



Grid: 16 x 8 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u0	E_{min} / E_{max}
105	51	138	0.489	0.372

Appendix B External Lighting Drawing

600x600 cable draw pit
RC - draw pit with 80mm deep recessed cover

LTG — External lighting duct route. Draw-pits to be installed where required. Minimum 450mm cover.

All external lighting to be controlled via photocell & timeclock (optimum position TBC on site).

All setting out to be provided by Allies and Morrison.

Conflicts of Information
It still remains the responsibility of the Installer/contractor to ensure that there are no conflicts with information provided by ourselves & that of any manufacturers information or relevant requirements of statuary Bodies or Client specification/Er's. If any conflicts do exist it is the responsibility of the Installer/Contractor to inform The Consultant/Client immediately Verbally & in writing.

WARNING TO HOUSE PURCHASERS - Property Misdescriptions Act 1991
Buyers are warned that this is a working drawing and is not intended to be treated as descriptive material describing, in relation to any descriptive material describing, in relation to any descriptive particular property or development, any of the Specific Matters prescribed by an Order made under the above Act. The contents of this drawing may be subject to change at any time & alterations and variations can occur during the progress of the works without revision of the drawing. Consequently the layout, form, contents & dimensions of the finished construction may differ materially from those shown. Nor do the contents of this drawing constitute a contract, part of any contract or a warranty.

Legend

V1 — Bollard Oblix 40 by Delta Light; IP65 rated; Lamp: 7W; Ref: 220 74 12

W1 — Downlight wall mounted fitting MONO LED WW by Delta Light; IP55 rated; Lamp: 7W LED; Mounting height: 2.1M; Ref: 223 11 4102 G

W2 — Wall recessed mounted fitting Heli X Screen LED WW by Delta Light; IP54 rated; Lamp: 1W LED; Mounting height: 0.300M; Ref: 202 04 22

W3 — In ground uplighter Logic S 3055 by Delta Light; IP67 rated; Lamp: 6W LED; Ref: 213 49 18132

W4 — Recessed wall fitting by Bega lighting; IP65 rated; Lamp: 6.3W LED; Mounting height: 0.300M; Ref: 22 249LED

W5 — LED Wall luminaires by Bega lighting; IP66 rated; Lamp: 25.2W LED; Mounting height: 2.6M; Ref: 2248LED

X1 — Column luminaire by Bega lighting, IP65 rated; Lamp: 33.6W LED; Pole mounted at 4M; Ref: 88 977

X2 — Column luminaire Visionair by Delta Light lighting, IP68 rated; Lamp: 36.6W LED; Pole mounted at 4M; Ref: 2782800

Y1 — Spike- mounted spotlight KIX PIN 3055 by Delta Light.; Lamp: 7W LED; Ref: 232 11 18132.

Y2 — Spike- mounted spotlight KIX PIN 3011 by Delta Light.; Lamp: 18W LED; Ref: 232 11 21 831.

Z1 — Parapet wall mounted strip light Adonis Hydra HD25 by LED Linear Lighting.; Lamp: 25W LED; Ref: Adonis Hydra HD25

Z2 — In ground strip light by Aldabra Light.; Lamp: 24W LED; Ref: T4.004.23.

Z3 — Strip light in-ground Iglu by ACDC Light.; Lamp: 15W LED; Ref: acdc1120

Z4 — Handrail strip light Q-rail system with integrated Q-lights; Lamp: (4.2W/m) LED Strip; Ref: Q-railing

Z5 — Canopy recessed strip light Factbox by XAL lighting.; Lamp: 27W LED; Ref: 120 27W e2 LED

Z6 — Canopy recessed strip light Adonis Hydra HD10 by LED Linear Lighting; Lamp: 9.6W LED; Ref: Adonis Hydra HD10

BACKGROUND PLAN AS PER: ALLIES AND MORRISON		
DRAWING No: 809_00_02_110	REVISION: C5	DATE RECEIVED: 16.07.2015

Rev	Date	Description	Drwn	Chkd
C3	30.09.2016	Lighting layout revised to comments.	SNW	JM
C2	05.04.2016	Lighting layout revised to comments.	AJH/AK	RS
C1	22.10.2015	Construction issue.	AJH/JM	FV

Current purpose: CONSTRUCTION — Scale: 1:200 — Size: A1

Original Issue Date: 22.10.2015 — Drwn: AJH — Chkd: FV

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Title: EXTERNAL LIGHTING

Project: KIDDERPORE AVENUE PHASE 2

Client: BARRATT LONDON

Dwg Number: 9596-E-0-002

Rev: C3

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