

Clarion Housing Group

Land at Richmond upon Thames College

External Lighting Statement

for

Land at Richmond upon Thames College



MLM.

Group

Notice

This document and its contents have been prepared and intended solely for Clarion Housing Group information and use in relation to Land at Richmond upon Thames College

MLM Consulting Engineers Limited assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document History

Client: Clarion Housing Group
Project: Land at Richmond upon Thames College
Document Title: External Lighting Statement
Document Reference: 7140487-MLM-ZZ-XX-RP-E-0001
MLM Reference: JKS/7140487

Revision	Status	Description	Author	Checked/Approved	Date
00	-	For Planning	Arfat Choudhury	James Stubbings	23/11/2018

Contents

1	Introduction	1
2	Design Parameters	2
3	System Description	3
4	Lighting Layout and Light Fittings	4
5	System Control	6
6	Conclusion	7

Appendix A - Luminaire Schedule

Appendix B - Lux Levels and External Lighting Layout

1 Introduction

This Lighting Statement has been produced by MLM Consulting Engineers Ltd to support the planning application to accompany a Reserved Matters planning application for the proposed development of 180 residential units with associated parking, open space and landscaping for the Land at Richmond upon Thames College, within the London Borough of Richmond upon Thames (LBRuT).

This document outlines the key features and strategies adopted to deliver an energy efficient external artificial lighting scheme, the effect of the scheme on the environment, provide safety and security, and compliance. The production of this Statement has been set out to comply with current British Standards, Legislation, Building Regulations and Security Principles.

The first step is to consider ecological wildlife presence in the area and the effect of the scheme and ways to mitigate it.

The second step is to reduce energy demand of the lighting scheme. To do so, energy efficient fittings and carefully designed scheme, including effective controls, will be used.

The third step is to design an efficient scheme whilst considering the above steps, and provide adequate illumination during the hours of darkness to present a safe and secure outdoor environment.

An Ecological Survey and Bat Assessment were carried out by others to establish the presence of roosting bats on the site and the result was found to be low to negligible.

Obtrusive lighting, light pollution and glare are considered for this scheme.

The necessary external emergency lighting will be proposed for areas it is required such as Fire Assembly Point. This will require secondary supply.

Within the Appendixes are documentation produced during development of the lighting design to obtain a workable and compliant scheme.

2 Design Parameters

The site wide was modelled from a CAD file using industry approved software to undertake illumination levels to create a compliant and energy efficient lighting scheme (see Appendix B).

The scheme is designed in accordance to the following criteria:

- London Borough of Richmond upon Thames and By-laws.
- Institution of Lighting Engineers - Guidance for the reduction of obtrusive light.
- Chartered Institution of Building Services Engineers (CIBSE) LG6 Guide – Environmental Lighting and Society for Light and Lighting (SLL) Guides.
- Secured by Design (SBD) Guidelines and Principles.
- Building Control Approved Document Part L – Conservation of Fuel & Energy.
- Applied Ecology Ltd. Baseline Ecology Assessment.

It should be noted that emphasis on environmental, energy and security issues were considered rather than product performance as products are constantly changing in line with modern technologies.

Table 1: Exterior Lighting Design Levels

Area	Design Maintained average illuminance	Working plane Height AFFL (m)	Uniformity (min/ave)
Public space	5 lux	0	N/A
Pedestrian routes	5 lux	0	0.25
Road ways	10	0	0.25

Table 2: Classification Zone

Zone	Surrounding	Lighting Environment	Example
E3	Suburban	Medium brightness	Residential Rural Suburbs

Table 3: Obstructive Light Performance Criteria

Environment al Zone	Sky Glow ULR [MAX %]	Light Intrusion (into Windows) Ev [lux]		Luminaire Intensity I [candelas]		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average L (cd/m2)
E3	5.0	10	2	10,000	1,000	10

3 System Description

Various different light fittings were considered and reviewed based on both the aesthetic and technical requirements of the external lighting design criteria.

The proposed luminaires are generally of die cast aluminium with steel cap, coated for corrosion and saline environment resistance.

The luminaires are IP and IK rated protection, with symmetrical distribution having zero upward light (zero light pollution).

They are UV stabilised polycarbonate clear diffusers with photocells, suitable for ambient temperatures between -20°C to +40°C, and BSI kitemark and ENEC approved.

The lamps will be LED technologies.

Reasonable mounting heights will be used to control and spread illumination without constituting lighting nuisance or pollution. The height of the lighting columns in general will be as short as possible to reduce the ecological impact such as effects on bats.

4 Lighting Layout and Light Fittings

Please refer to our drawing referenced RCR-MLM-ZZ-XX-DR-E-2101 in Appendix B.

The proposed lighting scheme incorporates wall mounted fittings around the perimeter of the residential blocks and column type fittings to roadways and walkways.

The light fittings will be strategically positioned to create a safe and secure environment whilst being considerate of the neighbouring properties. All light fittings and positions have been selected to portray the architect's intent and avoid adverse light spilling beyond the boundaries of the areas to be lit.

All lanterns shall be mounted at zero/five degree inclination and incorporate a flat glass protector and hoods, this results in no upward light spill. Integral reflectors shall be included to control light distribution, which has been modelled to ensure the layout has been designed with minimal possible throw of nuisance light

This is demonstrated in isolux contours and illumination levels calculations of the area. See Appendix B.

The various elements of the scheme will have fittings that incorporate circuit boards that is separate from the high power factor control, and combined with the latest high performance LED technologies to ensure excellent efficiency that will minimise energy consumption and reduce maintenance commitments.

The over-voltage protection diodes within the fitting and the individual LED protection, allows for the failure of a single LED or solder joint not to affect the operation of the other LEDs.

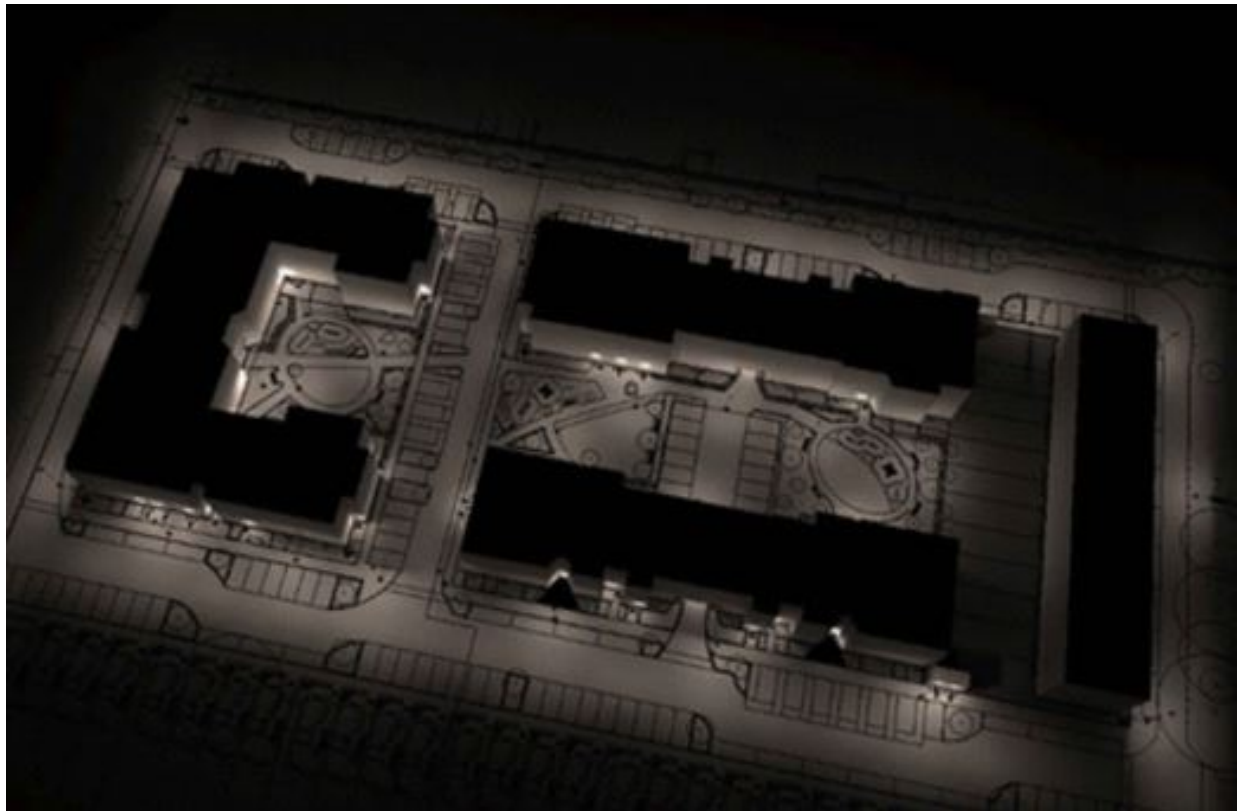
To enable compliance for the Richmond College Redevelopment, the proposed scheme would require:

- 13No. LED single head mounted fittings at 6 m high galvanized tubular steel columns along the southern and northern roadway of site. STW optics included to limit light spillage along the ecological corridor and residential properties south of the site.
- 7No. LED single head mounted fittings at 6 m high galvanized tubular steel columns along the eastern and western roadway. STE-M optics included to limit light spillage to adjacent residential block and terraces.
- 4No. LED single head mounted fittings at 6 m high galvanized tubular steel columns along the central roadway. S05 optics included.
- 11No. LED post top fittings at 4 m high galvanized tubular steel columns situated within the central courtyards of the residential blocks. Double screens included to limit light spillage to adjacent properties
- Various wall mounted fittings around the perimeter of the residential blocks at a height of between 2.2-3 m. integrated emergency with 3-hour battery back-up included.

See Appendix A for Luminaire Schedule.

The fittings generally comprise die-cast aluminium body with gear compartment, housing electronic driver and with micro-pod sensor, high efficiency metallised reflector and prismatic polycarbonate refractor providing zero up-light, and UV stabilised polycarbonate cover.

Figure 1: Site model



5 System Control

The external lighting installations will be controlled via a time-switch with photocell unit with manual override.

The lighting to the central courtyard shall dim if no presence is detected after a fixed time during hours of darkness.

The roadway/footpath lighting system switchgear shall be located within strategically positioned feeder pillars situated around the development. Lighting for the courtyard and building mounted fittings shall be located in a secure accessible location within the buildings.

6 Conclusion




The Isolux Contours (see Appendix B) demonstrate the extent and values of predicted light spill beyond the site boundaries (light pollution). It can be observed that there is a minimum to zero encroachment on to the northern boundary of the site. Therefore it can be assumed that any potential impact upon the ecological corridor would be either very limited or negligible.




Intrusive lighting to residential properties has been limited via the use of hood, shields and cowls in compliance with Guidance for the reduction of obtrusive light.

The proposed luminaires used throughout the scheme reveals zero uplight (obtrusive lighting) with minimised energy consumption.

Appendix A - Luminaire Schedule

1 Luminaire Schedule

Ref	Location	Description	Manufacturer and Model	Lumens/ Circuit Watt	Image
B	Residential Block Courtyard	Die-cast aluminium body and cover mounted on 4 m Columns. Double layer polyester power paint resistant. PMMA lenses for LED. Double screen shields. IP66 ingress protection. IK10 rated. 4000 K.	Arcluce Zoya Or Similar	114	
C	Residential Block Under crofts	Die-cast aluminium body finished in polyester powder coating. Plane face. UV stabilised polycarbonate LED lens. IP66 ingress protection. IK10 rated. 4000K. Integrated emergency fitting with 3 hours battery back-up.	Kingfisher Alfresco Or Similar	105	
D	Residential Block Perimeter	Wall mounted die-cast aluminium body finished in polyester powder coating. Hooded face. UV stabilised polycarbonate LED lens. IP66 ingress protection. IK10 rated. 4000 K. Integrated emergency fitting with 3 hours battery back-up.	Kingfisher Alfresco Or Similar	105	

Ref	Location	Description	Manufacturer and Model	Lumens/ Circuit Watt	Image
E	Northern and Southern Roadway Ways and Footpaths	6 m column mounted LED heads manufactured from high pressure die-cast aluminium. STW optics. IP66 ingress protection. IK09 rated. 4000 K.	Kingfisher Italo 1 Or Similar	116	
F	Eastern and Western Roadway Ways and Footpaths	6m column mounted LED heads manufactured from high pressure die-cast aluminium. STE-M optics. IP66 ingress protection. IK09 rated. 4000 K.	Kingfisher Italo 1 Or Similar	100.5	
G	Central Roadway Way and Footpath	6 m column mounted LED heads manufactured from high pressure die-cast aluminium. S05 optics. IP66 ingress protection. IK09 rated. 4000 K.	Kingfisher Italo 1 Or Similar	95	

Appendix B - Lux Levels and External Lighting Layout

DESIGNERS HAZARD INFORMATION FOR CONSTRUCTION

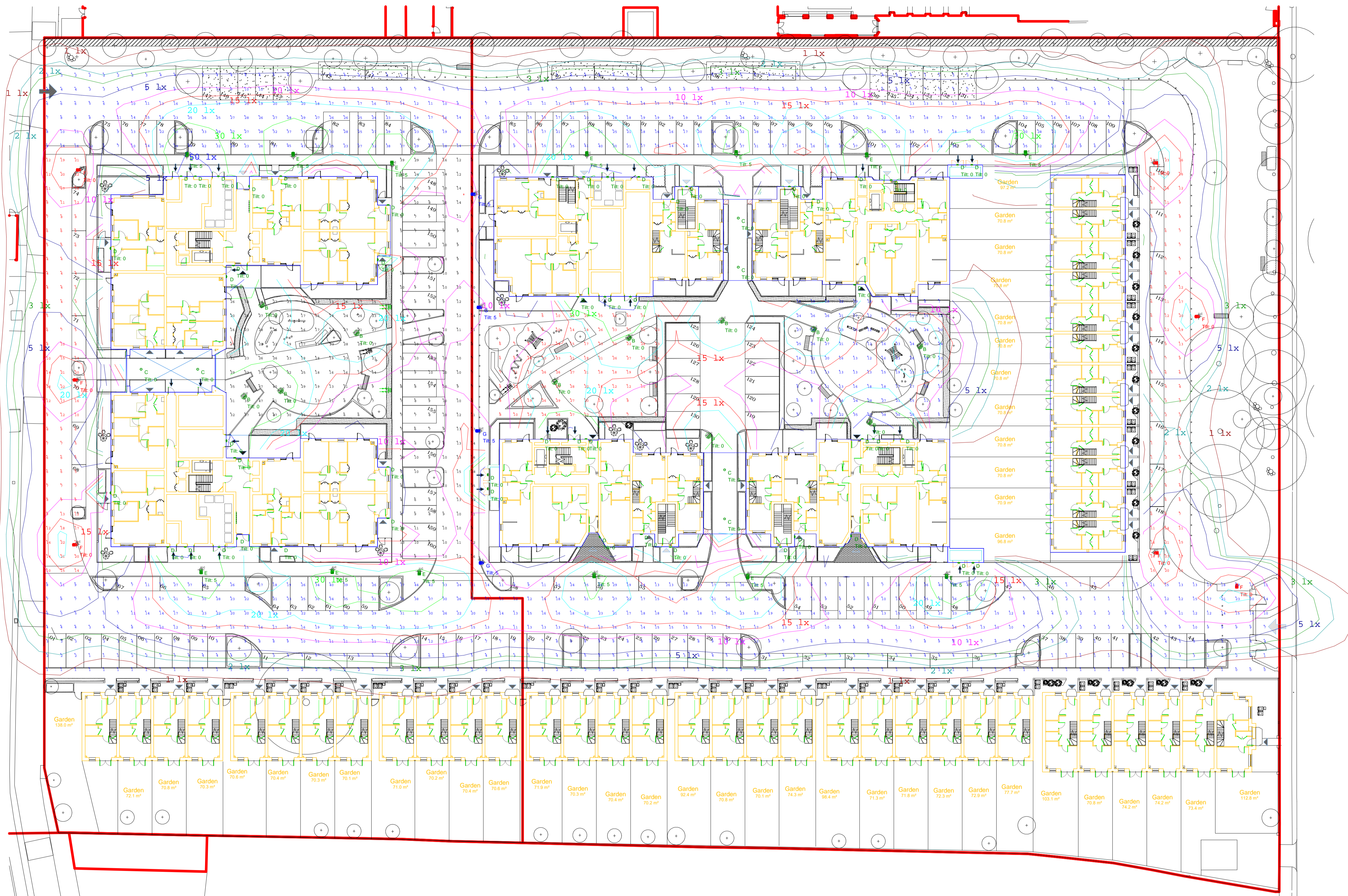
1. IF YOU DO NOT FULLY UNDERSTAND THE RISKS INVOLVED DURING THE CONSTRUCTION OF THE ITEMS INDICATED ON THIS DRAWING ASK YOUR MANAGER, HEALTH & SAFETY ADVISOR OR A MEMBER OF THE DESIGN TEAM BEFORE PROCEEDING.

THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING. REFER TO THE HEALTH AND SAFETY PLAN FOR FURTHER INFORMATION.

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
- DO NOT SCALE FROM THIS DRAWING MANUALLY OR ELECTRONICALLY. WRITTEN PERMISSION MUST BE OBTAINED FROM MLM PRIOR TO SCALING ELECTRONICALLY OR USING THIS ELECTRONIC FILE.

LEGEND



P01	22.11.2018	FOR PLANNING	GC	AC	JKS
REV	DATE	REVISION	MADE	CHK	APP

DRAWING STATUS: **PLANNING**

SUITABILITY DESCRIPTION



3rd Floor Eldon House,
2 Eldon Street,
London EC2M 7LS
Tel: 020 7422 7800
Website: www.mlmgroup.com

CLIENT: **CLARION HOUSING GROUP**

PROJECT: **RICHMOND COLLEGE REDEVELOPMENT**

DRAWING TITLE: **EXTERNAL LIGHTING STRATEGY**

DRAWN/DESIGN	GC/AC	MLM REF	STATUS	REVISION
SCALE	NTS @A1	7140487	-	P01
PROJECT	ORIGINATOR	VOLUME/ SYSTEM	LEVELS & LOCATIONS	TYPE
RCR- MLM - ZZ - XX	-DR	E	-2101	

Symbol	Qty	Label	Arrangement	LLF	Description
	11	B	SINGLE	0.900	LED Zoya post top luminaire with double screen column mounted at 4m.
	6	C	SINGLE	0.900	LED Alfresco plane face bulkhead c/w emergency
	52	D	SINGLE	0.900	LED Alfresco bulkhead with hood c/w emergency
	13	E	SINGLE	0.900	Italo 1 with STW Optic column mounted at 6m.
	7	F	SINGLE	0.900	Italo 1 with STE-M Optic column mounted at 6m.
	4	G	SINGLE	0.900	Italo 1 with S05 Optic column mounted at 6m.

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Central Garden	Illuminance	Lux	17.56	44	4	0.23	0.09
East Garden	Illuminance	Lux	17.57	38	5	0.28	0.13
Homezone 1	Illuminance	Lux	8.66	23	1	0.12	0.04
Homezone 3	Illuminance	Lux	10.77	39	4	0.37	0.10
Homezone 4	Illuminance	Lux	10.30	22	3	0.29	0.14
North Road	Illuminance	Lux	15.64	45	2	0.13	0.04
South Road	Illuminance	Lux	10.93	50	0	0.00	0.00
West Garden	Illuminance	Lux	22.72	47	6	0.26	0.13

50mm
100mm



T +44 20 7422 7800
A 3rd Floor Eldon House
2 Eldon Street
London, EC2M 7LS

www.mlmgroupp.com