The Honourable Society of Lincoln's Inn

External Lighting Design Strategy Report

July 2015

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Mott MacDonald

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Lincoln's Inn
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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
P1	13/07/2015	C Potter	A Coates	A Long	For Planning	
P2	20/07/2015	C Potter	A Coates	A Long	For Planning	

Contents

1 Introduction

The Honourable Society of Lincoln's Inn seek to refurbish and improve existing kitchen and catering facilities which are currently inadequate for the needs of the Inn. There is also a need to provide expansion space for the existing library alongside new advocacy training and educational facilities to enhance the function of the Inn. In providing these new facilities, the existing Under Treasurer's residence will need to be relocated to another part of the Inn.

To achieve the above proposals, planning and listed building consent are sought for five separate applications proposed at Lincoln's Inn:

- Application 1 – Old Hall Kitchen Refurbishment (Submitted to LB Camden Ref 2015/2413/P & 2015/2517/L)
- Application 2 – Great Hall Refurbishment Works (including Old Hall Temporary Kitchen Works)
- Application 3 – East Terrace Development (Excavation to create a two storey basement containing a lecture theatre, advocacy rooms and study areas)
- Application 4 – Library Extension (including demolition of Under Treasurer's House)
- Application 5 – 15 New Square (Change of use from Office B1 to Residential C3)

This External Lighting Design Strategy Report has been prepared as part of applications 2, 3 and 4 and outlines the proposed exterior lighting design criteria and scheme design proposals.

2 External Lighting Design Strategy

The Great Hall has an existing external lighting scheme that illuminates the perimeter of the Great Hall and its surrounding area. As part of the East Terrace and Library Extension project, an additional external lighting scheme is to be provided to the affected areas as part of these works. It is intended that the existing lighting scheme and new lighting scheme shall operate in conjunction with each other to provide functional and aesthetical illuminance to the project.

The proposed external lighting strategy for the Great Hall's new build East Terrace and Library extension has been developed to include luminaires manufactured by Bega Lighting and Simes Lighting. Refer to Appendix D for the luminaire schedule which details the proposed luminaires. The specific proposed luminaires have been selected due to their individual light distribution control characteristics.

Luminaires will utilise LED 'lamp source' with good colour rendering and high luminous efficacy characteristics, providing a 'white light' source for improved security, to complement CCTV installations and enhance user comfort. Final lamp selection will be to achieve a minimum colour rendering index of 1B.

From the bat inspection report it is noted in section 3.1.1 that there are no features suitable for bats in the Great Hall. Also mentioned is that most of the roof west is well lit externally with halogen lighting which reduces the potential for bats. The tower to the North West was very bright internally with no potential for bats. The new external lighting will have no further impact above that of the existing conditions.

A site drawing is included within Appendix A which details the new luminaire layout with reference to the buildings.

In accordance with the proposed lighting strategy, the outlined design parameters conform to:

- Institute of Lighting Engineers (ILE): The outdoor Lighting Guide
- ILE Guidance Note 01: Guidance Notes for the Reduction of Obtrusive Light
- CIBSE LG6 1992: The Outdoor Environment

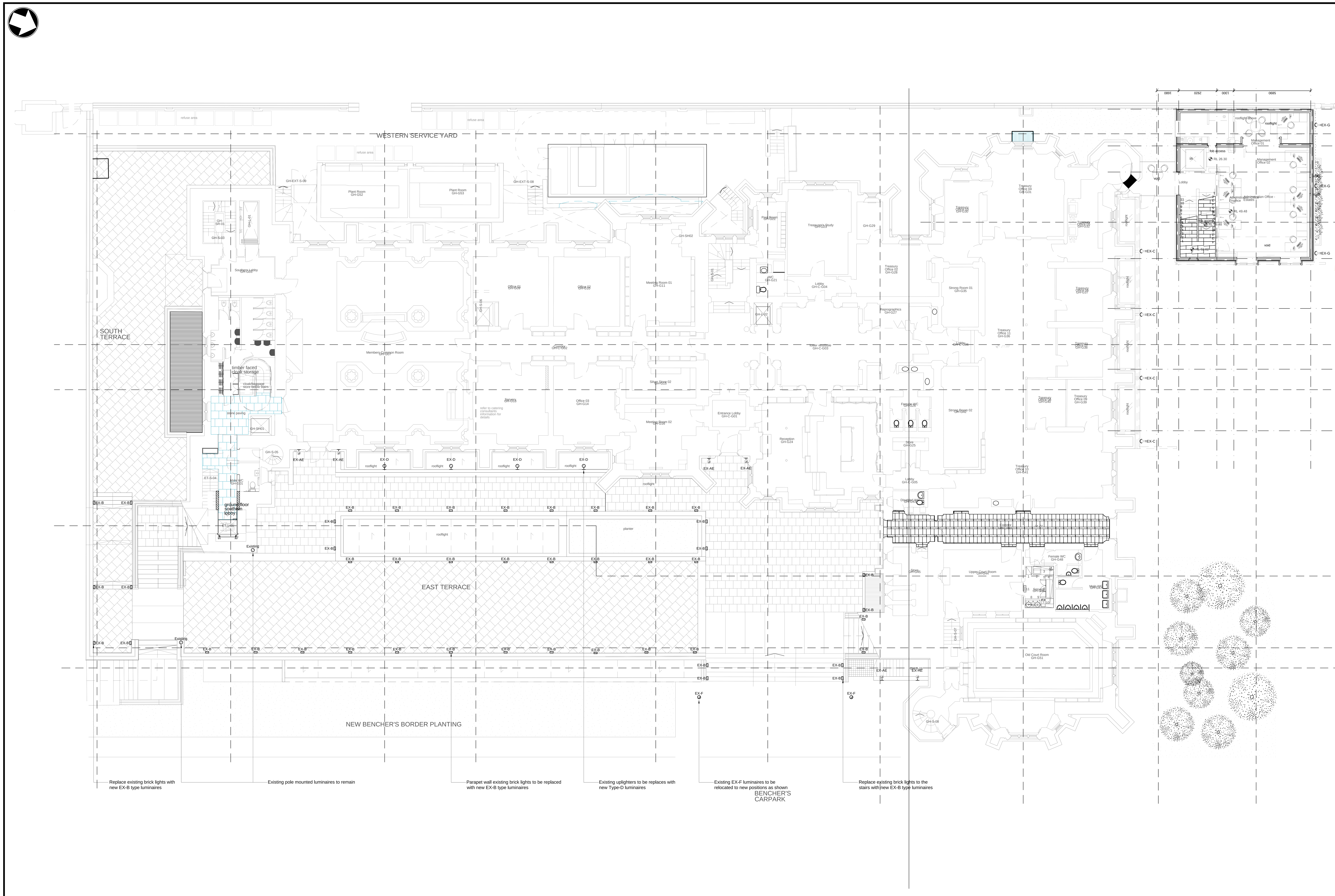
The new external lighting scheme has been designed to an environmental E4 classification, as an urban surrounding, with high district brightness in the local lighting environment including town/city centres with high levels of night-time activity.

The new lighting scheme amounts to a 14.9% upward light ratio in its entirety, not including replacement of existing floodlight luminaires. This meets the criteria for BREEAM credit POL 04 where a maximum allowance of 15% ULR is permitted for an E4 Environmental Zone. Refer to Appendix B for the BREEAM calculation.

In addition, a calculation to determine the spill light level confirms that there is no intrusive light spill to adjacent properties from the proposed lighting scheme. Refer to appendix C – 3D Illuminance Model for a visual representation of the schemes illuminance distribution results.

Appendices

Appendix A. External Lighting Layout



Notes

Do not scale from this drawing. Use only figured dimensions.

All dimensions are shown as millimetres (mm) and levels as metres above ordnance datum (mAOD) and should be verified on site.

Any drawing errors or discrepancies to be brought to the attention of Mott MacDonald at the address shown in the title block.

This drawing should be read in conjunction with the specification and all other services, structural and architectural drawings.

1. New luminaires shall be controlled via astronomical time switch arrangement programmed to meet the requirements of the Client.

Key to symbols

- EX-A — LED wall lights installed at low level.
- EX-B — LED recessed brick lights installed at low level
- EX-C — In-ground recessed LED uplighter
- EX-D — Projector type LED uplighter. Surface mounted
- EX-F — Existing pole mounted 'lantern' type luminaire to be relocated to positions as indicated
- EX-G — In-ground recessed uplighter
- Existing — Existing pole mounted 'lantern' type luminaire to remain

'E' denotes 3hour emergency version complete with integral battery pack

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	July 2015	CP	Stage 4 - Preliminary Issue		
P1	May 2015	HD	Stage 3 - Preliminary Issue		

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Client The Honourable Society of Lincoln's Inn

Title
Great Hall and Library Project
Electrical Services
External Lighting Layout

Designed	C. Potter		Eng check		
Drawn	H Duncan		Coordination		
Dwg check	D Kemp		Approved		

Scale at A0	Status	Rev	Security
1:100	PRE	P2	STD

Drawing Number
MMD-348908-E-DR-GH-GF-2701

1:100 0 5m 10m

P:\Cambridge\Murdoch\EST\PROJECTS\348908 Lincoln's Inn\8.0 Drawings\Working Drawings\Electrical\Drawings\Great Hall Library Extension East Terrace\MMD-348908-E-DR-GH-GF-2701.dwg Jul 13, 2015 - 5:08PM pot61227

Appendix B. BREEAM Calculation

Mott MacDonald
BREEAM: POL 04 Calculator

Date: 13.07.2015
Rev: P1

Job Number	348908	Job Name	Lincoln's Inn - Great Hall, East Terrace and Library Extension

Fitting	Manufacturer	Description	Quantity	Lumens per fitting	Total Lumens	ULOR (%)	Upward Lumens
Skill Round	Simes	Surface mounted LED	6	416	2496	0.00%	0
33 055	Bega	Brick Light Recessed	43	1130	48590	0.00%	0
MegaZip	Simes	In-ground Uplighter	4	1553	6212	100.00%	6212
Zip LED	Simes	In-ground Uplighter	3	913	2739	100.00%	2739
				Total	60037	**Total**	8951

Installation ULR: 14.91%

This scheme complies to environmental zone: **E4**

Installation of ULR = (Total upward Lumens/ Total Lumens output of fittings)

Permissable ULR% (For each environmental zone)

E1	0%
E2	<2.5%
E3	<5.0%
E4	<15.0%

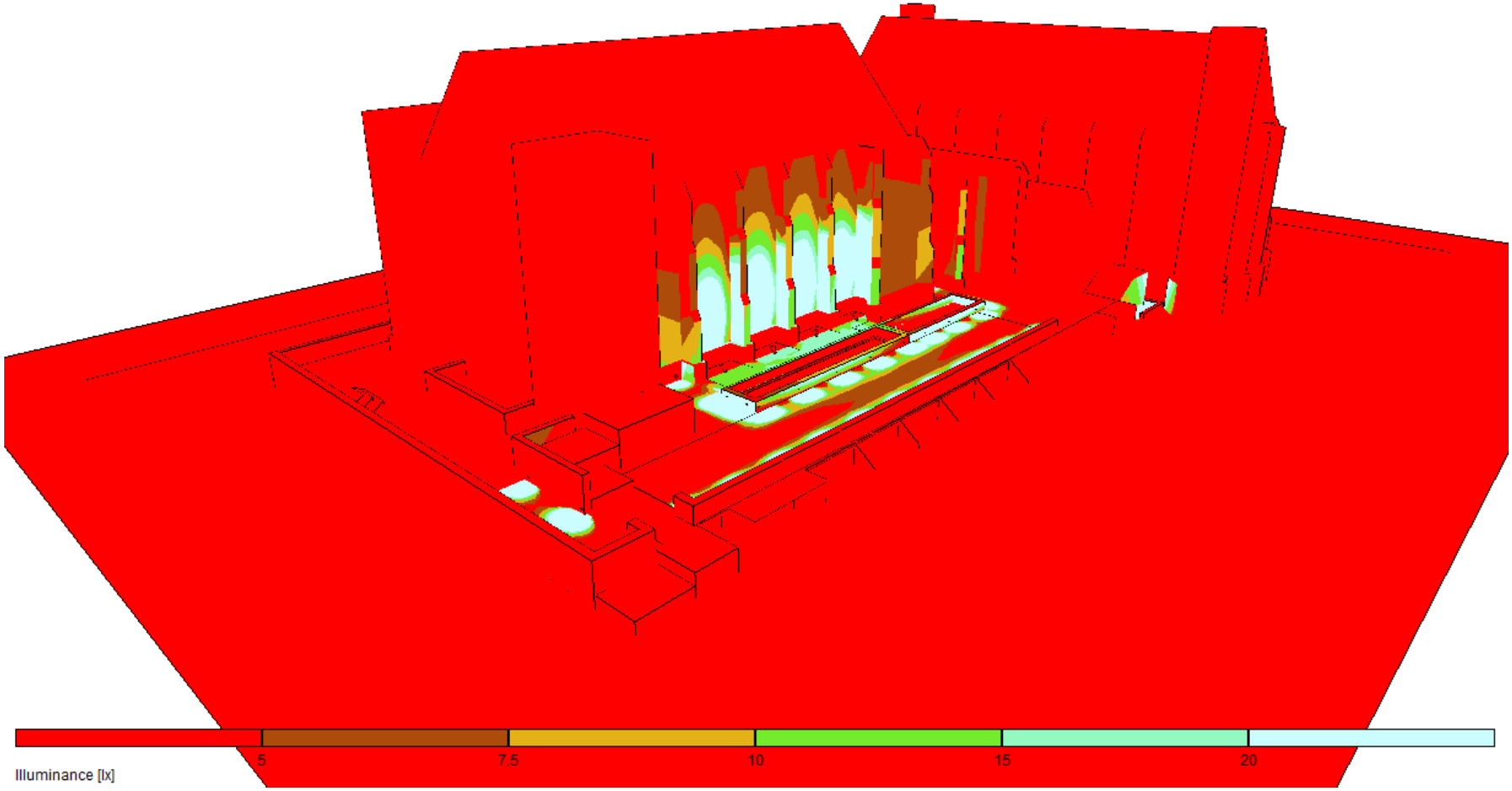
Appendix C. 3D Illuminance Model

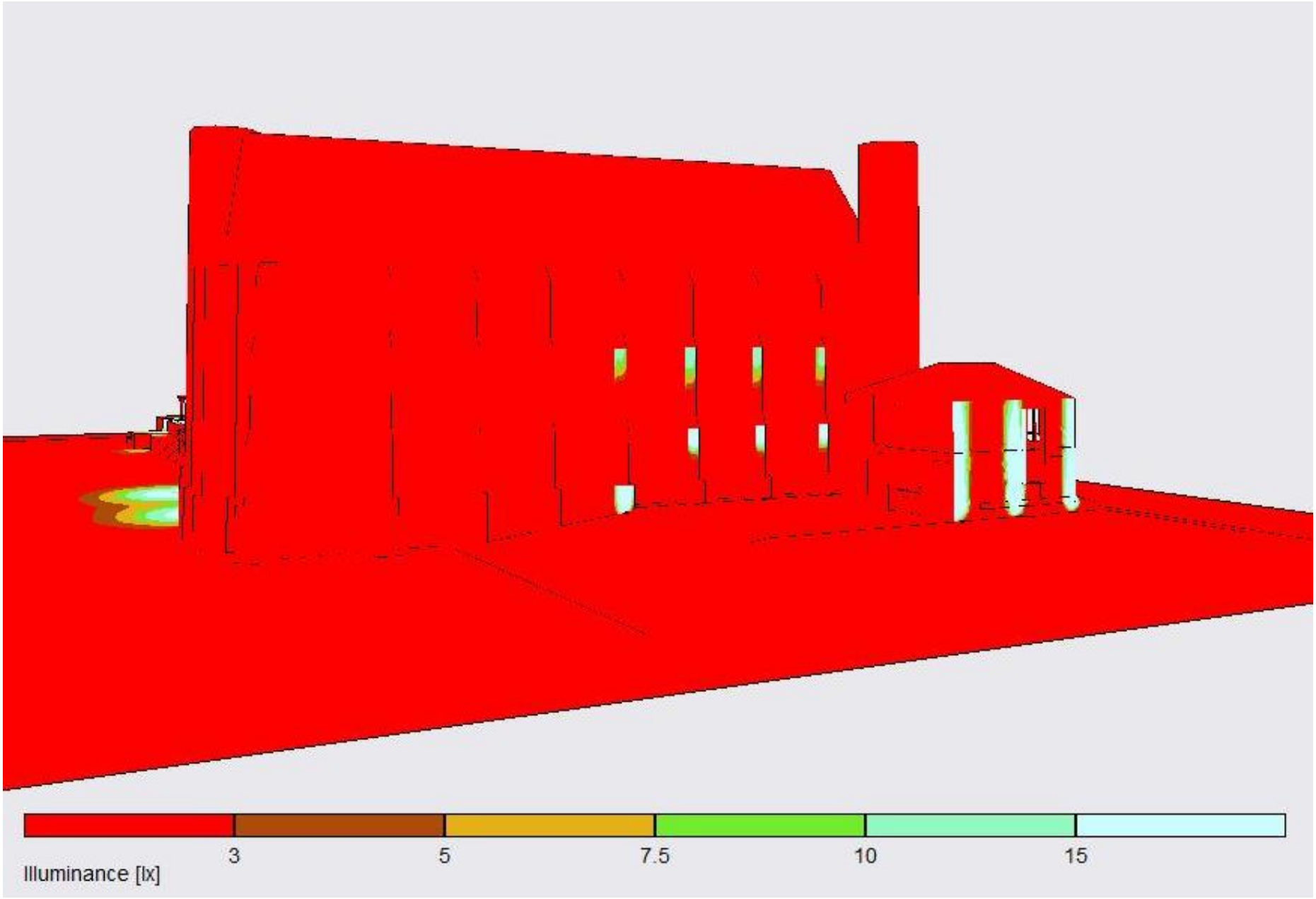
Project Number: 348908

Project Name: Lincoln's Inn – Great Hall, East Terrace and Library Extension Project.

3D – Model - Illuminance Distribution.

This model represents the new luminaires proposed for the project's external lighting scheme.

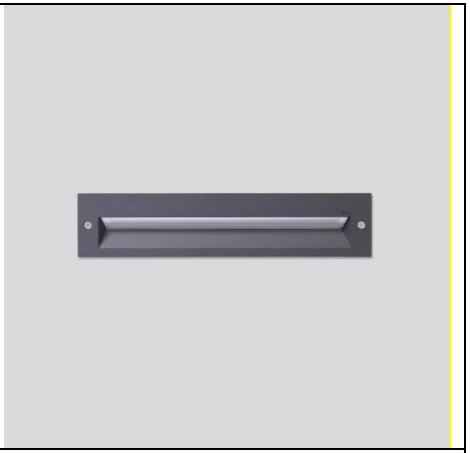



3
5
7.5
10
15
Illuminance [lx]

Appendix D. Luminaire Schedule

HSLI: Great Hall, East Terrace & Library Extension
External Lighting - Planning

Ref	Title	Lamp	Fixing Type	Manufacturer	Image
EX - A	**Skill Round** Modules LED 3000K 230V CRI 90 Rated input power: 12.5W Electronic ballast 220÷240V 50/60Hz Aluminium die cast housing in EN AB-47100 (low copper content) with high resistance against corrosion. Stone wash surface treatment prior to painting process. A4 grade Stainless Steel screws with 2,5-3% molybdenum content which increases the resistance against corrosion Silicone gaskets. Painting Process : 3 Step Process 1) Surface treatment with BONDERITE. A heavy metal free chemical surface treatment containing ceramic nano particles giving a cohesive, inorganic and highly dense protective coating. 2) PRE POLYMERIZATION a process of introducing an epoxy primer with excellent characteristics to the paint which also offers very high resistance to oxidation due to its Zinc content. 3) POLYMERIZATION a process with the application of polyester powder with high resistance against UV rays and harsh weather conditions. Improved protection for Marine applications. Mechanical resistance of diffuser IK 08	LED	Surface Wall Mounted	Simes	

EX – B	**33 055** LED luminaire with asymmetrical light distribution. Luminaire made of aluminium alloy, aluminium and stainless steel. Reflector made of anodised pure aluminium. Recessed opening:306 x 60mm. Recessed depth: 70mm. IP65 Rating. 8.4W LED 3000K Colour temperature. (CRI) Ra >80. 1130 total luminous flux output.	LED	Recessed Brick Light	Bega	
EX - C	**Simes MegaZip** MEGAZIP WHITE LED 3200K 27W 230V Die-cast aluminium housing EN AB-44100 (copper free) with high corrosion resistance. Stainless steel front ring 2mm thick. Toughened glass 12mm thick. Stainless steel screws. Luminaire hard wired with cable H07RN-F. Recessing box in polypropylene. Silicone gaskets. Double powdered paint in 3 step process: - surface treatment containing ceramic nano particles (Bonderite NT-1); - epoxy primer paint; - polyester powder paint with high resistance against UV rays and harsh weather conditions. Luminaires supplied with LED circuit board and power supply. IP67 CLASS I IK09 Maximum weight 1000Kg	LED	In Ground Uplighter	Simes	

EX-D	**Simes MegaFocus** MEGAFOCUS 32 LED WHITE 3200K 77W 230V Die-cast EN AB-47100 aluminium housing with high corrosion resistance. 99,98% pure aluminium reflectors. Clear toughened glass 8mm thick. Stainless steel A4 screws. Double cable entries with PG16 (Ø 10÷14 mm) cable glands in nickeled brass. Silicone gaskets. Double powdered paint in 3 step process: - surface treatment containing ceramic nano particles (Bonderite NT-1); - epoxy primer paint; - polyester powder paint with high resistance against UV rays and harsh weather conditions. LED versions are supplied with LED circuit board. IP66 CLASS II IK10	LED	Surface Mounted	Simes	

EX-F Existing pole mounted 'lantern' type luminaire 	**EX-G** **Simes ZIP** ZIP WHITE LED 3200K 16W 230V Die-cast aluminium housing EN AB-44100 (copper free) with high corrosion resistance. Stainless steel front ring 2mm thick. Toughened glass 10mm thick. Stainless steel screws. Recessing box in polypropylene. Silicone gaskets. Double powdered paint in 3 step process: - surface treatment containing ceramic nano particles (Bonderite NT-1); - epoxy primer paint; - polyester powder paint with high resistance against UV rays and harsh weather conditions. L.E.D. circuit included. IP67 CLASS I IK09 Maximum weight 1000Kg	**LED**	In Ground Uplighter	Simes	

General Notes:

The suffix ‘E’ on the layout denotes emergency versions utilising 3hour battery standby supplies.

The Contractor shall be responsible for confirming all correct part numbers for luminaires, accessories and supports as necessary to complete the works.

Where conflicts are found between the Luminaire schedule and the drawings, the luminaire schedule shall take precedence.