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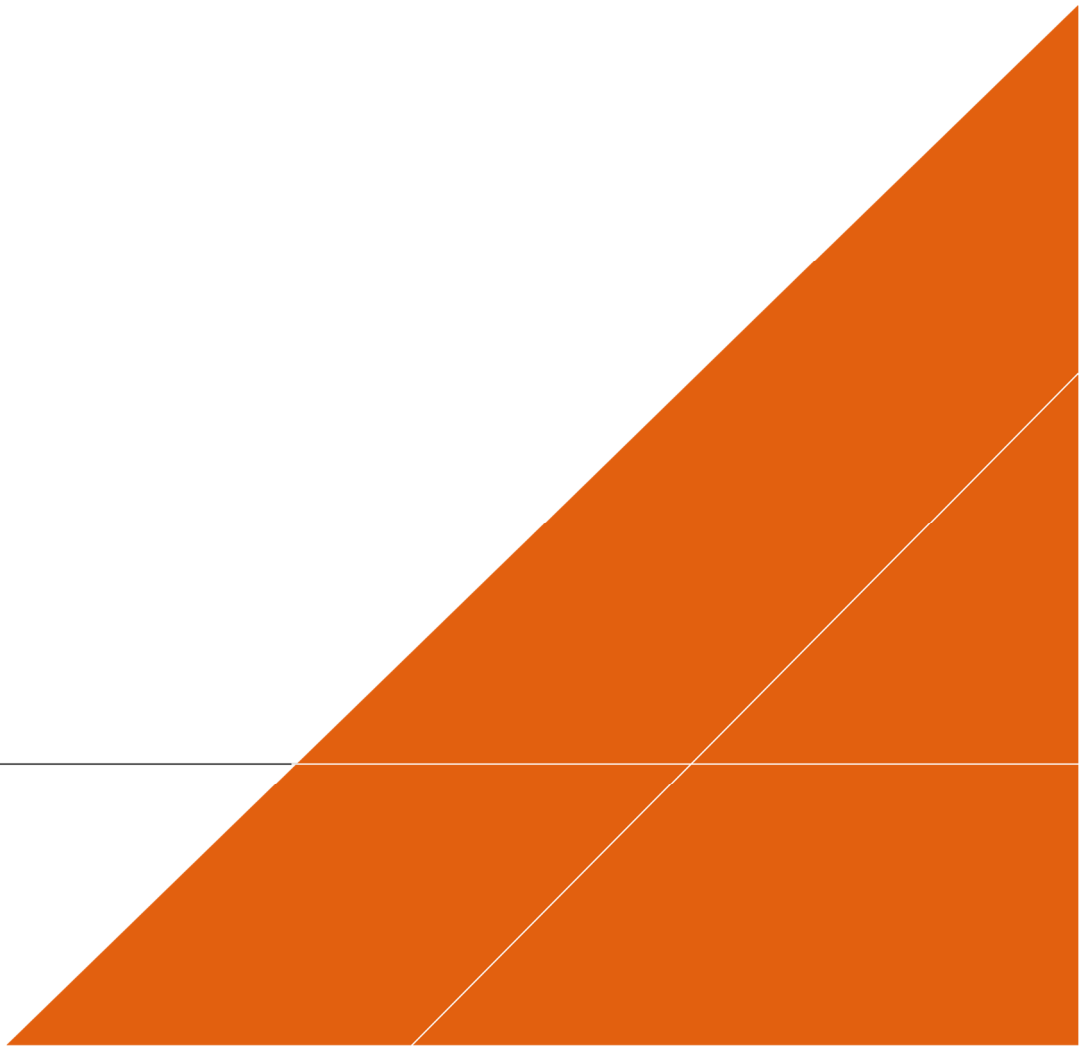
LONDON BOROUGH OF HILLINGDON

Primary Schools Expansion Project

Lighting Strategy Report – Warrender School

NOVEMBER 2016



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Lighting Strategy Report – Warrender School

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Executive Summary

The primary schools expansion project within London Borough of Hillingdon includes the following junior schools:

- Warrender School
- Newnham School and
- Hillside School

This report outlines the proposed lighting strategy for the external environments, specifically for Warrender School.

Due the school being surrounded by the residential houses, light trespass and line of sight from the adjacent residential properties have been taken into consideration when establishing an appropriate lighting scheme. For consistency, the lighting design principle is also applicable to the other two schools.

The objective of the proposed lighting strategy is to provide safe and functional lighting for the external environments within the school boundary during darkness, but without affecting the surrounding residents. To meet this requirement, the proposed lighting scheme established is as follows:

- For the external car parking areas, 4 metre high post mounted LED luminaires with asymmetrical reflectors are adopted. These will be located at the strategic locations with the luminaires pointing away from the residential side. This aims to provide satisfactory lighting performance without disturbing the adjacent residents.
- For the pathway lighting, 1 metre high bollards coming with twin lens louvres are installed. These will be located just on the entrance into the car park to provide adequate light levels for areas where the column lighting does not provide sufficient light level whilst ensuring there is not light pollution to adjacent residents.
- For the building perimeter, the security lighting will be provided by means of wall mounted LED luminaires with asymmetric lenses which will be fixed along the walls to provide localised downward lights.

It should be noted that no artificial lighting will be provided for the new outdoor playground.

From the initial lighting assessment, it indicates that the proposed lighting scheme outlined above provides satisfactory lighting performance and that there is no adverse effect to the surrounding residents.

1.0 Introduction

Arcadis has been commissioned by London Borough of Hillingdon to provide a turnkey solution to deliver the primary schools expansion project which includes the following junior schools:

- Warrender School
- Newnham School and
- Hillside School

In respect of the design of the building engineering systems including lighting system for this project, Arcadis is currently involved in the concept and scheme design. The detailed design will be undertaken and developed by the prospective “Design and Build” Contractor at a later date.

This report outlines the proposed lighting strategy specifically for the external areas of Warrender School to support the planning application. For consistency, the lighting design principle adopted is also applicable to the other two schools.

2.0 Lighting Standards

The lighting strategy has been based on the following standards/guides:

- CIBSE Code of Interior Design
- CIBSE/SLL Lighting Guide 5: Lighting for Education - 2011
- CIBSE/SLL Lighting Guide 6: The Exterior Environment – 2016
- CIBSE/SLL Lighting Guide 10: Daylighting – A Guide for Designers: Lighting for the Built Environment – 2014
- British Standard BS5489 Part 9: Road lighting

3.0 Lighting Strategy

As the school is surrounded by residential houses, consideration has been given to the effect of light spillage to the adjacent properties. To avoid disruption to the surrounding residents by the artificial lights, but without compromising the functional requirements, the proposed lighting scheme established is as follows:

- For the external car parking areas, 4 metre high post mounted LED luminaires with asymmetrical reflectors are adopted. These will be located at the strategic locations with the luminaires pointing away from the residential side. This aims to provide satisfactory lighting performance without disturbing the adjacent residents.
- For the pathway lighting, 1 metre high bollards coming with twin lens louvres are installed. These will be located just on the entrance into the car park to provide adequate light levels for areas where the column lighting does not provide sufficient light level whilst ensuring there is not light pollution to adjacent residents.

- For the building perimeter, the security lighting will be provided by means of wall mounted LED luminaires with asymmetric lenses which will be fixed along the walls to provide localised downward lights.

The lighting design criteria adopted are tabulated below for information:

External Area	Average Illumination Level (Lux)	Uniformity
External Car Park	15 - 20	0.4
Building Perimeter	10	0.4
Footpath	10	0.4

4.0 Conclusion

The initial lighting calculations have been carried out. These are based on the luminaires manufactured by Holophane. The associated lighting plots are attached in Appendix C for information. The results indicate that the lighting performance is satisfactory and that there is no light spillage to the surrounding residential properties.

APPENDIX A

Luminaire Schedule

Refer to lighting computer plots in Appendix C

APPENDIX B

Pictures of Proposed Luminaire Types for External Lighting

Image of Proposed Luminaire	Description
	4 metre high post complete with LED lamps and asymmetrical reflector for car park lighting. Note: Colour of body to be agreed with the Architects.
	1m high floor mounted LED Bollard, twin lens with Louvre for pathway lighting. Note: Colour of body to be agreed with the Architects.
	Wall mounted luminaire compete with LED lamps and asymmetrical reflector for building security lighting. Note: Colour of body to be agreed with the Architects.

APPENDIX C

Lighting Computer Plot for Warrender School

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
	A	3	DSX1.2.LA064.FW	DSX-1 FORWARD THROW DISTRIBUTION, COLUMN MOUNTED AT 4m	LED C.6000LM-4000K	DSX1.2.LA064. FW.ies	Absolute	0.70	52
	B	1	DSX1.2.LA054.AY	DSX-1 ASYMMETRIC DISTRIBUTION, COLUMN MOUNTED AT 4m	LED C.5000LM-4000K	DSX1.2.LA054. AY.ies	Absolute	0.70	36
	C	9	DEW.L014.PGL	DENVER WALL ELITE, WALL MOUNTED AT 3m	LED C.1000LM - 4000K	DEW.L014.PG L.IES	Absolute	0.70	16.7
	D	2	DEB.L014.PAY.DO	1m DENVER ELITE BOLLARD, TWIN LENS WITH LOUVRE	LED C.1000LM - 4000K	DEB.L014.PA Y.DO.IES	815	0.70	12

STATISTICS

Description	Symbol	Avg	Max	Min	Min/Max	Min/Avg
Car Park	+	21 lux	49 lux	8 lux	0.16	0.38
Perimeter	◇	20 lux	51 lux	4 lux	0.08	0.20
Spill Light	⚹	0 lux	10 lux	0 lux	0.00	N / A

NOTES

1. Holophane Europe Ltd offer a Lighting Design Service in good faith and without charge, v every effort is made to ensure we interpret the design specification accurately.

2. All illuminance values shown are the result of theoretical computer calculations; summated by luminaires positioned in a fixed relationship to each other and the statistical zone.

3. In practice the values may vary due to tolerances in column installation, luminaire orientation, surface reflectance and fluctuations in power supply (voltage).

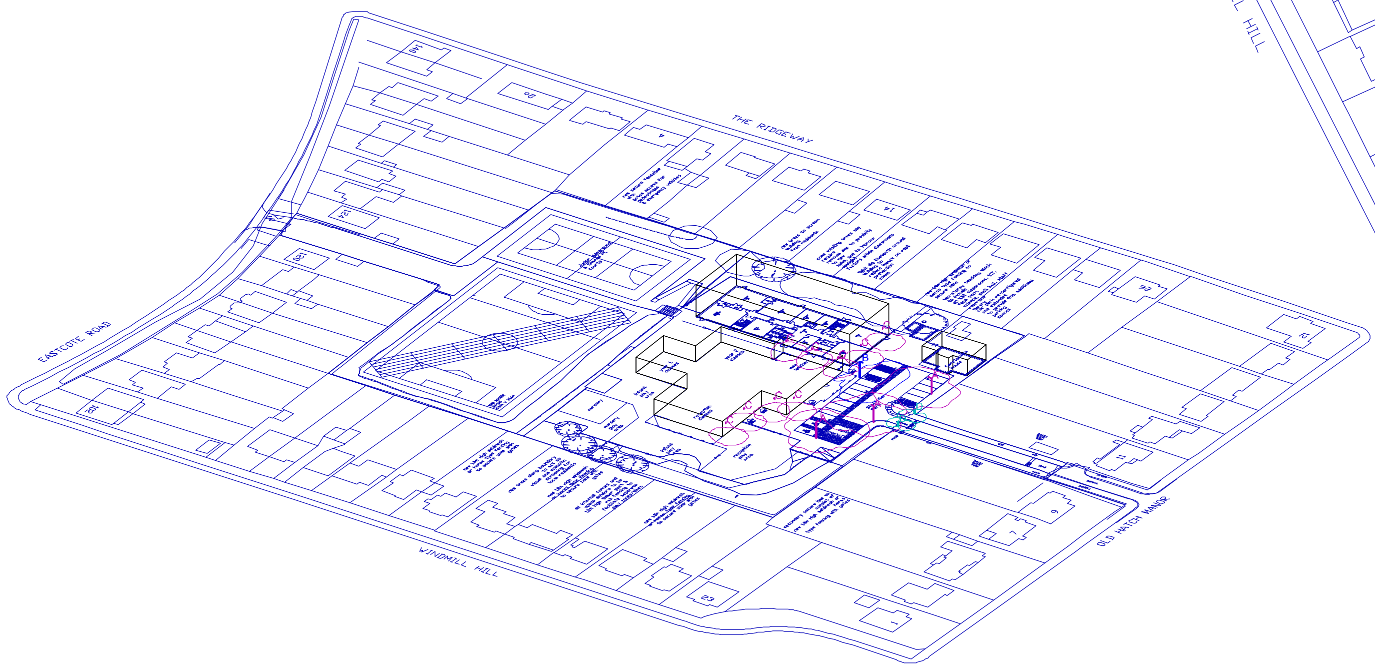
4. Results provided within this design are derived from product specific photometry, the substitution of alternative luminaires will not produce comparable results.

5. Queries regarding this drawing should be addressed to David Goodchild on (07793) 041599 or dgoodchild@holophane.co.uk.

6. All calculations are maintained at 2,000 hours.

7. The contour lines on the 3-D view represent 5 lux from source.

8. Constant Lumen Output shown at 70%.



Southwest View
Not to Scale

Plan View
Scale 1 : 600

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London Borough of Hillingdon - Warrender School

External Lighting r3

for Arcadis

Designer	D Goodchild
Date	Nov 23 2016
Scale	As shown at A1
Drawing No.	P115-2606-04

1 of 1

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