



Lighting Assessment

Draft Report

**Land off Goat Mill Road,
Merthyr Tydfil**



OFF GOAT MILL ROAD, MERTHYR TYDFIL

LIGHTING ASSESSMENT

Document Issue Sheet

Version	Status	Project Number	Document Reference	Prepared By	Date	Verified	Date
D1	Draft	WLC329	WLC329-LA-001		18.08.2021		23.08.2021
D2	Draft	WLC329	WLC329-LA-001		25.02.2022		28/02/2022
D3	Draft	WLC329	WLC329-LA-001		02/03/2022		02/03/2022

This Lighting Assessment has been prepared for our client as stated within our appointment only and expressly for the purposes set out in an appointment and we owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. This report has been based solely on the specific design assumptions and criteria stated herein.

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1. Introduction

- 1.1 This Lighting Assessment has been prepared by Williams Lighting Consultants Ltd. for and on behalf of Jayplas. The report is submitted in support of a planning application for a plastics recycling facility. It describes the indicative exterior lighting works provided at the proposed new development (the Proposed Development) based on the layout submitted with the application.
- 1.2 The assessment details the principles the exterior lighting design follows. These principles are in place to ensure adequate illumination of external areas, and that the design meets the criteria of the documents detailed in table 1.
- 1.3 Accompanying this assessment, lighting calculations (Appendix A) and a proposed exterior lighting strategy (plan) (Appendix B) has been prepared to demonstrate exterior lighting at the proposed development has a minimal impact on the environment – lux contour plots don consider the rear anti-glare shields factory fitted. The rear Pudsey Diamond shields cannot be represented within the lux contour lines but have been proposed to further reduce possible impact on the surrounding areas. Thus, the calculations are very much a worst-case impact.

2. Lighting Design

2.1 Standards and Guidance

2.1.1 An exterior lighting system is required to facilitate safe and secure movement around the Proposed Development for all users. Exterior lighting will be required to light all storage areas in accordance with the below list of documents and site-specific design criteria:

Table 1: Standards and Guidance Documents	
Document Reference	Document Title
1	ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2020
2	BS EN 12464-2:2014 Light and Lighting of workplaces. Outdoor workplaces.
3	ILP and BCT GN08:2018 Bats and artificial lighting in the UK

2.2 Lighting Class Selection

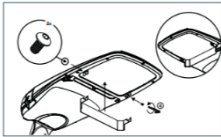
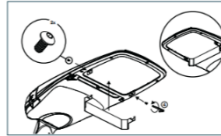
2.2.1 Refer to Table 2 below for proposed lighting class.

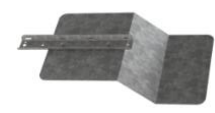
Table 2: Proposed Lighting Levels			
Area	Lighting Class	Minimum Average Illuminance (lux)	Minimum Uniformity (Emin/Eav)
Storage Areas	Short-term handling of large units and raw materials, loading and unloading of solid bulk goods.	20	25%
Office Car Parking	Light traffic, parking areas of shops,	5	25%

	terraced and apartment houses, cycle parks.		
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2.3 Luminaire Selection and shielding

2.3.1 The following lighting fixtures were selected. It has been compared against the lighting standards and applicable guidance notes below.

Table 3: Luminaire Specification and shielding examples				
Luminaire	Proposed Locations	Characteristics		Image
DW Windsor Kirium Pro3 with factory fitted rear anti glare shield (represented within lux contours)	Storage and car parking areas	Upward Light:	0%	 
		Glare Rating:	None – anti glare shield factory fitted	
		Colour temperature:	2700K (Warm White)	
		Efficacy:	Up to 140lm/W	
DW Windsor Kirium Pro 1 with factory fitted rear anti glare shield (represented within lux contours)	Car Parking and warehouse perimeter areas	Upward Light:	0%	 
		Glare Rating:	None – anti glare shield factory fitted	
		Colour temperature:	2700K (Warm White)	
		Efficacy:	Up to 140lm/W	

Luminaire mounted shield (not represented within lux contour lines)	Ecological sensitive areas.	Pudsey Diamond Rear Light Shield	
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2.3.2 Energy efficiency – the design has considered appropriate optic settings for the development layout ensuring (as practicable as possible) light is only provided where required.

2.3.3 Light pollution (vertically and horizontally) has been minimized as much as possible through careful luminaire selection and shielding (optically and column mounted). The design follows the principles set out in the ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2020 and conforms with the below:

Table 5 (Table 3 GN01/20): Maximum values of vertical illuminance on properties.						
Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance on the vertical plane (E _v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx	1 lx	2 lx	5 lx

2.3.4 The proposed site is considered under Environmental Zone E2 (low district brightness).

2.3.5 Upward Light Ratios

Table 6 (Table 6 GN01/20) Maximum values of upward light ratio (ULR) of luminaires.					
Light technical parameter	Environmental zone				
	E0	E1	E2	E3	E4
Upward Light Ratio (ULR %)	0	0	2.5	5	15

2.3.6 All proposed units have an ULR of 0% and are mounted on the horizontal; below the 2.5% maximum URL permitted.

3. Ecology

3.1 The following section reviews the ILP and BCT Guidance Note 08/18 Bats and artificial lighting in the UK recommendations for appropriate luminaire specification:

- **Recommendation 1:** *All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.*

Lighting Proposal: All proposed lighting utilises an LED light source to avoid light sources with high UV content.

- **Recommendation 2:** *LED Luminaires should be used where possible due to their sharp cut off, lower intensity, good colour rendition and dimming capability.*

Lighting Proposal: All luminaires specified are LED and have an anti glare shield factory fitted. Optics have carefully been selected to avoid glare and light spill as much as possible whilst achieving the required lighting levels. Columns close to ecological sensitive areas have rear shields proposed to further reduce rear light spill.

- **Recommendation 3:** *Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).*

Lighting Proposal: All proposed light sources feature peak wavelengths higher than 550nm, avoiding the light most disturbing to bats.

- **Recommendation 4:** *Column heights should be carefully considered to minimize light spill.*

Lighting Proposal: Maximum mounting height proposed is 12m.

- **Recommendation 5:** *Luminaires should always be mounted on the horizontal, ie no upward tilt.*

Lighting Proposal: All luminaires have a 0% Upward Light Ratio (ULR) and shall be set at the horizontal (0 degree tilt). Spill light can be well-controlled.

3.2 Refer to Appendix B for lighting plan detailing lux contour levels (contour plots do not consider the blocking effect of shields or buildings) and equipment specification, including mitigation methods.

4. Environmental Residual Effects

4.1 The proposed lighting will have a residual effect on the environment, and these will occur at different phases during the project. The residual effects have been assessed below and consider the permanent and temporary effects.

4.2 Operational - Landscape and Visual (permanent impact)

4.2.1 There is a permanent impact on the visual scene. With the use of a design practice the impact can be minimized through good design – reducing the number of columns required and their height. With the use of modern lanterns and shielding light is well controlled.

4.2.2 Recommendation: Design prepared by competent designer in consultation with architect and ecologist and in accordance with BS 5489, ILP Guidance on the Reduction of Obtrusive Light and BCT Guidance on Bats and Artificial Lighting.

4.3 Operational - Community (permanent impact)

4.3.1 A well-designed lighting installation will have a positive impact on the local community, providing:

- A safer place to work
- Encourage the use of more sustainable modes of transport, such as walking, cycling.

4.3.2 Recommendation: None

4.4 Construction and Demolition - Noise (temporary impact)

4.4.1 Noise during construction

4.4.2 Recommendation: Employment of competent contractor with use of appropriate tools to minimize noise.

4.5 Construction and Demolition - Dust (temporary impact)

4.5.1 Dust during construction

4.5.2 Recommendation: Employment of competent contractor with use of appropriate tools to minimize dust.

4.6 Construction and Demolition – Ground Contamination (temporary impact)

4.6.1 None anticipated

4.6.2 Recommendation: None

4.7 Construction and Demolition – Storage of Materials (temporary impact)

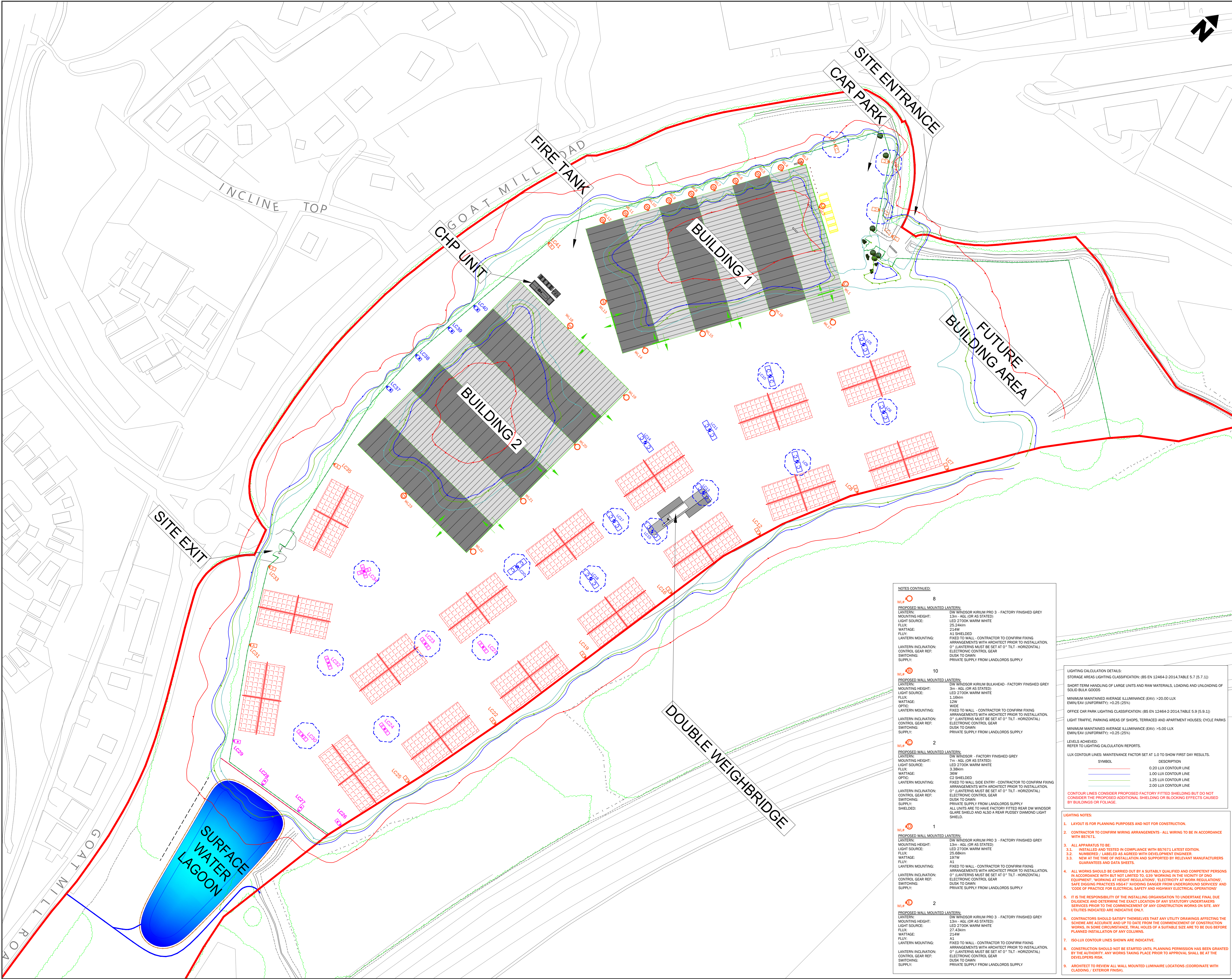
4.7.1 Storage of materials is anticipated

4.7.2 Recommendation: Hazardous materials to be handled, stored and transported in accordance with COSHH regulations and manufacturer guidelines.

4.8 Construction and Demolition – Waste

4.8.1 Waste is anticipated

4.8.2 Recommendation: Lamps and lanterns to be disposed of in accordance with WEEE regulations. Columns to be recycled where possible.



LIGHTING NOTES:

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RISKS (REFERENCE SHALL ALSO BE MADE TO THE DESIGN RISK ASSESSMENT)

1. LAYOUT FOR PLANNING PURPOSES ONLY, NOT FOR CONSTRUCTION.

SYMBOL	QUANTITY
	10
PROPOSED COLUMN AND LANTERN: COLUMN: 10m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 25.24lm WATTAGE: 25W OPTIC: A1 SHIELDED LANTERN MOUNTING: POST TOP LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY SHIELDING: ALL UNITS ARE TO HAVE FACTORY FITTED REAR DW WINDSOR GLARE SHIELD AND ALSO A REAR PUCSEY DIAMOND LIGHT SHIELD.	
	6
PROPOSED COLUMN AND LANTERN: COLUMN: 10m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: TWO x DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 25.69lm WATTAGE: 197W OPTIC: A1 LANTERN MOUNTING: TWIN MOUNTED DOUBLE ARM BRACKET - CONTRACTOR TO SOURCE SUITABLE COLUMN MOUNT. LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY	
	11
PROPOSED COLUMN AND LANTERN: COLUMN: 10m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: TWO x DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 18.03lm WATTAGE: 12W OPTIC: A1 LANTERN MOUNTING: TWIN MOUNTED DOUBLE ARM BRACKET - CONTRACTOR TO SOURCE SUITABLE COLUMN MOUNT. LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY	
	4
PROPOSED COLUMN AND LANTERN: COLUMN: 6m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: DW WINDSOR KIRUM PRO 1 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 3.38lm WATTAGE: 36W OPTIC: C2 SHIELDED LANTERN MOUNTING: POST TOP LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY SHIELDING: ALL UNITS ARE TO HAVE FACTORY FITTED REAR DW WINDSOR GLARE SHIELD AND ALSO A REAR PUCSEY DIAMOND LIGHT SHIELD.	
	4
PROPOSED COLUMN AND LANTERN: COLUMN: 5m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: DW WINDSOR KIRUM PRO 1 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 3.38lm WATTAGE: 36W OPTIC: C2 SHIELDED LANTERN MOUNTING: POST TOP LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY SHIELDING: ALL UNITS ARE TO HAVE FACTORY FITTED REAR DW WINDSOR GLARE SHIELD AND ALSO A REAR PUCSEY DIAMOND LIGHT SHIELD.	
	4
PROPOSED COLUMN AND LANTERN: COLUMN: 5m TUBULAR GALVANISED STEEL LIGHTING COLUMN WITH GLASS FLARE ROOT PROTECTION. LANTERN: DW WINDSOR KIRUM PRO 1 - FACTORY FINISHED GREY LIGHT SOURCE: LED 2700K WARM WHITE FLUX: 3.38lm WATTAGE: 36W OPTIC: C2 SHIELDED LANTERN MOUNTING: POST TOP LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL) CONTROL GEAR REF: ELECTRONIC DRIVER ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR DUSK TO DAWN SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY SHIELDING: ALL UNITS ARE TO HAVE FACTORY FITTED REAR DW WINDSOR GLARE SHIELD AND ALSO A REAR PUCSEY DIAMOND LIGHT SHIELD.	
COLUMN PROTECTIVE BARRIER: BROVAP BX146530R GALVANISED STEEL OR EQUIVALENT.	

NOTES CONTINUED:

WLA

8

PROPOSED WALL MOUNTED LANTERN:
LANTERN: DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY
MOUNTING HEIGHT: 13m - AGL (OR AS STATED)
LIGHT SOURCE: LED 2700K WARM WHITE
FLUX: 25.24lm
WATTAGE: 25W
OPTIC: A1 SHIELDED
LANTERN MOUNTING: FIXED TO WALL - CONTRACTOR TO CONFIRM FIXING ARRANGEMENTS WITH ARCHITECT PRIOR TO INSTALLATION.
LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL)
CONTROL GEAR REF: ELECTRONIC DRIVER
ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR
DUSK TO DAWN
SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY

WLB

10

PROPOSED WALL MOUNTED LANTERN:
LANTERN: DW WINDSOR KIRUM BULKHEAD - FACTORY FINISHED GREY
MOUNTING HEIGHT: 5m - AGL (OR AS STATED)
LIGHT SOURCE: LED 2700K WARM WHITE
FLUX: 1.16lm
WATTAGE: 12W
OPTIC: C2 SHIELDED
LANTERN MOUNTING: FIXED TO WALL - CONTRACTOR TO CONFIRM FIXING ARRANGEMENTS WITH ARCHITECT PRIOR TO INSTALLATION.
LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL)
CONTROL GEAR REF: ELECTRONIC DRIVER
ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR
DUSK TO DAWN
SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY

WLC

2

PROPOSED WALL MOUNTED LANTERN:
LANTERN: DW WINDSOR - FACTORY FINISHED GREY
MOUNTING HEIGHT: 7m - AGL (OR AS STATED)
LIGHT SOURCE: LED 2700K WARM WHITE
FLUX: 3.38lm
WATTAGE: 36W
OPTIC: C2 SHIELDED
LANTERN MOUNTING: FIXED TO WALL SIDE ENTRY - CONTRACTOR TO CONFIRM FIXING ARRANGEMENTS WITH ARCHITECT PRIOR TO INSTALLATION.
LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL)
CONTROL GEAR REF: ELECTRONIC DRIVER
ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR
DUSK TO DAWN
SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY
SHIELDING: ALL UNITS ARE TO HAVE FACTORY FITTED REAR DW WINDSOR GLARE SHIELD AND ALSO A REAR PUCSEY DIAMOND LIGHT SHIELD.

WLD

1

PROPOSED WALL MOUNTED LANTERN:
LANTERN: DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY
MOUNTING HEIGHT: 13m - AGL (OR AS STATED)
LIGHT SOURCE: LED 2700K WARM WHITE
FLUX: 25.69lm
WATTAGE: 197W
OPTIC: A1
LANTERN MOUNTING: FIXED TO WALL - CONTRACTOR TO CONFIRM FIXING ARRANGEMENTS WITH ARCHITECT PRIOR TO INSTALLATION.
LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL)
CONTROL GEAR REF: ELECTRONIC DRIVER
ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR
DUSK TO DAWN
SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY

WLE

2

PROPOSED WALL MOUNTED LANTERN:
LANTERN: DW WINDSOR KIRUM PRO 3 - FACTORY FINISHED GREY
MOUNTING HEIGHT: 13m - AGL (OR AS STATED)
LIGHT SOURCE: LED 2700K WARM WHITE
FLUX: 27.43lm
WATTAGE: 214W
OPTIC: A1
LANTERN MOUNTING: FIXED TO WALL - CONTRACTOR TO CONFIRM FIXING ARRANGEMENTS WITH ARCHITECT PRIOR TO INSTALLATION.
LANTERN INCLINATION: 0° (LANTERNS MUST BE SET AT 0° TILT - HORIZONTAL)
CONTROL GEAR REF: ELECTRONIC DRIVER
ISOLATOR: CHARLES ENDIRECT DOUBLE POLE ISOLATOR
DUSK TO DAWN
SUPPLY: PRIVATE SUPPLY FROM LANDLORDS SUPPLY

LIGHTING CALCULATION DETAILS:

STORAGE AREAS LIGHTING CLASSIFICATION: (BS EN 12464-2:2014, TABLE 5.7 (5.7.1))
SHORT TERM HANDLING OF LARGE UNITS AND RAW MATERIALS, LOADING AND UNLOADING OF SOLID BULK GOODS
MINIMUM MAINTAINED AVERAGE ILLUMINANCE (EAV): >20.00 LUX
E/MIN/EAV (UNIFORMITY): >0.25 (25%)
OFFICE CAR PARK LIGHTING CLASSIFICATION: (BS EN 12464-2:2014, TABLE 5.9 (5.9.1))
LIGHT TRAFFIC, PARKING AREAS OF SHOPS, TERRACED AND APARTMENT HOUSES; CYCLE PARKS
MINIMUM MAINTAINED AVERAGE ILLUMINANCE (EAV): >5.00 LUX
E/MIN/EAV (UNIFORMITY): >0.25 (25%)
LEVELS ACHIEVED:
REFER TO LIGHTING CALCULATION REPORTS.
LUX CONTOUR LINES: MAINTENANCE FACTOR SET AT 1.0 TO SHOW FIRST DAY RESULTS.

SYMBOL	DESCRIPTION
	0.20 LUX CONTOUR LINE
	1.00 LUX CONTOUR LINE
	1.25 LUX CONTOUR LINE
	2.00 LUX CONTOUR LINE

CONTOUR LINES CONSIDER PROPOSED FACTORY FITTED SHIELDING BUT DO NOT CONSIDER THE PROPOSED ADDITIONAL SHIELDING OR BLOCKING EFFECTS CAUSED BY BUILDINGS OR FOLIAGE.

LIGHTING NOTES:

1. LAYOUT IS FOR PLANNING PURPOSES AND NOT FOR CONSTRUCTION.

2. CONTRACTOR TO CONFIRM WIRING ARRANGEMENTS - ALL WIRING TO BE IN ACCORDANCE WITH BS7671.

3. ALL APPARATUS TO BE:
3.1. INSTALLED AND TESTED IN COMPLIANCE WITH BS7671 LATEST EDITION.
3.2. NUMBERED / LABELED AS AGREED WITH DEVELOPMENT ENGINEER.
3.3. NEW AT THE TIME OF INSTALLATION AND SUPPORTED BY RELEVANT MANUFACTURERS GUARANTEES AND DATA SHEETS.

4. ALL WORKS SHOULD BE CARRIED OUT BY A SUITABLY QUALIFIED AND COMPETENT PERSONS IN ACCORDANCE WITH BUT NOT LIMITED TO, 0.39 WORKING IN THE VICINITY OF DNO EQUIPMENT; WORKING AT HEIGHT REGULATIONS; 'ELECTRICITY AT WORK REGULATIONS'; SAFE DIGGING PRACTICES H547 AVOIDING DANGER FROM UNDERGROUND SERVICES' AND 'CODE OF PRACTICE FOR ELECTRICAL SAFETY AND HIGHWAY ELECTRICAL OPERATIONS'.

5. IT IS THE RESPONSIBILITY OF THE INSTALLING ORGANISATION TO UNDERTAKE FINAL DUE DILIGENCE AND DETERMINE THE EXACT LOCATION OF ANY STATUTORY UNDERTAKERS SERVICES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WORKS ON SITE. ANY UTILITIES INDICATED ARE INDICATIVE ONLY.

6. CONTRACTORS SHOULD SATISFY THEMSELVES THAT ANY UTILITY DRAWINGS AFFECTING THE SCHEME ARE ACCURATE AND UP TO DATE FROM THE COMMENCEMENT OF CONSTRUCTION WORKS. IN SOME CIRCUMSTANCE, TRAIL HOLES OF A SUITABLE SIZE ARE TO BE DUG BEFORE PLANNED INSTALLATION OF ANY COLUMNS.

7. ISO-LUX CONTOUR LINES SHOWN ARE INDICATIVE.

8. CONSTRUCTION SHOULD NOT BE STARTED UNTIL PLANNING PERMISSION HAS BEEN GRANTED BY THE AUTHORITY. ANY WORKS TAKING PLACE PRIOR TO APPROVAL SHALL BE AT THE DEVELOPERS RISK.

9. ARCHITECT TO REVIEW ALL WALL MOUNTED LUMINAIRE LOCATIONS (COORDINATE WITH CLADDING / EXTERIOR FINISH).

STATUS:

PLANNING LAYOUT

Williams Lighting Consultants Ltd.

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www.wclighting.co.uk
01608 642530

SITE:

OFF GOAT MILL ROAD
POWYS

TITLE:

PROPOSED EXTERIOR
LIGHTING STRATEGY

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:1000	23.08.21	PW	LD
PROJECT NO:	DRAWING NO:	REVISION:	
WLC329	WLC329-1300-001	P3	

DATE: 2 March 2022
DESIGNER: WLC
PROJECT No: WLC329
PROJECT NAME: GOAT MILL RD, MERTHYR TYDFIL



Storage Areas lighting classification: (BS EN 12464-2-2014, Table 5.7 [5.7.1])

Short-term handling of large units and raw materials, loading and unloading of solid bulk goods

Minimum maintained average illuminance (Eav): >20.00 lux
Emin/Eav (Uniformity): >0.25 (25%)

Office Car Park lighting classification: (BS EN 12464-2-2014, Table 5.9 [5.9.1])

Light traffic, parking areas of shops, terraced and apartment houses; cycle parks

Minimum maintained average illuminance (Eav): >5.00 lux
Emin/Eav (Uniformity): >0.25 (25%)

WLC329-LC-AC-001-R2

PREPARED BY: Williams Lighting Consultants Ltd.
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Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Overall Site	306047.24	206527.95	334.85	672.49	1.49	2.69
2	Car Park	306173.34	207073.48	73.47	105.00	1.50	1.50
3	Site Entrance	306244.29	207088.63	21.00	69.00	1.50	1.50
4	Building 1	306171.30	206973.15	150.00	157.00	1.50	1.50
5	Water Tank	306070.78	206974.91	105.00	48.00	1.50	1.50
6	Building 2	306184.61	206824.89	129.00	141.00	1.50	1.50
7	Main Storage	306086.80	206629.99	211.00	199.23	1.50	1.50
8	Rear Building 2	306076.70	206824.16	33.00	138.00	1.50	1.50
9	Rear Building 1	306093.90	207015.74	21.00	132.00	1.50	1.50

Luminaires

Luminaire A Data

Supplier	
Type	Kirium Pro3-128LED-2.7k-A1-Shield 650mA UMSUG 42 0214 0000 100
Lamp(s)	128 x 2.7k LED
Lamp Flux (klm)	25.24
File Name	Kirium Pro3-128LED-2.7k-A1-Shield_650mA UMSUG 42 0214 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	None
No. in Project	28

Luminaire B Data

Supplier	
Type	Kirium Pro 1-32LED-2.7k-C2-Rear Shield 3 50mA UMSUG 42 0036 0000
Lamp(s)	32 x 2.7kLED
Lamp Flux (klm)	3.38
File Name	Kirium Pro 1-32LED-2.7k-C2-Rear Shield 3 50mA UMSUG 42 0036 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	G2
No. in Project	13

Luminaire D Data

Supplier	
Type	Kirium Bulkhead-16LED-2.7k-300mA-Wide- 12W
Lamp(s)	16 x 2.7k LED
Lamp Flux (klm)	1.16
File Name	Kirium Bulkhead-16LED-2.7k-300mA-Wide- 12W.ies
Maintenance Factor	0.90
Lum. Int. Class	G3
No. in Project	10

Luminaire E Data

Supplier	
Type	KIRIUM PRO3 128LED 2.7k A1 600mA UM SUG 42 0197 0000 100
Lamp(s)	128 x 2.7k LED
Lamp Flux (klm)	25.68
File Name	KIRIUM PRO3 128LED 2.7k A1_600mA UM SUG 42 0197 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	None
No. in Project	16

Luminaires

Luminaire F Data

Supplier	
Type	KIRIUM PRO3 128LED 2.7k A1 650mA UM SUG 42 0214 0000 100
Lamp(s)	128 x 2.7k LED
Lamp Flux (klm)	27.43
File Name	KIRIUM PRO3 128LED 27k A1_650mA UM SUG 42 0214 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	None
No. in Project	2

Luminaire G Data

Supplier	
Type	KIRIUM PRO3 128LED 2.7k A1 400mA UM SUG 42 0132 0000 100
Lamp(s)	128 x 2.7k LED
Lamp Flux (klm)	18.03
File Name	KIRIUM PRO3 128LED 27k A1_400mA UM SUG 42 0132 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	None
No. in Project	12

Luminaire H Data

Supplier	
Type	Kirium Pro Mini 16LED 2.7k C2 CLO 640mA UMSUG 42 0029 0000 100
Lamp(s)	16 x 3k LED
Lamp Flux (klm)	3.50
File Name	Kirium Pro Mini 16LED 27k C2 CLO_640mA UMSUG 42 0029 0000 100.ies
Maintenance Factor	0.90
Lum. Int. Class	G3
No. in Project	1

Layout

ID /Mast	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
1	A	306244.54	207073.55	13.00	332.00	0.00	0.00	0.40			
2	A	306355.07	207058.80	12.00	151.00	0.00	0.00	0.40			
3	A	306196.44	207014.41	13.00	335.00	0.00	0.00	0.40			
4	A	306179.92	206983.50	13.00	330.00	0.00	0.00	0.40			
5	A	306216.56	207052.34	13.00	327.00	0.00	0.00	0.40			
6	A	306326.66	207012.93	10.00	151.00	0.00	0.00	0.40			
7	A	306304.65	206954.97	10.00	177.00	0.00	0.00	0.40			
8/17	G	306239.52	206899.67	10.00	166.00	0.00	0.00	0.70			
10	A	306292.82	206894.07	10.00	175.00	0.00	0.00	0.40			
11	A	306191.18	206955.56	13.00	0.00	0.00	0.00	0.40			
12	B	306214.24	207102.27	7.00	58.00	0.00	0.00	0.40			
13	F	306144.77	206986.93	13.00	243.00	0.00	0.00	0.40			
15	F	306140.25	206960.07	13.00	91.00	0.00	0.00	0.40			
14	B	306092.71	206929.89	5.00	357.00	0.00	0.00	0.20			
17	D	306118.21	207029.57	3.00	151.00	0.00	0.00	0.00			
16	B	306091.18	206910.40	5.00	356.00	0.00	0.00	0.20			
18	D	306168.54	207124.62	3.00	151.00	0.00	0.00	0.00			
19	D	306162.49	207113.21	3.00	152.00	0.00	0.00	0.00			
20	D	306155.94	207100.88	3.00	153.00	0.00	0.00	0.00			
21	D	306149.50	207088.86	3.00	160.00	0.00	0.00	0.00			
23	H	306234.68	207132.23	6.00	15.00	0.00	0.00	0.40			
23	D	306143.19	207077.03	3.00	160.00	0.00	0.00	0.00			
25	B	306187.66	207116.65	7.00	62.00	0.00	0.00	0.40			
26	B	306173.93	207145.81	6.00	329.00	0.00	0.00	0.40			
27	B	306202.40	207161.56	6.00	212.00	0.00	0.00	0.40			
28	B	306218.68	207137.03	6.00	214.00	0.00	0.00	0.40			
29	A	306191.67	206914.85	13.00	8.00	0.00	0.00	0.40			
30	E	306192.50	206828.75	13.00	5.00	0.00	0.00	0.40			
31	A	306285.03	206831.74	10.00	168.00	0.00	0.00	0.40			
32	A	306192.17	206870.36	13.00	5.00	0.00	0.00	0.40			
31	B	306089.41	206885.54	5.00	2.00	0.00	0.00	0.20			
32	B	306090.38	206860.45	5.00	6.00	0.00	0.00	0.20			
36	A	306275.09	206767.24	10.00	170.00	0.00	0.00	0.40			
37	A	306263.40	206707.19	10.00	168.00	0.00	0.00	0.40			
39	A	306141.90	206697.68	10.00	26.00	0.00	0.00	0.40			
36	B	306174.26	206651.14	8.00	31.00	0.00	0.00	0.30			

Layout Continued

ID /Mast	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
37/19	E	306238.31	206793.68	12.00	351.00	0.00	0.00	0.70			
42	A	306116.94	206737.75	10.00	24.00	0.00	0.00	0.40			
43	E	306142.65	206824.38	13.00	274.00	0.00	0.00	0.40			
44	A	306101.14	206806.69	10.00	11.00	0.00	0.00	0.40			
41/1	G	306264.43	206948.56	10.00	355.00	0.00	0.00	0.70			
42/1	G	306264.43	206948.56	10.00	175.00	0.00	0.00	0.70			
43/2	A	306240.95	206977.04	10.00	345.00	0.00	0.00	0.70			
44/2	A	306240.95	206977.04	10.00	165.00	0.00	0.00	0.70			
45/3	A	306243.32	207023.96	10.00	145.00	0.00	0.00	0.70			
46/3	A	306243.32	207023.96	10.00	325.00	0.00	0.00	0.70			
47/4	A	306304.61	207056.45	10.00	325.00	0.00	0.00	0.70			
48/4	A	306304.61	207056.45	10.00	145.00	0.00	0.00	0.70			
49/5	G	306259.40	206911.64	10.00	167.00	0.00	0.00	0.70			
50/5	G	306259.40	206911.64	10.00	347.00	0.00	0.00	0.70			
51/6	G	306254.09	206866.50	10.00	346.00	0.00	0.00	0.70			
52/6	G	306254.09	206866.50	10.00	166.00	0.00	0.00	0.70			
53/7	E	306213.02	206771.07	12.00	349.00	0.00	0.00	0.70			
54/7	E	306213.02	206771.07	12.00	169.00	0.00	0.00	0.70			
55/8	E	306201.15	206682.30	12.00	177.00	0.00	0.00	0.70			
56/8	E	306201.15	206682.30	12.00	357.00	0.00	0.00	0.70			
60	B	306205.06	206645.53	8.00	99.00	0.00	0.00	0.30			
61	B	306253.41	206661.46	8.00	171.00	0.00	0.00	0.20			
59/10	E	306180.82	206723.03	12.00	333.00	0.00	0.00	0.70			
60/10	E	306180.82	206723.03	12.00	153.00	0.00	0.00	0.70			
61/11	E	306157.78	206775.32	12.00	330.00	0.00	0.00	0.70			
62/11	E	306157.78	206775.32	12.00	150.00	0.00	0.00	0.70			
63/12	E	306157.84	206775.32	12.00	238.00	0.00	0.00	0.70			
64/12	E	306157.84	206775.32	12.00	58.00	0.00	0.00	0.70			
65/13	G	306218.70	206840.90	10.00	258.00	0.00	0.00	0.70			
66/13	G	306218.70	206840.90	10.00	78.00	0.00	0.00	0.70			
67/14	A	306268.57	207075.90	12.00	332.00	0.00	0.00	0.70			
68/14	A	306268.57	207075.90	12.00	152.00	0.00	0.00	0.70			
69/15	A	306283.10	207002.82	10.00	333.00	0.00	0.00	0.70			
70/15	A	306283.10	207002.82	10.00	153.00	0.00	0.00	0.70			
71/16	G	306219.68	206945.10	10.00	0.00	0.00	0.00	0.70			
72/16	G	306219.68	206945.10	10.00	180.00	0.00	0.00	0.70			

Layout Continued

ID /Mast	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
73/17	G	306239.52	206899.67	10.00	346.00	0.00	0.00	0.70			
74/18	E	306231.88	206719.24	12.00	171.00	0.00	0.00	0.70			
75/18	E	306231.88	206719.24	12.00	351.00	0.00	0.00	0.70			
81	D	306136.74	207065.15	3.00	153.00	0.00	0.00	0.00			
82	D	306130.52	207053.16	3.00	157.00	0.00	0.00	0.00			
83	D	306124.25	207041.40	3.00	156.00	0.00	0.00	0.00			
84	D	306111.50	207017.59	3.00	158.00	0.00	0.00	0.00			
80/19	E	306238.31	206793.68	12.00	171.00	0.00	0.00	0.70			
85	A	306097.03	206986.60	10.00	345.00	0.00	0.00	0.50			
84	B	306230.17	206649.47	8.00	96.00	0.00	0.00	0.30			

Horizontal Illuminance (lux)

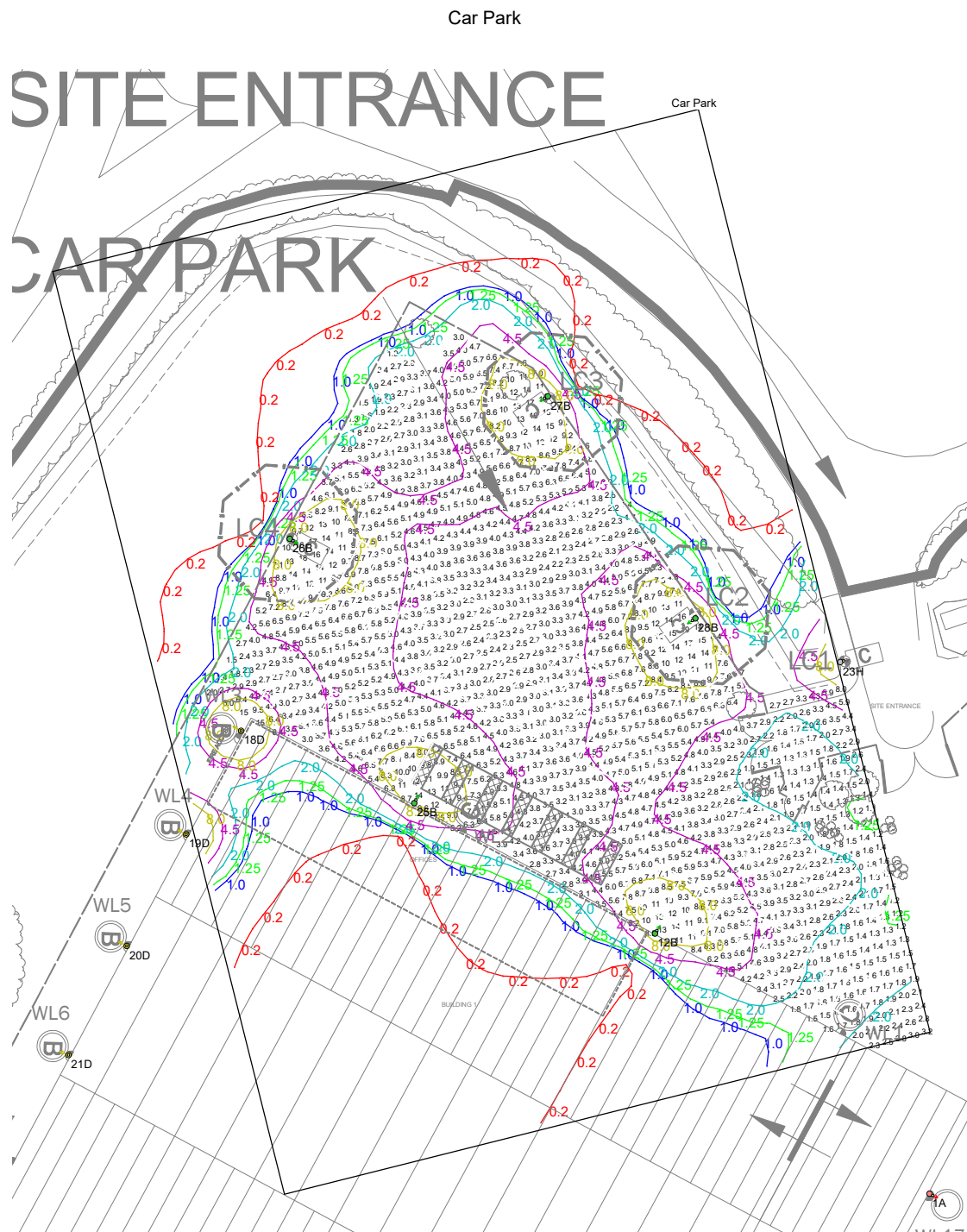
Overall Site



Results

Eav	19.71
Emin	0.83
Emax	108.09
Emin/Emax	0.01
Emin/Eav	0.04

Horizontal Illuminance (lux)

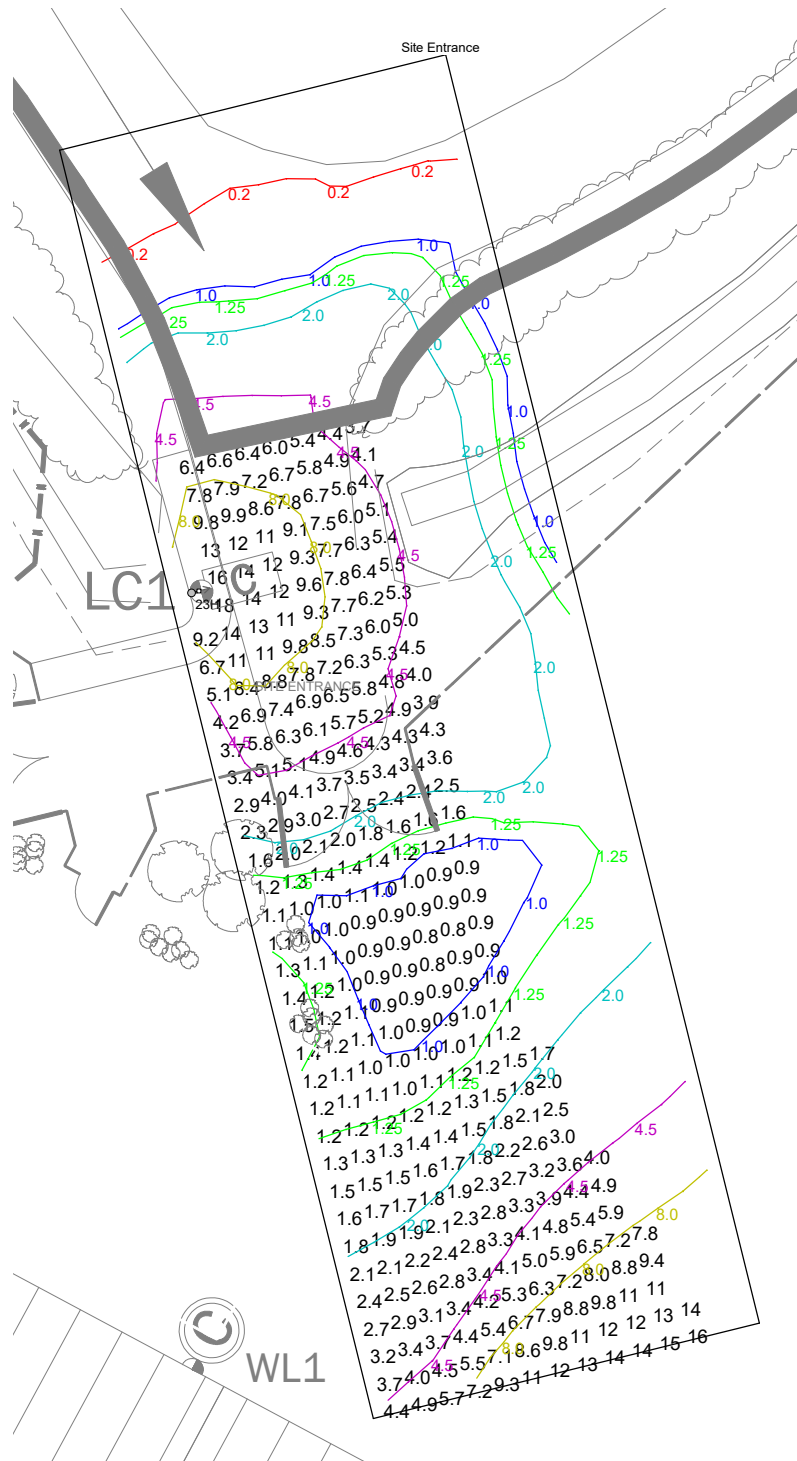


Results

Eav	4.82
Emin	1.10
Emax	18.73
Emin/Emax	0.06
Emin/Eav	0.23

Horizontal Illuminance (lux)

Site Entrance

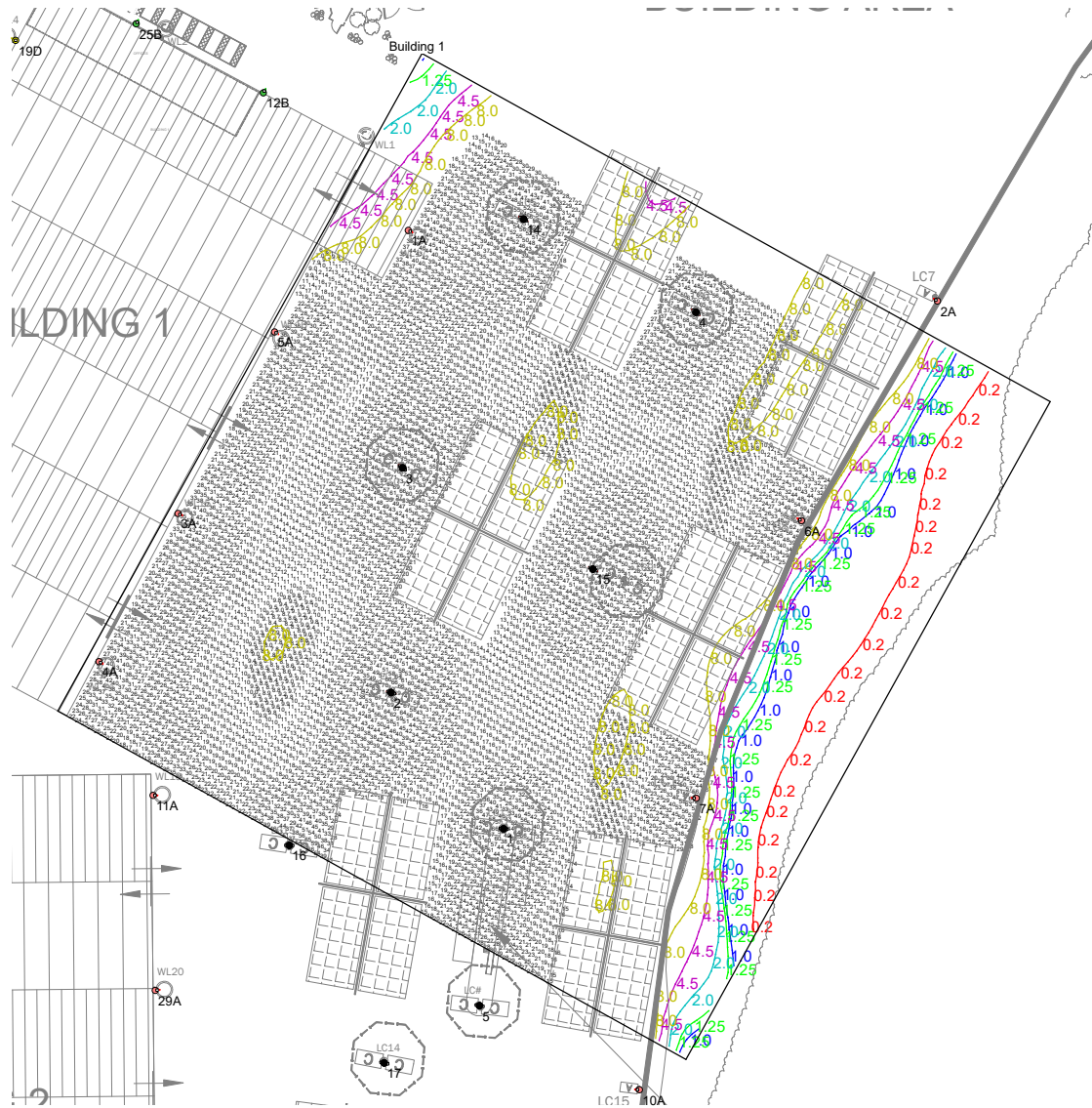


Results

Eav	4.51
Emin	0.83
Emax	17.57
Emin/Emax	0.05
Emin/Eav	0.18

Horizontal Illuminance (lux)

Building 1

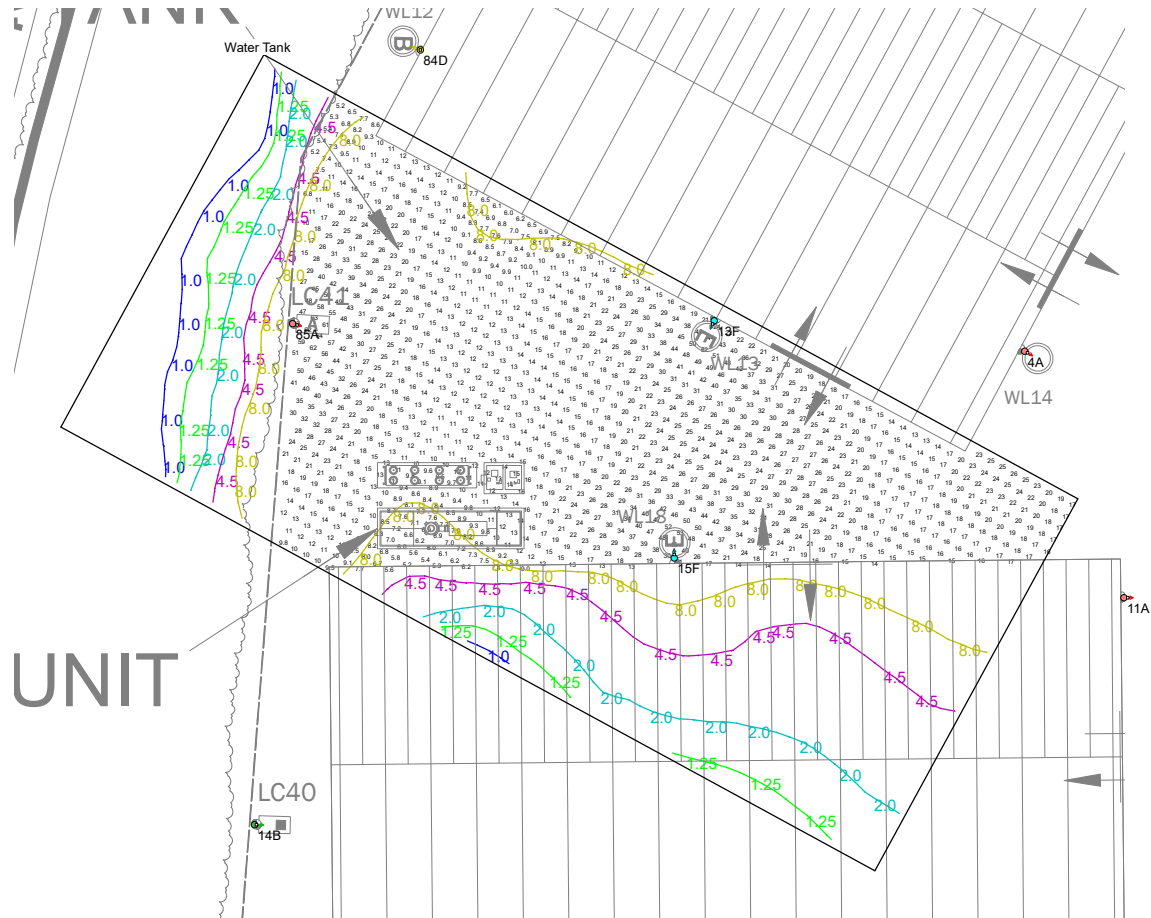


Results

Eav	23.89
Emin	6.29
Emax	76.51
Emin/Emax	0.08
Emin/Eav	0.26

Horizontal Illuminance (lux)

Water Tank



Results

Eav	20.15
Emin	5.18
Emax	63.73
Emin/Emax	0.08
Emin/Eav	0.26

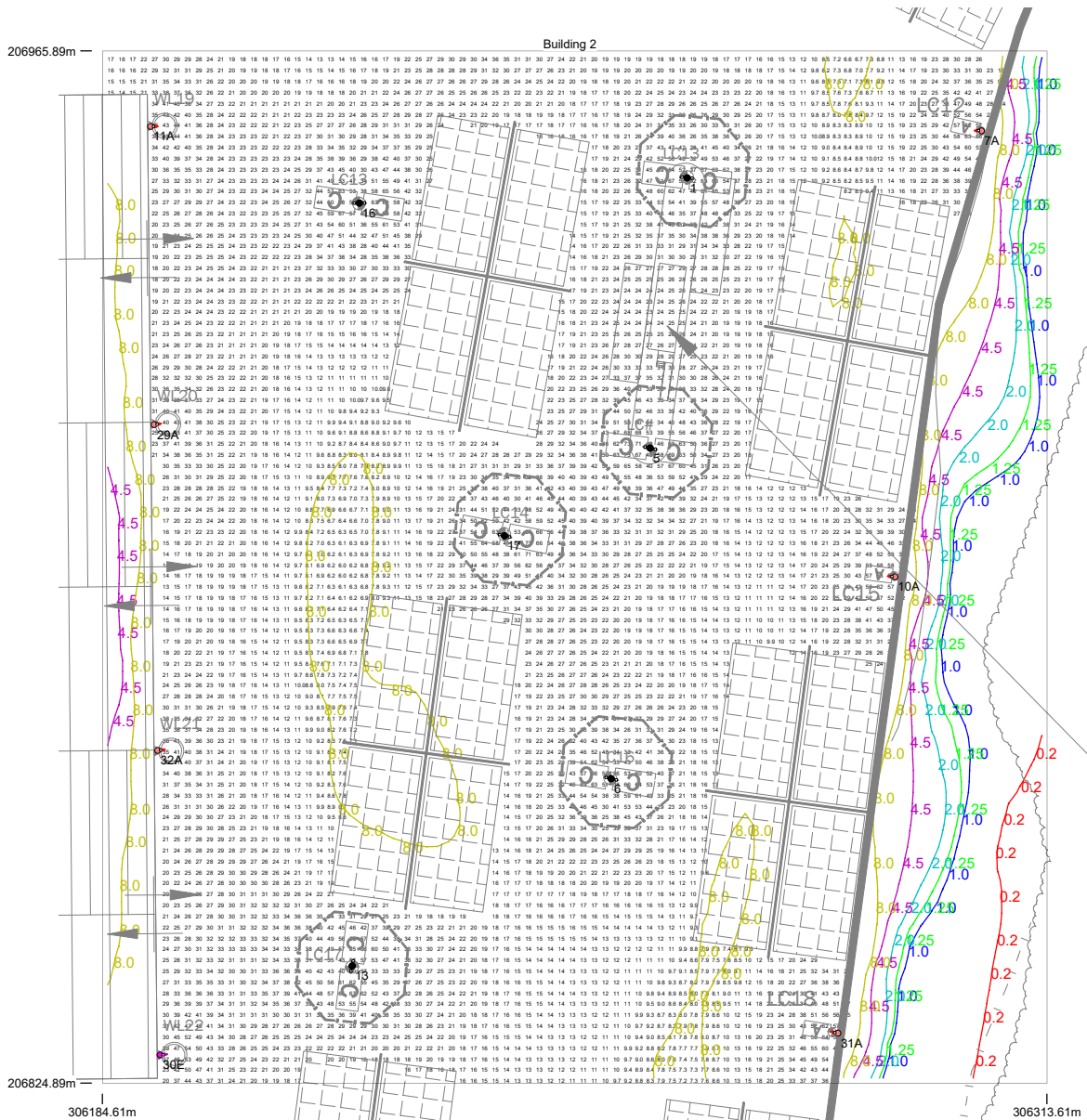
DATE: 2 March 2022
PROJECT No: WLC329

DESIGNER: WLC
PROJECT NAME: GOAT MILL RD, MERTHYR TYDFIL



Horizontal Illuminance (lux)

Building 2



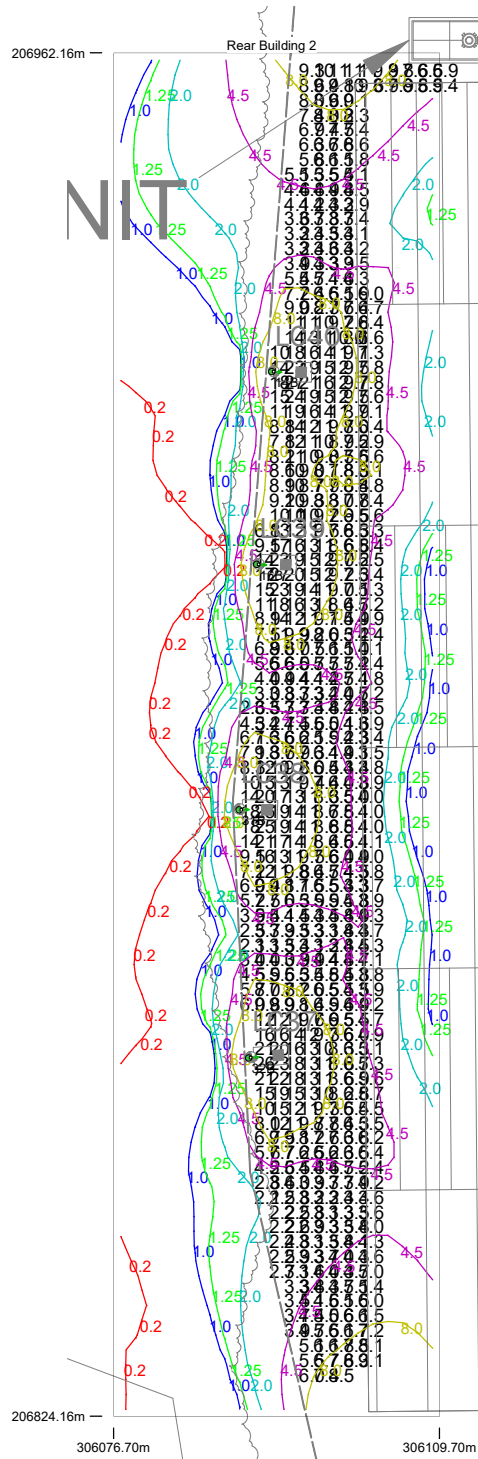
Results

Eav	24.01
Emin	5.99
Emax	73.32
Emin/Emax	0.08
Emin/Eav	0.25

DESIGNER: WLC
PROJECT NAME: GOA

Horizontal Illuminance (lux)

Rear Building 2



Results

Eav	7.80
Emin	2.06
Emax	27.38
Emin/Emax	0.08
Emin/Eav	0.26

Horizontal Illuminance (lux)

Rear Building 1



Results

Eav	8.18
Emin	1.01
Emax	41.25
Emin/Emax	0.02
Emin/Eav	0.12