



Design Considerations & Environmental Report

**Carter's Site
Reading**

DESIGN CONSIDERATIONS & ENVIRONMENTAL REPORT

Document Issue Sheet

Revision	Project Number	Document Reference	Prepared By	Date	Verified	Date
R0	WLC907	WLC907-DCR-001		11/03/2025		26/03/2025

This Design Considerations & Environmental Report 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.

Williams Lighting Consultants Ltd.

Office 6, Stonehouse Business Centre, 1a Middle Row, Chipping Norton, OX7 5NH

t: 01608 642530 e: info@wlclighting.co.uk

web: www.wlclighting.co.uk

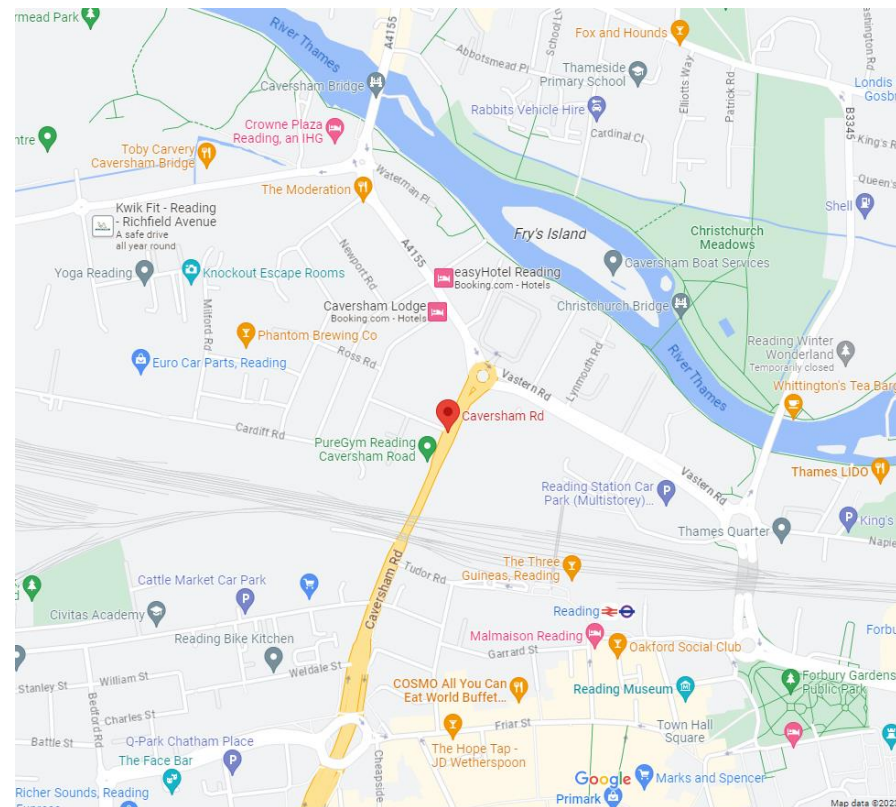
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1. Introduction

1.1 This Design Considerations & Environmental Report has been prepared by Williams Lighting Consultants Ltd. for and on behalf of the Client. The report assesses the requirements for safety fences (lighting protection), design considerations, Health and Safety requirements, environmental impacts and future maintenance schedules associated with the proposed lighting equipment.

1.2 Site Location:



2. Safety Fences – Lighting Columns

2.1 All lighting columns are to be positioned at least 0.8m from the kerb edge or at the rear of the footpath. Refer to Appendices A and B for further details.

2.2 The British Standard recommends a 0.8m setback as a minimum. With the above proposals, it is considered that safety barriers will not be a requirement for any lighting column within the proposed design.

3. Maintenance Activities

3.1 Electrical Test and Inspection

- 3.1.1 Upon installation, all lighting columns shall have an electrical installation certificate as per the latest BS7671 Requirements for Electrical Installations - IET Wiring Regulations. This certificate is to be passed and to the authority and developer upon adoption/completion.
- 3.1.2 Each lighting column shall require a periodic condition report every 6 years dated from the initial test certificate.

3.2 Lamp Changes

- 3.2.1 The proposed lanterns utilize an LED light source, lamp changes will not be required. It is however recommended that the LED lens be cleaned every 6 years and driver replacements should be considered.

3.3 Structural Test and Inspections

- 3.3.1 It is recommended that all lighting columns are visually inspected for damage every three years for the first six years and then every 2 years.
- 3.3.2 Columns to be structurally tested and inspected following with industry best practice ILP Guidance Note 22/19 Asset-Management Toolkit: Minor Structures.

4. Health and Safety

4.1 All works are to be carried out considering current Health and Safety regulations, legislation and Construction Design Management 2015 regulations. The below list is not exhaustive:

- Highways Act, 1980
- The Management of Health and Safety at Work Regulations, 1999 and 2003
- Electricity at Work Regulations, 1989
- CDM Regulations 2015
- BS7671 Wiring Regulations
- New Roads and Street Works Act (NRSWA), 1991
- BS5489 (British Standards for Lighting)
- G39/1 Working in Vicinity of DNO Equipment

4.2 Under CDM a project is notifiable if the construction work is to exceed 30 working days and has more than 20 workers working simultaneously at any point or exceeds 500 person-days. If any of these are applicable an F10 form must be submitted. This form can be found by visiting the HSE website.

4.3 CDM regulations will still apply if the project does not meet the above requirements. If any of this is in doubt the company should seek professional advice.

4.4 It is recommended that all street lighting works are carried out by an HERS Registered contractor.

4.5 All electrical works must comply with the latest BS7671 Requirements for Electrical Installations - IET Wiring Regulations.

5. Design Considerations

5.1 Existing Lighting

5.1.1 The site is a new development – no lighting is present.

5.2 Maintenance Factors

5.2.1 Proposed luminaire maintenance factors have been derived from an E3 environmental zone with a 72-month cleaning cycle. Luminaire lumen maintenance factor at 100,000 hours is 0.9 mounted at a height of less than 6m producing an MF of 0.76.

5.3 Overhead Cables

5.3.1 None present.

5.4 Lighting Levels

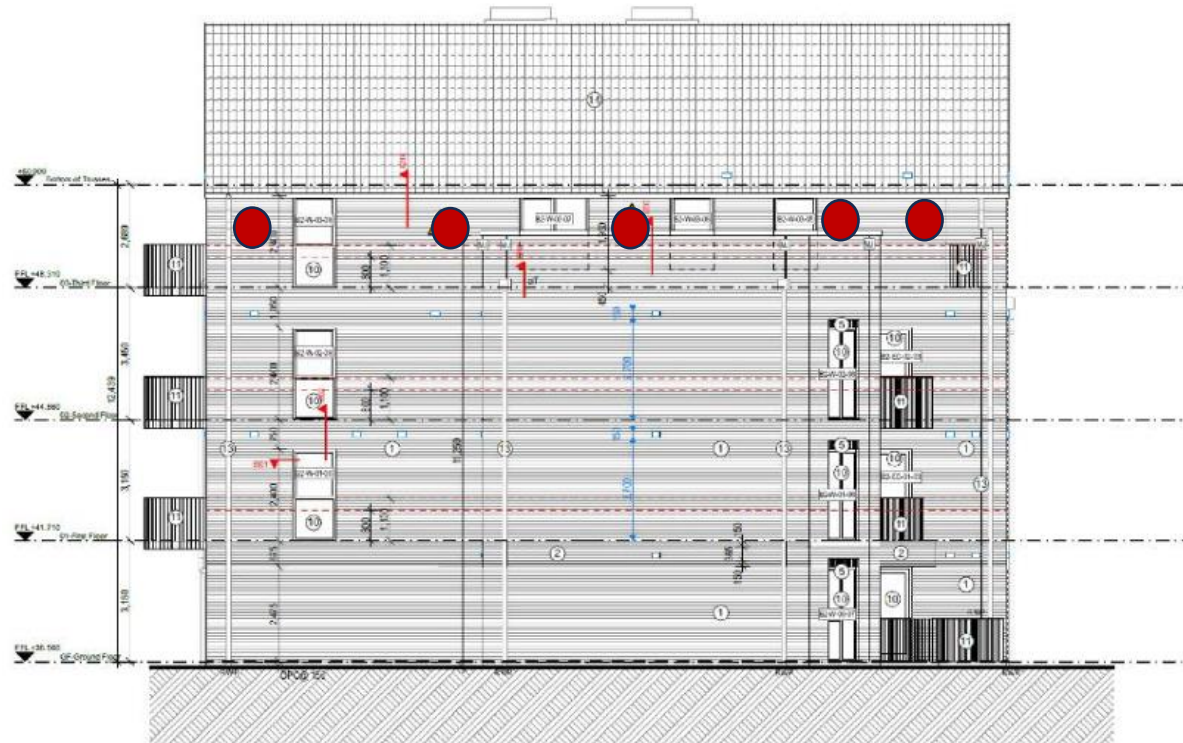
5.4.1 The proposals have been designed to meet the requirements of the lighting class P5 as per BS5489-1:2020. Considering E3 zone, low speed limit, very low usage.

5.5 Ecology Concerns

5.5.1 No immediate existing ecological impacts within the vicinity of the works i.e. hedgerows, trees, bat foraging / commuting routes.

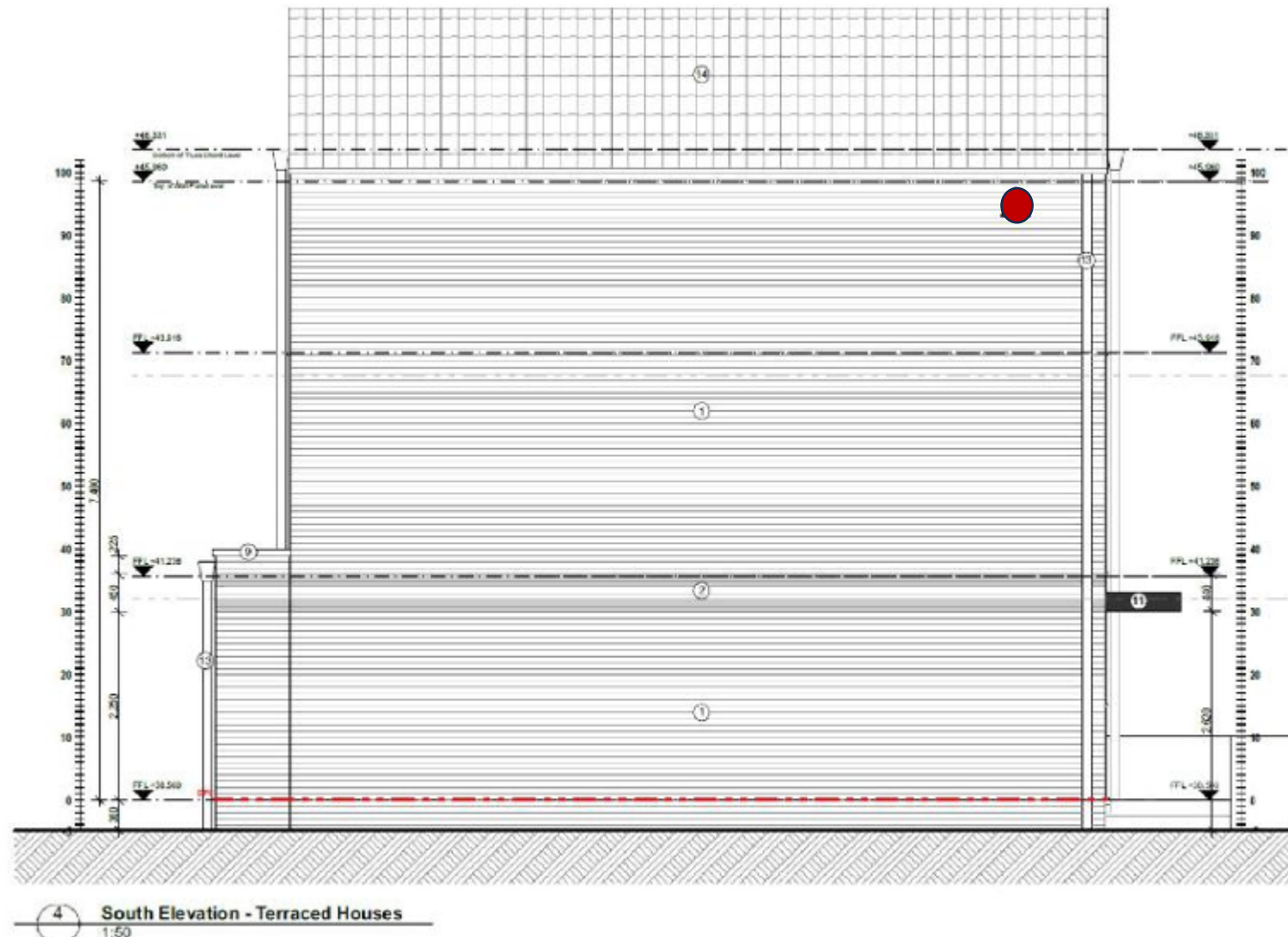
5.5.2 Colour temperature selected at 2700K to reduce the potential impact on local ecology.

5.5.3 Proposed bat boxes are shown on our plans – lighting does not directly impact any proposed bat box – refer to Appendix D for bat box locations. Refer to below figures detailing bat box mounting location:



3 Block B2 South Elevation
1:100

Figure 1 Bat Box mounting ●



5.5.4 Refer to Appendix D Private Lighting Layout for A combined (private and adoptable) lux contour plan.

6. Environmental Considerations

6.1 Proposed Lighting

- 6.1.1 The proposed design ensures existing receptors do not have any light spill onto their properties.
- 6.1.2 The potential lighting impact has been significantly reduced using a competent design practice and careful considerations towards heights of columns and equipment specification.

6.2 Obtrusive Light Limitations for Exterior Lighting

- 6.2.1 The below table has been reproduced from the ILP GN01/20 and provides maximum limits on vertical illuminance values on properties.

Table 1 (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

- 6.2.2 The proposed site is considered under Environmental Zone E3 (medium district brightness). Shielding proposed to reduce back spill light on surrounding properties.
- 6.2.3 The below table has been reproduced from the ILP GN01/20 and provides maximum limits on upward light values.

Table 2 (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

6.3 Proposed Luminaire

Table 3: Luminaire Specification				
Luminaire	Proposed Locations	Characteristics		Image
Holophane V-Max	Highway lighting	Upward Light:	0%	
		Glare Rating:	G4	
		Colour temperature:	2700K (Warm White)	
		Efficacy:	Up to 140lm/cW	

6.4 Ecology

6.4.1 See 5.5.

7. Environmental Residual Effects

7.1 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.

7.2 Operational - Landscape and Visual (permanent impact)

7.2.1 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. With the use of modern lanterns light is well controlled.

7.2.2 Recommendation: Design prepared by competent designer following BS 5489 and ILP Guidance on the Reduction of Obtrusive Light.

7.3 Operational - Community (permanent impact)

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

- A reduction in the fear of crime
- Encourage the use of more sustainable modes of transport, such as walking, cycling.

7.3.2 Recommendation: None

7.4 Construction and Demolition - Noise (temporary impact)

7.4.1 Noise during construction

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

7.5 Construction and Demolition - Dust (temporary impact)

7.5.1 Dust during construction

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

7.6 Construction and Demolition – Ground Contamination (temporary impact)

7.6.1 None anticipated

7.6.2 Recommendation: None

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

7.7.1 Storage of materials is anticipated

7.7.2 Recommendation: Hazardous materials to be handled, stored, and transported following COSHH regulations and manufacturer guidelines.

7.8 Construction and Demolition – Waste

7.8.1 Waste is anticipated

7.8.2 Recommendation: Lamps and lanterns to be disposed of following WEEE regulations. Columns to be recycled where possible.

APPENDIX A: LIGHTING CALCULATION REPORT – ADOPTABLE

DATE: 26 March 2025
DESIGNER: WLC
PROJECT No: WLC907-S38
PROJECT NAME: S38 CARTERS SITE, READING



R1: LA REVIEW - CT CHANGED TO 3000K
R2: ECOLOGY REVIEW - CT CHANGED TO 2700K

THE PROPOSALS HAVE BEEN DESIGNED TO MEET THE
REQUIREMENTS OF THE FOLLOWING TARGET LIGHTING
CLASS(ES): P5 IN ACCORDANCE WITH BS 5489:2020

LEVELS ACHIEVED:
REFER TO INDIVIDUAL GRID WITHIN REPORT.

WLC907-S38-LC-AC-001 R2

PREPARED BY: Williams Lighting Consultants Ltd.
t: 01608 642530
e-mail: info@wlclighting.co.uk
website: www.wlclighting.co.uk

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Grid Origin 471249.7m x 174150.6m

Area 73.3m x 81.0m

Sample Spacing 1.50m x 1.50m

Luminaires

Luminaire A Data

Supplier	
Type	VMX.2.LA032.V1.F4Q1.W018
Lamp(s)	LED C.3000 Lumens
Lamp Flux (klm)	2.28
File Name	VMX.2.LA032.V1.F4Q1.W018.IES
Maintenance Factor	0.76
Lum. Int. Class	G4
No. in Project	1

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	471286.05	174183.33	6.00	108.00	0.00	0.00	0.30			

Horizontal Illuminance (lux)

Grid 1



Results

Eav	3.51
Emin	0.67
Emax	7.53
Emin/Emax	0.09
Emin/Eav	0.19

APPENDIX B: LIGHTING CALCULATION REPORT – ADOPTABLE

DATE: 11 March 2025
DESIGNER: WLC
PROJECT No: WLC907-PRV
PROJECT NAME: CARTERS SITE, READING



R1: REVISED CT TO 3000K
R2: PLANNING REVIEW

THE PROPOSALS HAVE BEEN DESIGNED TO MEET THE
REQUIREMENTS OF THE FOLLOWING TARGET LIGHTING
CLASS(ES): P5 IN ACCORDANCE WITH BS 5489:2020

LEVELS ACHIEVED:
REFER TO INDIVIDUAL GRID WITHIN REPORT.

WLC907-PRV-LC-AC-001 R2

PREPARED BY: Williams Lighting Consultants Ltd.
t: 01608 642530
e-mail: info@wlclighting.co.uk
website: www.wlclighting.co.uk

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	Grid 1	471215.69	174132.62	108.00	102.00	1.50	1.50

Luminaires

Luminaire A Data



Supplier	Holophane Europe
Type	VMXII.1.LA032.V1.F4Q1.W022 (TZ)
Lamp(s)	LED C.3000 Lumens
Lamp Flux (klm)	2.72
File Name	VMXII.1.LA032.V1.F4Q1.W022 (TZ).IES
Maintenance Factor	0.76
Lum. Int. Class	G4
No. in Project	2

Luminaire B Data



Supplier	Holophane Europe
Type	VMXII.1.LA022.V1.X2L3.W011 (TZ)
Lamp(s)	LED C.2000 Lumens
Lamp Flux (klm)	1.26
File Name	VMXII.1.LA022.V1.X2L3.W011 (TZ).IES
Maintenance Factor	0.76
Lum. Int. Class	G3
No. in Project	2

Luminaire C Data

Supplier	
Type	VMX.2.LA032.V1.F4Q1.W018
Lamp(s)	LED C.3000 Lumens
Lamp Flux (klm)	2.28
File Name	VMX.2.LA032.V1.F4Q1.W018.IES
Maintenance Factor	0.76
Lum. Int. Class	G4
No. in Project	1

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	C	471285.81	174183.05	6.00	109.00	0.00	0.00	0.30			
2	B	471250.18	174182.03	6.00	288.00	0.00	0.00	0.30			
3	B	471232.75	174174.58	6.00	8.00	0.00	0.00	0.30			
4	A	471266.63	174167.87	6.00	16.00	0.00	0.00	0.30			
5	A	471264.33	174144.11	6.00	93.00	0.00	0.00	0.30			

Horizontal Illuminance (lux)

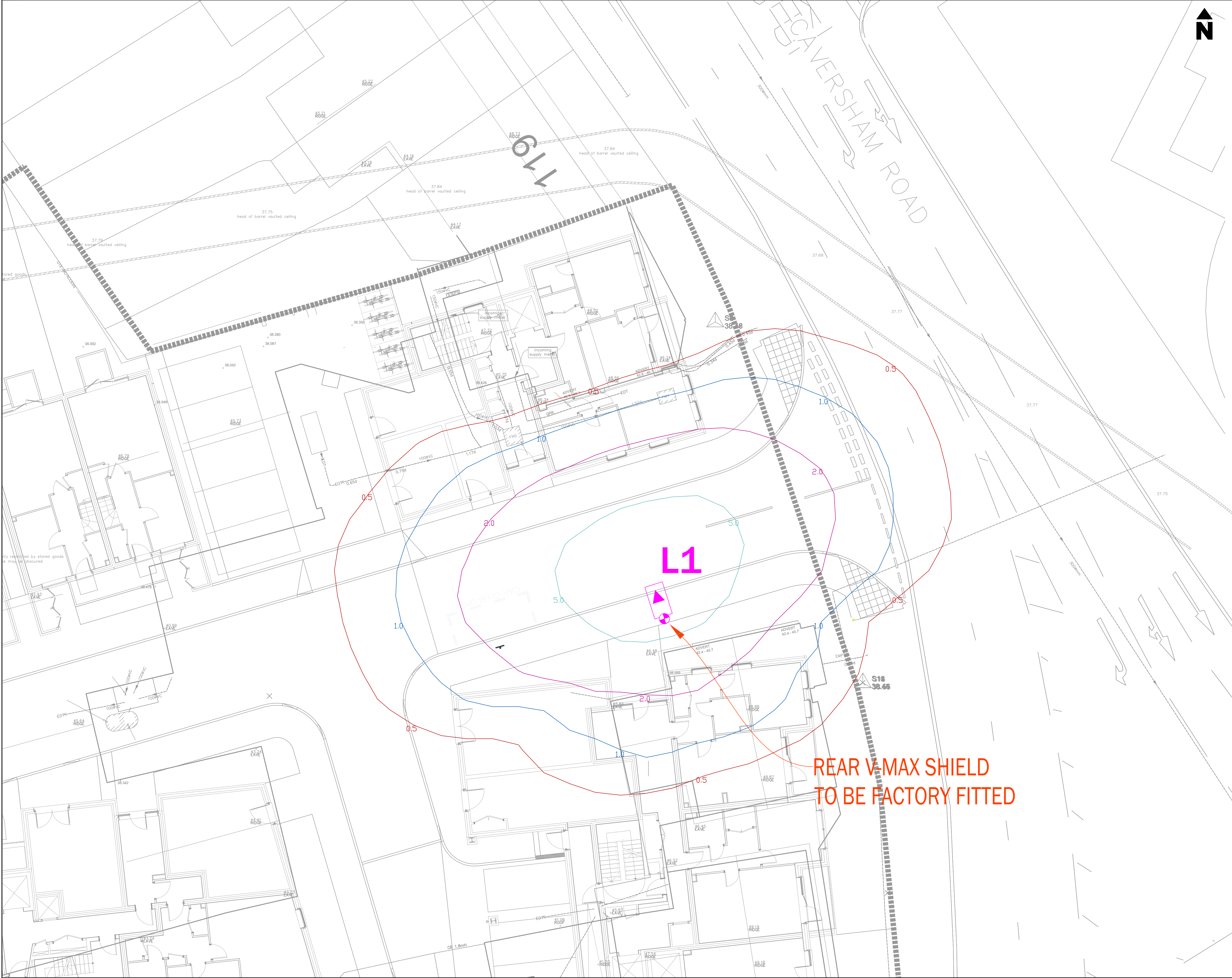
Grid 1



Results

Eav	3.76
Emin	0.64
E _{max}	9.17
E _{min} /E _{max}	0.07
E _{min} /E _{av}	0.17

APPENDIX C: LIGHTING LAYOUT – ADOPTABLE



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. UNKNOWN UTILITIES MAY BE PRESENT - ANY UTILITIES SHOWN ARE INDICATIVE. CONTRACTOR MUST REFER TO UP TO DATE UTILITY PLANS.

2. REFER TO CDM RISK ASSESSMENT.

SYMBOL	QUANTITY
	1

PROPOSED LIGHTING COLUMN AND LANTERN:

COLUMN:

60mm TUBULAR GALVANISED STEEL LIGHTING COLUMN AS PER READING BOROUGH COUNCILS SPECIFICATION FOR ROAD LIGHTING AND BS EN40

LANTERN:

LIGHT SOURCE:

LED 2700K WARM WHITE

FLUX:

2280lm

WATTAGE:

18W

OPTIC:

F401

LANTERN MOUNTING:

POST TOP - 76MM

LANTERN INCLINATION:

0°

CONTROL GEAR REF:

LED ELECTRONIC DRIVER DALI ENABLED

ISOLATOR:

CHARLES ENGINEER DOUBLE POLE ISOLATOR

SWITCHING:

CMS MAYFLOWER NODE

SUPPLY:

NEW UNMETERED DNO SUPPLY

GLARE RATING:

G4

LIGHTING CALCULATION DETAILS:

THE PROPOSALS HAVE BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE FOLLOWING TARGET LIGHTING CLASSES: P6 FOLLOWING BS5489-1:2020.

LEVELS ACHIEVED:

REFER TO LIGHTING CALCULATION REPORTS.

LUX CONTOUR LINES - CALCULATED AT GROUND LEVEL:

SYMBOL	DESCRIPTION
	0.50 LUX CONTOUR LINE
	1.00 LUX CONTOUR LINE
	2.00 LUX CONTOUR LINE
	5.00 LUX CONTOUR LINE

LIGHTING NOTES:

1. THE PROPOSALS HAVE BEEN DESIGNED TO MEET THE REQUIREMENTS OF THE FOLLOWING TARGET LIGHTING CLASSES: P6

2. THIS DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH HEA HEMSA GUIDANCE NOTE - CDM2015 REGULATIONS, ISSUE 1.1, DATED 09/04/15

2.1. PROCEDURE 3 - DETAILED DESIGN - BASED ON INFORMATION PROVIDED BY THE CLIENT

3. REFER TO DESIGNERS HAZARD ELIMINATION AND MANAGEMENT DOCUMENT.

4. ALL NEW COLUMNS AND ILLUMINATED SIGNS TO BE DNO SERVICED, UNLESS AGREED OTHERWISE IN WRITING.

5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LIAISE WITH THE DNO FOR MAINS SERVICE TO STREET LIGHTING AND LIT TRAFFIC SIGNS UNLESS OTHERWISE AGREED.

6. ALL APPARATUS TO BE:

6.1. INSTALLED AND TESTED IN COMPLIANCE WITH BS7671 LATEST EDITION.

6.2. NUMBERED / LABELED AS AGREED WITH AUTHORITY ENGINEER.

6.3. NEW AT THE TIME OF INSTALLATION AND SUPPORTED BY RELEVANT MANUFACTURERS GUARANTEES AND DATA SHEETS.

7. ALL WORKS SHOULD BE CARRIED OUT BY A SUITABLY QUALIFIED AND COMPETENT PERSONS IN ACCORDANCE WITH BUT NOT LIMITED TO, GS39 'WORKING IN THE VICINITY OF DNO EQUIPMENT', WORKING AT HEIGHT REGULATIONS', 'ELECTRICITY AT WORK REGULATIONS', 'SAFE DIGGING PRACTICES H5047' 'AVOIDING DANGER FROM UNDERGROUND SERVICES' AND 'CODE OF PRACTICE FOR ELECTRICAL SAFETY AND HIGHWAY ELECTRICAL OPERATIONS'

8. 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.

9. 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, TRIAL HOLES OF A SUITABLE SIZE ARE TO BE DUG BEFORE PLANNED INSTALLATION OF ANY COLUMNS.

10. ISO-LUX CONTOUR LINES SHOWN ARE INDICATIVE.

11. ALL COLUMNS ARE TO BE AT REAR OF FOOTWAY / SERVICE STRIP OR AT CLEARANCE INDICATED. IF COLUMNS CANNOT BE INSTALLED AS SET OUT IN THIS DRAWING THEN THE DESIGNER IS TO BE CONSULTED FOR ALTERNATIVE POSITIONS.

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

R2
R1
REV:

REVISED CT TO 2700K
LA REVIEW
FIRST ISSUE
DESCRIPTION:

PW
PW
BY:

28.03.25
17.10.23
20.09.23
DATE:

STATUS:

FOR APPROVAL

Williams Lighting Consultants Ltd.

info@wlighting.co.uk
www.wlighting.co.uk
01608 642530

SITE:

S38 CARTER'S SITE
READING

TITLE:

PROPOSED ADOPTABLE
LIGHTING LAYOUT

SCALE AT A1:

1:100

DATE:

19.09.23

DRAWN:

PW

CHECKED:

LD

PROJECT NO:

WLC907-S38

DRAWING NO:

WLC907-S38-1300-001

REVISION:

R2

APPENDIX D: LIGHTING LAYOUT - PRIVATE

