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THE PADEL CLUB, Q LEISURE, LONDON ROAD, ALBOURNE, HASSOCKS

LIGHTING SURVEY REPORT

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Designs for Lighting (DFL) is a business built on successfully collaborating with our clients. We have over 20 years proven experience in our industry, listening to the challenges our clients face, developing the best solutions and being innovators in our specialism. Our role is to find the most effective and sustainable outcome to enhance and support your projects. We proudly work with recognised industry bodies to promote and shape the future of the industry and ensure our staff are trained to exceed the required competency levels of our industries. Above all, we ensure each project delivers against our values.

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1. INTRODUCTION

1.1. Executive Summary

1.1.1. This Lighting Survey Report has been written by DFL (Designs for Lighting Ltd), a lighting design consultancy specialising in Lighting Impact Assessments, obtrusive light mitigation, and detailed lighting design.

1.1.2. The Lighting Survey Report assesses the existing lighting installed at London Rd, Hassocks BN6 9BQ and the existing lighting environment surrounding the Application Site.

1.1.3. The lighting survey was carried out by two competent DFL lighting professionals with many years of experience conducting such surveys.

1.1.4. This report is to be read in conjunction with **3930-DFL-ELG-XX-RP-EO-13001**

2. BASELINE LIGHTING SURVEY

2.1. Introduction

2.1.1. To provide an objective assessment of the lighting baseline levels within and surrounding the Application Site, a lighting baseline survey has been undertaken.

2.1.2. This survey consisted of recorded illuminance levels and photography of the existing lighting at night.

2.2. Methodology

2.2.1. Illuminance measurements were taken in the horizontal plane with the illuminance meter being placed on the ground above the measurement point, and in the vertical plane at approximately 1.5 m in height facing north, east, south, and west. This totalled 5 illuminance readings per measurement location.

2.2.2. Measurements were taken using a Konica Minolta T-10A illuminance meter (serial number: 20015648) which has a current calibration certificate (certificate no: STD_137059). A copy of the calibration certificate can be found in **Appendix 1**. This is a handheld illuminance meter.

2.2.3. All photography was recorded in locations within and surrounding the Application Site, to provide an overview of the existing lighting, and to provide context to the illuminance readings that were recorded.

2.2.4. Photographs were recorded using a DSLR camera mounted on a tripod.

2.2.5. The location of all illuminance measurements and the photography locations can be seen in **Appendix 1**.

2.3. Weather Conditions During the Survey

Date	Astronomical Twilight	Moon Phase	Weather Conditions (night)	Night-time Phase Start
21-05-2025	22:38	Third Quarter	Overcast	22:38

Table 1: Weather Conditions During Lighting Survey

2.4. Illuminance Measurements

Reading number	Eh	Ev North	Ev East	Ev South	Ev West
1	0.53	3.71	0.70	0.04	0.67
2	84	9.68	3.44	4.47	5.18
3	11.34	12.91	2.74	5.94	5.24
4	238	43.5	222.7	36.1	2.11
5	1.1	3.63	1.28	0.12	0.95
6	0.36	2.61	2.45	1.01	0.88
7	1.87	2.19	0.22	0.46	5.88
8	2.06	3.79	0.29	1.18	4.35
9	3.66	6.96	0.23	1.42	7.06
10	0.02	0.01	0.29	0.11	0.01-
11	0.02	0.02	0.2	0.06	0.01
12	0.01	0.03	0.01	0.04	0.01
13	0.02	0.02	0.02	0.01	0.01
14	0.01	0.02	0.01	0.01	0.01
15	0.01	0.01	0.01	0.01	0
16	0.01	0.01	0.03	0.02	0
17	0.01	0	0.01	0.01	0
18	0.01	0.01	0.02	0.01	0

Table 2:Baseline Illuminance Results

2.4.1. The data shows a single strong lighting event at Reading 4, where horizontal illuminance peaks at 238 lux and vertical values—especially Ev East at 222.7 lux—indicate a dominant light source from the east, shown in **Figure 10**. Most other readings are much lower, generally under 12 lux, with minimal vertical values across all directions. Readings 11–18 record only background levels around 0.01 lux, showing very low ambient lighting overall.

2.5. Nighttime Photography

2.5.1. To provide some visual context to the illuminance readings photography has been recorded across the Application Site.

2.5.2. The photography taken during the lighting survey can be seen below (**Figure 1** - **Figure** 2).

Photography Location 1 – Photo 1

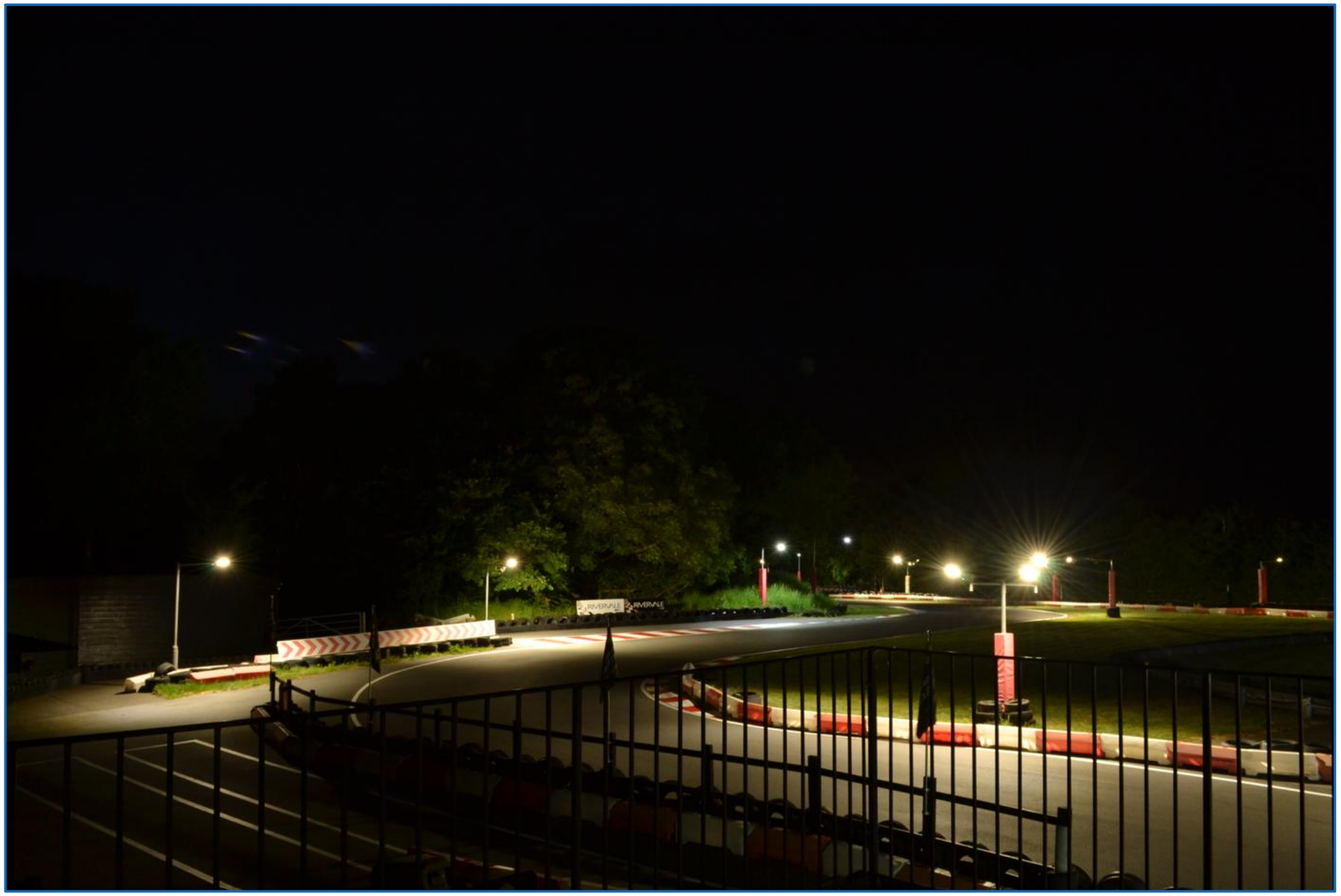

Figure 1: View from Photography Location 1 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/10

Exposure Time: 2 seconds

ISO Speed: ISO- 400

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 1 – Photo 2

Figure 2: View from Photography Location 1 – Photo 2

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/10

Exposure Time: 5 sec

ISO Speed: ISO- 400

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 2 – Photo 1

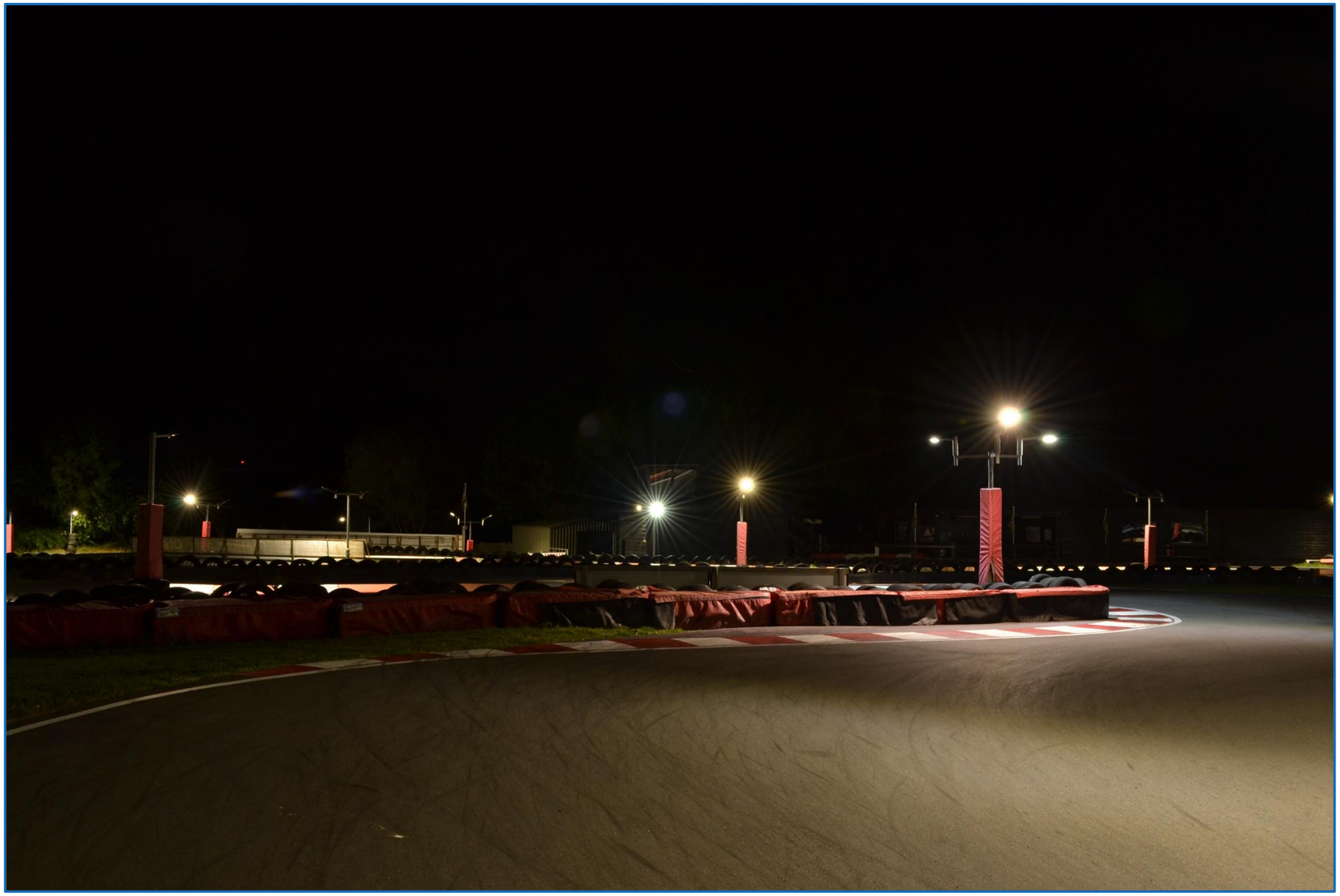

Figure 3: View from Photography Location 2 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 2.5 sec

ISO Speed: ISO- 200

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 3 – Photo 1

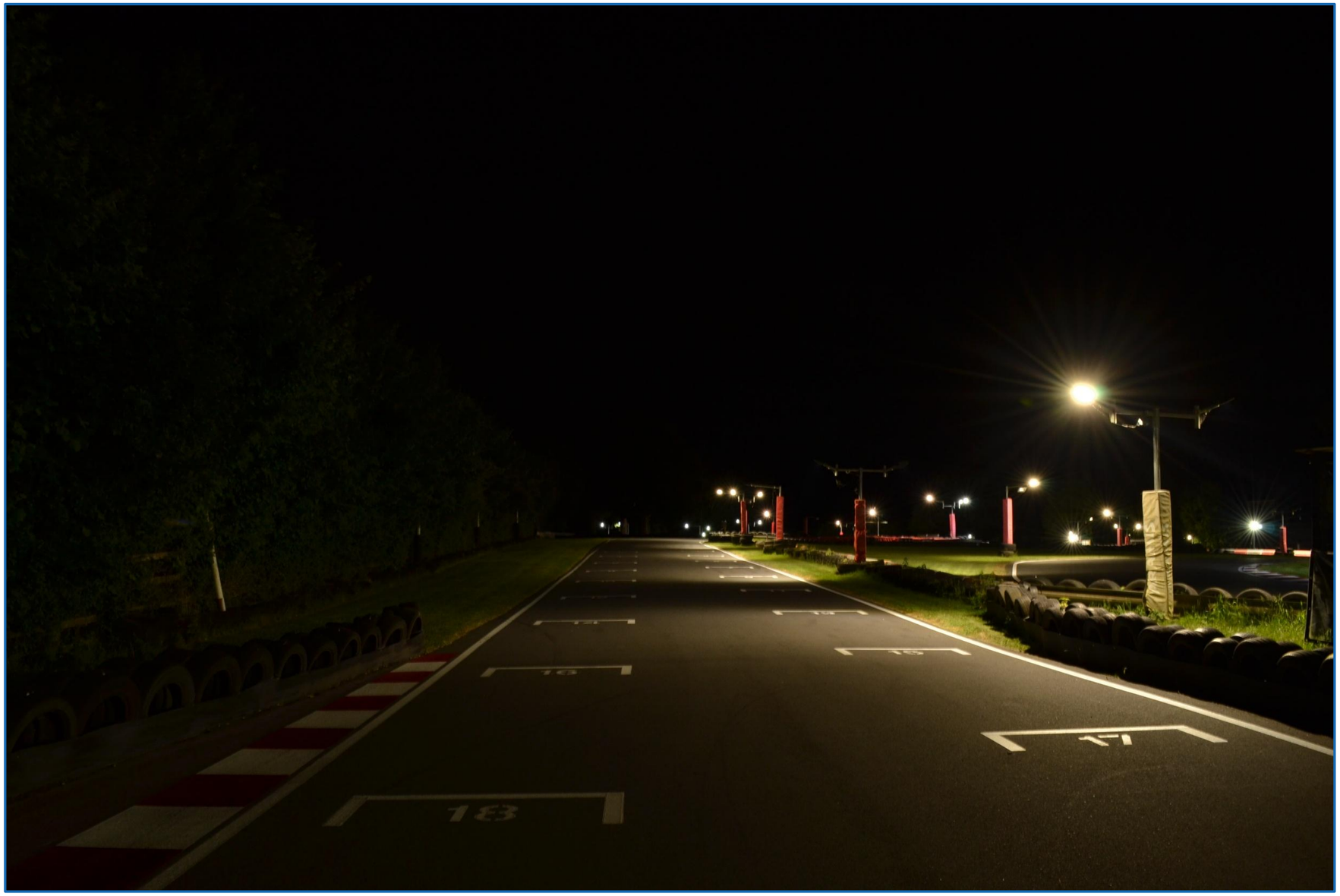

Figure 4: View from Photography Location 3 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 2.5 sec

ISO Speed: ISO- 200

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 3 – Photo 2

Figure 5: View from Photography Location 3 – Photo 2

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 2.5 sec

ISO Speed: ISO- 200

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 4– Photo 1

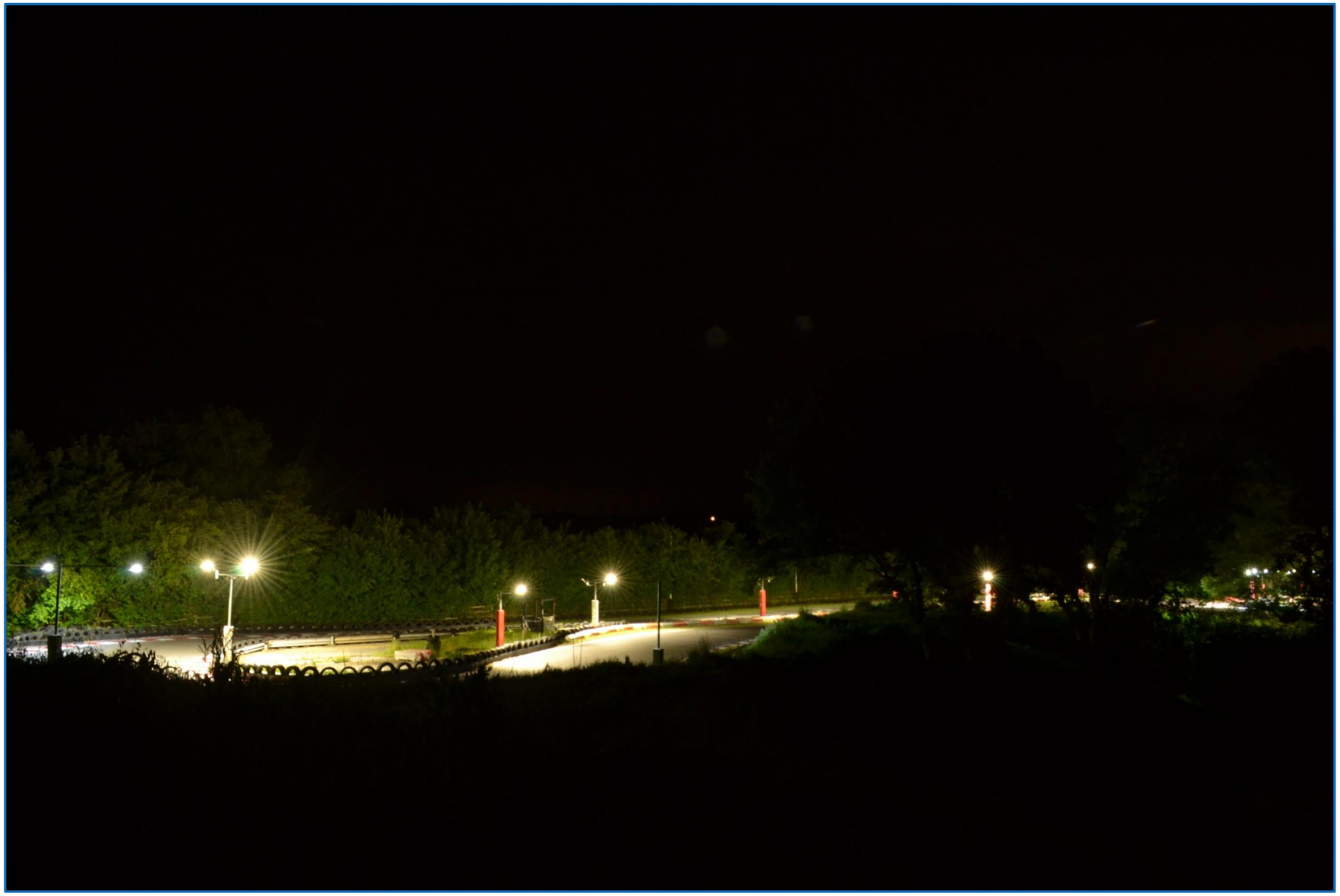

Figure 6: View from Photography Location 4 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 4 sec

ISO Speed: ISO- 800

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 5 – Photo 1

Figure 7: View from Photography Location 5– Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 13 sec

ISO Speed: ISO- 800

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 6– Photo 1

Figure 8: View from Photography Location 6 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 13 sec

ISO Speed: ISO- 800

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 7– Photo 1

Figure 9: View from Photography Location 7 – Photo 1

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 2 sec

ISO Speed: ISO- 400

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

Photography Location 7– Photo 2

Figure 10: View from Photography Location 7 – Photo 2

This page is only for electronic viewing only and the brightness of the screen used to view should be set to maximum brightness.

Photo Parameters:

F-stop: f/ 10

Exposure Time: 2 sec

ISO Speed: ISO- 400

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Location:

2.6. Lighting Baseline Summary

2.6.1. The lighting survey revealed that there was minimal illumination across the application site, with only the go-kart track, car park, and the main site building being adequately lit. The rest of the area, including the application site itself, was notably dark, with little to no artificial lighting observed.

2.6.2. The application site is situated within a steep embankment, which further contributes to the lack of lighting in the area. This topographical feature, combined with the general absence of lighting infrastructure, results in a predominantly unlit environment, creating a stark contrast with the more illuminated areas of the site.

3. CONCLUSION

3.1.1. In conclusion, the lighting survey indicates that the application site is relatively dark, with minimal illumination observed across the area. Only the go-kart track, car park, and main site building are adequately lit, while the rest of the site, including the application area, remains poorly illuminated. The site's location on a steep embankment further exacerbates the lack of lighting, creating a stark contrast with the more brightly lit zones. Therefore, the proposed lighting from the application site will not significantly impact the rest of the site, as the embankment will largely block out most of the light.

APPENDIX 1

Lighting Baseline Survey Maps and Equipment Calibration

Figure 11: Illuminance Measurement Locations

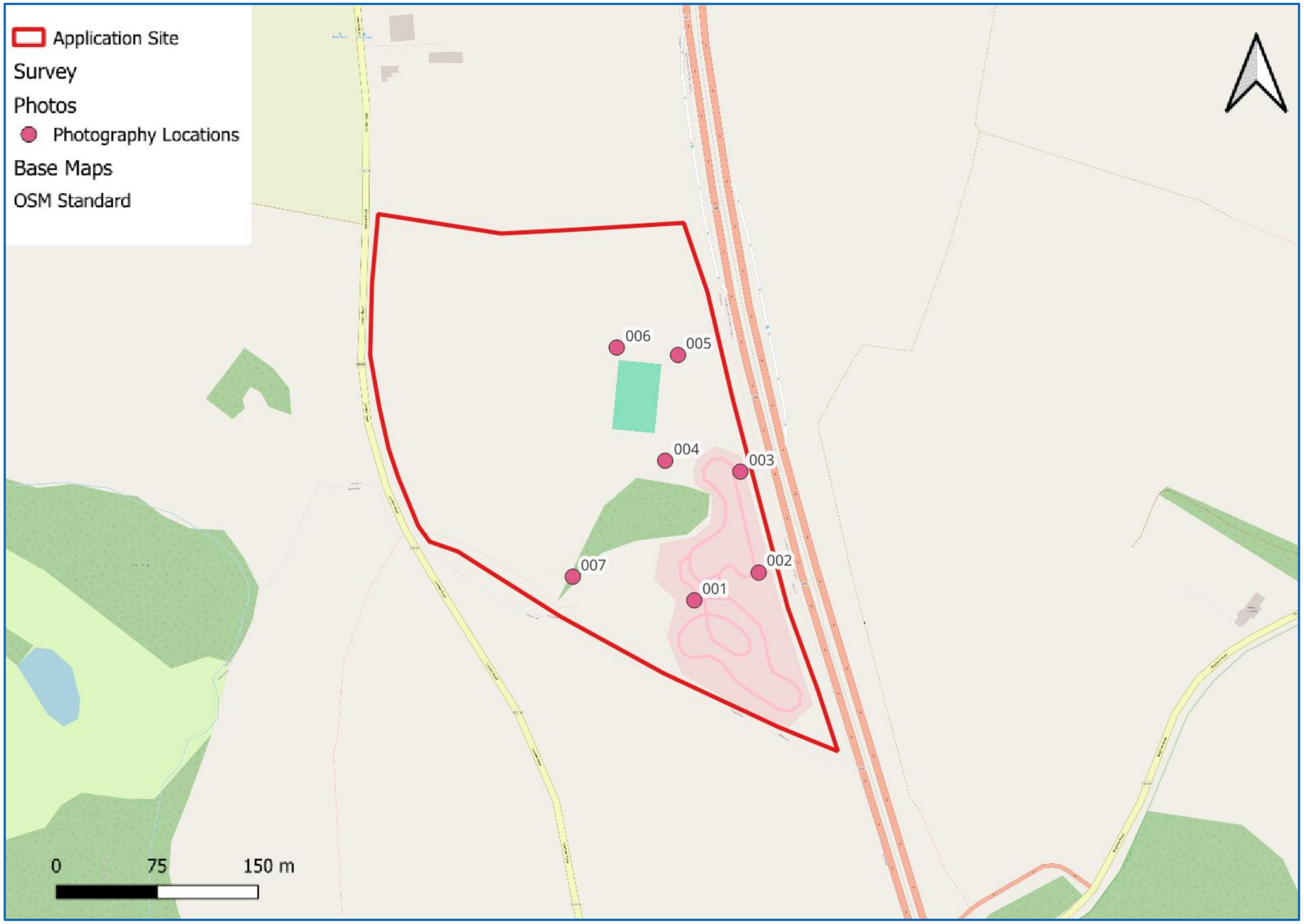

Figure 12: Photography Locations

Certificate of Calibration

Issued by: BSRIA Limited
Date of issue: 29 July 2024

Certificate number STD_154400

Page 1 of 2 pages

BSRIA

Laboratory address:
Old Bracknell Lane West, Bracknell,
Berkshire RG12 7AH
T: +44 (0) 1344 459 314 | 0800 254 5566
E: instruments@bsria.co.uk
W: www.bsria.com/uk/instrument/

MARTIN TROTTER

Approved signatory

Customer: Designs for Lighting UK Ltd
Fao Fran Goodyear 17 City Business Centre Hyde Street
Winchester Hampshire SO23 7TA

Date received: 13 July 2024

Instrument:

BSRIA I.D.:	129521
Description:	Light meter
Manufacturer:	Konica Minolta
Model:	T-10A
Serial number:	36621008
Procedure version:	BLT264V1

Laboratory conditions:

Temperature: 20 °C ± 4 °C Relative humidity: < 75 %rh
Mains voltage: 240 V ± 10 V Mains frequency: 50 Hz ± 1 Hz

Comments:

Instrument calibration conducted as found - no adjustments undertaken.
This certificate only relates to the range shown within.
At time of calibration the instrument was fitted with the measurement head serial number 55611050.

Calibration information:

The instrument was calibrated by comparison against laboratory reference equipment whose values are traceable to recognised National Standards. This is an electronic document that has been signed digitally.

The uncertainties quoted refer to the calibration only and are not intended to indicate any long-term instrument specification/performance. This certificate only relates to the items calibrated and was performed at the above laboratory address.

Calibrated by: D. M. Tovey **Date of calibration:** 29 July 2024

Figure 13: **Illuminance Meter Calibration Certificate Page 1**

Certificate of Calibration

As Found Results

Certificate number STD_154400

Page 2 of 2 pages

Reference equipment used in the calibration:

Instrument description	Serial number	Certificate number	Last cal. date	Cal. period
Light Bench (ZZMLB02)	18425/2 & 18426/1	ZZMLB02 - March 2024	14/03/2024	12 Months
Light Bench (ZZMLB03)	18425/1 & 18427/1	ZZMLB03 - March 2024	14/03/2024	12 Months
Distance Measuring System (ZZMLB04)	4816	ZZMLB04 - Feb 2024	15/02/2024	12 Months

Calibration uncertainties:

Illuminance : 0 to 2000 lux ±5 % of applied value or 0.1 lux whichever is greatest.
Measurement uncertainty equals the above plus the devices resolution as reported in the results section, added in quadrature.

Calibration procedure, Illuminance:

The instrument was calibrated against laboratory standards which are themselves traceable back to National Standards.

The illuminance measurements were conducted in accordance with the methodology contained in BS 667 using a tungsten filament lamp with a colour temperature of 2856 k. Illuminance levels were calculated using an inverse square law with respect to distance away from a tungsten filament lamp source.

The light meters reference plane was taken to be the front face of the diffuser.

The illuminance meter was zeroed prior to calibration.

Calibration results, Illuminance:

Range	Applied	Indicated	Correction	Specification	% of Spec.	Comment
Auto	0.00 lux	0.00 lux	0.00 lux	±0.01 lux	0.0 %	
	50.0 lux	50.5 lux	-0.5 lux	±1.1 lux	45.5 %	
	100.0 lux	100.5 lux	-0.5 lux	±2.1 lux	23.8 %	
	250.0 lux	248.8 lux	1.2 lux	±5.1 lux	23.5 %	
	500.0 lux	496 lux	4.0 lux	±11.0 lux	36.4 %	
	1000.0 lux	985 lux	15.0 lux	±21.0 lux	71.4 %	
	2000.0 lux	1966 lux	34.0 lux	±41.0 lux	82.9 %	

Any test points marked with a * do not comply with instrument specification.

End.

Figure 13: Illuminance Meter Calibration Certificate Page 2

TECHNICAL DESCRIPTIONS, DEFINITIONS & ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed *Abbreviation used by DFL LI&P.*

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term. *Abbreviation used by DFL LI&P.*

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation. *Abbreviation used by DFL LI&P.*

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption. *Spill light which because of quantitative, directional or spectral attributes in a given context gives rise to annoyance, discomfort, distraction or reduction in the ability to see essential information.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars. *The increase in diffuse illuminance of the night sky above that produced by natural sources such as the moon and visible star.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important. *Lighting of vertical surfaces such as walls, windows, statues, sculptures and people's faces*. CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light, *similar to the light from older incandescent lamps. (Tcp)The temperature of the Planckian radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions, measured in absolute temperature on the kelvin (K) scale.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface. *The SI derived unit of illuminance, measuring luminous flux per unit area (1 lux =1 lumen/m2).* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Lumens: measure how bright a light appears to our eyes. *The SI derived unit of luminous flux; a measure of the total quantity of visible light emitted by a source or received by a surface (unit: lumen).* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings. *Glare: condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or by extreme contrasts.* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.1.8

Luminous intensity: is light brightness or how intense the light source is. light intensity is how intense a light source is emitted or received in a particular direction, this is measured candelas and is termed as luminous intensity *Iv <of a source, in a given direction> quotient of the luminous flux, dΦv, leaving the source and propagated in the element of solid angle dΩ containing the given direction, by the element of solid angle (unit: cd =lm · sr -1.* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.2.

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted. *Base unit of luminous intensity in the International System of Units (SI); the luminous power per unit solid angle emitted by a point light source in a particular direction.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface. *The overall uniformity shall be calculated as the ratio of the lowest luminance, occurring at any grid point in the field of calculation, to the average luminance.* BS EN 13201-3-2015, Calculation of Performance Section 8.3.

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object. *Lv <in a given direction, at a given point of a real or imaginary surface> quantity defined by the formula (unit: cd · m-2 = lm · m-2 · sr-1)* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.3.

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area. *Ev (unit: lx = lm · m-2) 1. <at a point of a surface> quotient of the luminous flux dΦv incident on an element of the surface containing the point, by the area dA of that element 2. <at a point of a surface> equivalent definition: integral, taken over the hemisphere visible from the given point, of the expression.* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.10.

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light. *apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes, except the lamps themselves, all the parts necessary for fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.3

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output. *RULO <of a luminaire> ratio of the upward luminous flux of the luminaire, measured under specified practical conditions with its own lamp(s) and equipment, to the sum of the individual luminous fluxes of the same lamp(s) when operated outside the luminaire with the same equipment, under specified conditions* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.12.

Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and "wear and tear". *DEPRECATED: light loss factor ratio of illuminance produced by the lighting installation after a certain period to the illuminance produced by the installation when new Note 1 to entry: The term depreciation factor has been formerly used to designate the reciprocal of the above ratio. Note 2 to entry: The maintenance factor takes into account light losses caused by dirt accumulation on luminaires and room surfaces (in interiors) or other relevant surfaces (in exteriors, where appropriate), and the decrease of the luminous flux of lamps*. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.5.18.

***Tilt**: is how much the luminaire is lifted based on the fitting facing flat to the ground.*

***Outreach:** how far away the fitting is from the column/wall its mounted on to the light source*.

This isn't the end...

We don't just have the solution for what you need today. We also have the solutions you might need for the future. We have dedicated teams that deliver.

- **Lighting Impact and Planning** teams that focus on delivering the most effective and sensitive lighting solutions to support planning.
- **Residential** teams that cover all aspects of new development and redevelopment spanning private, section 38 and section 278 design packages.
- **Public Realm** teams that are experts in enhancing night-time public spaces to create inviting spaces and opportunity for local economies to thrive during the hours of darkness.
- **Electrical** teams – we don't just put a light in the ground, we can help you get power to it as well! Additionally, we also offer design services for EV charging. As this market rapidly expands, make sure you have the experts managing the load, otherwise your EV charging solutions might not live up to expectations.
- **Strategic Infrastructure** teams that offer Lighting and Electrical expertise for complex transport networks and interchanges.
- **Consultancy Services** teams that help when you know what you want but you need someone to help you turn the idea into a project.

Finally, as innovators, you might be facing something bespoke or niche. Don't worry – we might have the answer you need. Feel free to get in touch!

THE POWER TO MAKE LIGHT WORK

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