



**Edgeworthstown SHD,
Bracklin Road, Edgeworthstown, Co. Longford**
PUBLIC LIGHTING REPORT

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1-0 INTRODUCTION

This report by Coffey Consulting Engineering will outline the design intent for the public lighting design for the proposed development at Edgeworthstown, Co. Longford.

The report details the preliminary lighting design of the development, including:

- Providing adequate illumination for both pedestrians and vehicles.
- Minimise light pollution on the surrounding areas and neighbours.
- Reduce glare on users.
- The use of high efficiency LED lighting technology.

The complete installation shall be in accordance with all relevant Irish and European Standards, including:

- IS 10101:2020 - National Rules for Electrical Installations;
- S.I. No. 291 of 2013: Safety, Health and Welfare at Work (Construction) Regulations 2013;
- IS EN 13201-2:2015 Road Lighting – Part 2: Performance Requirements;
- IS EN 13201-3:2015 Road Lighting – Part 3: Calculation of Performance;
- IS EN 13201-4:2015 Road Lighting – Part 4: Methods of Measuring Lighting Performance;
- BS 5489-1:2013 Code of Practice for the Design of Road Lighting. Part 1: Lighting of Roads and Public Amenity Areas;
- Longford County Council Public Lighting Technical Specification & Requirements
- ESB Networks National Code of Practice for Customer Interface
- ESB Networks – Housing Schemes: Guidebook for ESB Networks Standards for Electrical Services
- Recommendations for Site Development Works in Housing Areas, DoEHLG
- Ecologist's recommendations

2-0 EXTERNAL LIGHTING DESIGN

It is proposed to install new 6 metre high lighting columns and 27W LED luminaires throughout the scheme, as per the drawing 5237-BLD-100.

The lighting levels are noted on the drawing 5237-BLD-102.

Proposed Light Fittings

The preliminary lighting design is based on the following light fittings:

Metro



Construction:	Die-cast aluminium. IP66 and IK08 rated. Driver and LED modules are accessible for maintenance and replacement
Lens:	Tempered glass
Finish:	Grey RAL 9006
Luminaire:	10W to 134W LED. 4,000K. 27W to be used on project
Life:	L90 B10 >100,000 hours @25°C
Height:	6 metres

General Data

Dimension in metres, angles in degrees.

Grid Origin: 4.71m x -36.99m

Area: 361.94m x 374.34m

Sample Spacing: 1.50m x 1.50m

Type A Denotes Street Optic

Type B Denotes Forward Throw Optic

Type C Denotes Existing 55W SOX Streetlight - Estimate

Type D Denotes Existing 52W SOX Streetlight - Estimate

Please note that the design will be developed during the detailed design stage and the exact position and manufacturer of the light fittings may change, however the overall lighting installation will comply with the Standards listed in Section 1.0.

The preliminary calculations were carried out using Lighting Reality software. Results below and on the drawings 5237-BLD-101 and 5237-BLD-102.

Luminaire Reference	Type	Location			Angle	Tilt	Cant	Outreach
		X	Y	Height				
1	A	155.72	17.10	6.00	218.00	0.00	0.00	0.50
2	B	139.70	39.92	6.00	225.00	0.00	0.00	0.50
3	B	127.91	55.83	6.00	203.00	0.00	0.00	0.50
4	B	128.15	77.04	6.00	134.00	0.00	0.00	0.50
5	B	145.73	91.31	6.00	136.00	0.00	0.00	0.50
6	A	141.96	111.45	6.00	216.00	0.00	0.00	0.50
7	A	123.14	137.50	6.00	220.00	0.00	0.00	0.50
8	C	108.13	61.36	6.00	39.00	0.00	0.00	0.50
9	A	93.77	178.81	6.00	220.00	0.00	0.00	0.50
10	B	68.13	200.33	6.00	29.00	0.00	0.00	0.50
11	A	89.58	214.36	6.00	310.00	0.00	0.00	0.50
12	A	137.37	219.41	6.00	113.00	0.00	0.00	0.50
13	B	176.99	122.94	6.00	136.00	0.00	0.00	0.50
14	A	176.59	172.90	6.00	38.00	0.00	0.00	0.50
15	A	156.24	201.55	6.00	33.00	0.00	0.00	0.50

16	A	210.62	232.79	6.00	315.00	0.00	0.00	0.50
17	C	140.08	18.09	6.00	58.00	0.00	0.00	0.50
18	A	192.78	231.26	6.00	265.00	0.00	0.00	0.50
19	A	282.05	208.24	6.00	240.00	0.00	0.00	0.50
20	A	239.78	239.57	6.00	218.00	0.00	0.00	0.50
21	A	107.19	160.07	6.00	210.00	0.00	0.00	0.50
22	A	260.00	221.30	6.00	241.00	0.00	0.00	0.50
23	A	243.27	202.74	6.00	143.00	0.00	0.00	0.50
24	B	225.39	179.40	6.00	136.00	0.00	0.00	0.50
25	A	205.92	153.36	6.00	131.00	0.00	0.00	0.50
26	B	194.82	179.50	6.00	342.00	0.00	0.00	0.50
27	B	226.05	221.22	6.00	65.00	0.00	0.00	0.50
28	B	160.04	230.94	6.00	271.00	0.00	0.00	0.50
29	B	191.54	139.18	6.00	138.00	0.00	0.00	0.50
30	B	114.51	213.17	6.00	94.00	0.00	0.00	0.50
31	B	162.13	106.42	6.00	137.00	0.00	0.00	0.50
32	C	92.73	67.54	6.00	306.00	0.00	0.00	0.50
33	D	157.66	-7.48	6.00	312.00	0.00	0.00	0.50
34	B	197.03	205.94	6.00	330.00	0.00	0.00	0.50
35	A	89.25	214.92	6.00	120.00	0.00	0.00	0.50
36	B	225.68	220.71	6.00	235.00	0.00	0.00	0.50

The preliminary light levels are:

- Average: Road – 6.45 lux,
- Minimum: Road – 1.26 lux,
- Uniformity: Road – 0.03 lux,

The average light level is 6.45 lux, with a minimum of 1.26 lux. This complies with Class P4 of IS EN 13201-1-2:2015 / BS 5489-1:2020 for residential roads (5.0 lux average/ 1.0 lux minimum).

A formal lighting submission shall be made to Longford County Council prior to installation on site. Refer to Section 4.0 for further details.

3-0 ECOLOGY

Optics/ shields/ cowls shall be installed where necessary, in consideration of wildlife (e.g. bats) and to prevent unnecessary up lighting or illumination of nearby trees, buildings etc.

The site lighting design will be developed further during the detailed design stage, taking on board any further recommendations from the Ecologist/ LCC.

3-1-1 BAT SURVEY

A survey has been completed on the site and a number of mitigation measure identified. See Appendix IV for these measures for the site.

4-0 FUTURE DESIGN SUBMISSION TO LONGFORD COUNTY COUNCIL

In accordance with Longford County Council Public Lighting requirements, a formal design submission, shall be made to Longford County Council for approval, prior to the installation of any public lighting, or associated columns/ poles, ducts etc. on site.

The formal submission will include the following, as required:

- Lighting performance modelling calculations by Lighting Reality® in soft format. The cover shall show:
 - The identity of the lighting designer;
 - The project name;
 - The lighting classification designed to;
 - The combined maintenance factor for the luminaire and how it was derived.
- Lighting Reality® report in PDF format.
- CAD drawing in soft format showing the following information:
 - The site boundary;
 - All landscaping details;
 - All services;
 - All private areas to be hatched and identified;
 - Individually numbered columns with icons of a size to allow accurate assessment of column positions;
 - PL Ducts and Cable Access Chambers;
 - Individually numbered micro pillar locations;
 - ESB cabinet locations;
 - Individually numbered single line circuit diagrams;
 - All duct, column foundation or any other detail shall only show LCC approved versions;
- Technical specifications for the proposed equipment, including TM21 and LM80 reports.
- Written details outlining the OEM warranty and the procedure for transferring warranty to LCC after the project is taken in charge.
- Voltage drop calculations for each circuit.
- Lantern details including number of LEDs and drive current must be provided.
- Energy calculations including the designed dimming regime.

APPENDIX I - 5237-BLD-100 PUBLIC LIGHTING LAYOUT

Horizontal Illuminance (lux)



APPENDIX II - 5237-BLD-101 PUBLIC LIGHTING CALCULATIONS

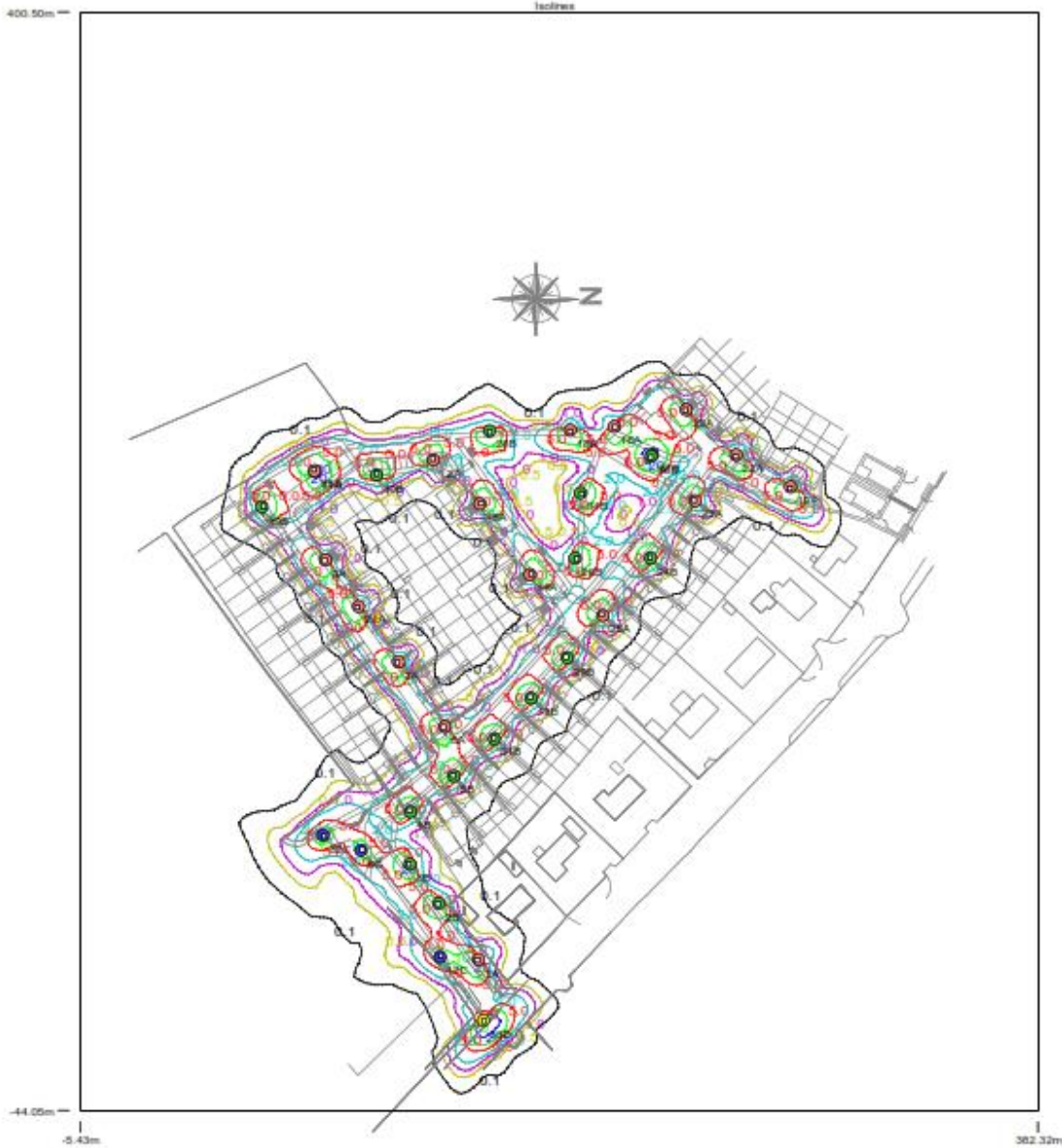
Horizontal Illuminance (lux)



APPENDIX III - 5237-BLD-102 REALITY LIGHTING CONTOURS

Horizontal Illuminance (lux)

Isolines



APPENDIX IV – ECOLOGY REPORT

Mitigation measures

As there are bats present in the environs there is a requirement for mitigation measures.

Application for a derogation licence

NB: Works on a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service before works can commence. There is a no licence required in this instance.

Measure 1: hedgerows

Any removal of hedgerows along boundaries or internally must be replaced by suitable tree and understorey plants to provide foraging and commuting habitat. Linear planting of trees within the proposed development will provide new commuting habitat. Landscaping of rear gardens within the development can replicate the current linear hedgerow foraging habitat. Native species suitable for urban planting will be used.

Measure 2: All lighting along the boundaries will follow the measures indicated below. Lighting has increased dramatically over the last number of years as a result of many new developments. This includes aesthetic lighting of bridges, monuments and buildings, flood lighting of sports grounds, street and road lighting and security lighting of urban and rural areas to name but a few. Lighting can impact on bats' roosting sites, commuting routes and foraging areas. Contrary to common belief, bats are not blind. While bats tend to rely on a type of sonar, known as echolocation, for orientation and hunting during the hours of darkness, vision is still an important sense for bats. When bats emerge from roosts early in the evening, they tend not to echolocate but rely on eyesight to fly from the roost to adjoining treelines or hedgerows. Various studies have shown that bats' eyesight works best in dim light conditions. Where there is too much luminance, bats' vision can be reduced resulting in disorientation. While light sensitivity varies between species, bats tend to have a higher tolerance for red visual light than white light. Short wave frequency (UV) light is most disturbing for bats. This is due to the fact that bats have a higher proportion of rods in their retina compared to cones. The rods allow greater absorption of light in dim conditions. Too much luminance at bat roosts may cause bats to desert a roost. Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk. Any delays of emergence can reduce feeding periods. Lighting can also disturb bats' feeding behaviour. Many night flying insects are attracted to lights especially those lamps that emit UV light. A single source of light in a dark area can cause local insect populations to congregate in concentrations around the light source. While some Irish bat species such as Leisler's bats will opportunistically feed on such insect gatherings, the majority of Irish bat species are too sensitive to such light sources and suffer from insect populations being reduced in traditional feeding areas. In addition, artificial lighting can increase the chances of bats being preyed on. Lighting can be particularly harmful to bat populations along river corridors, woodland edges, along hedgerows and treelines and at lake edges.

Measure 3: Types of light Low Pressure Sodium (SOX) – this light (typically orange light) is emitted at a single wavelength with a very low amount of UV. Therefore very few insects are attracted to this light source and it has a minimal effect on bats. High Pressure Sodium (SON) – this light (typically pinkish-yellow light) is emitted over a slightly broader wavelength spectrum. It is a more intense light so attracts more

insects and has a greater impact on bats. Metal Halide & Mercury vapour– these are white light sources that emits light at wavelengths across the colour spectrum and emits high levels of UV. These light types can attract high levels of insects and because it is a close match to daylight has a greater impact on bats. Metal halide typically comes in three types: Quartz arc tube; Ceramic arc tube and Cosmo ceramic. Luminary (Light) accessories Shields – these can be mounted at the front or back of luminaire. Masking – by painting a section of the luminaire protectors, light will be blocked from penetrating through. Louvres – these can be either internal or external rows of slates angled to block light in a certain direction.

Avoid lighting along rivers, lakes and canals. Avoid lighting along important commuting routes. Avoid the use of mercury or metal halide lamps Minimise light spills using shields, masking & louvres Keep light columns as low as possible Restrict lights to ensure that there are dark areas Restrict lights to ensure that there are dark hours.

Measure 4. Sensor lighting to reduce energy wastage

Measure 5. Use of planting to reduce impacts of lighting

Measure 6. Use of demountable columns

Measure 7. Screening to reduce impacts of lighting

Measure 8. Assessment of lighting regime after installation

Measure 9. Greater use of the solar clock to control timing of lighting

Potential impact of work on bird fauna

No negative impacts will occur to bird species.

Predicted and Residual impact of the proposal

No foraging areas should be lost due to the proposed works if the recommended mitigation measures are implemented.

No loss of commuting or foraging habitat is anticipated.