COFFEY CONSULTING
ENGINEERING

Loughrea Fire Station, Co. Galway

PUBLIC LIGHTING REPORT

COFFEY CONSULTING ENGINEERING
BLOCK A, MARLINSTOWN BUSINESS PARK, MULLINGAR, CO. WESTMEATH

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1-0 INTRODUCTION

This report by Coffey Consulting Engineering will outline the design intent for the public lighting for the proposed Fire Station in Loughrea, Co. Galway.

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;
- Galway County Council Public Lighting Technical Specification & Requirements (June 2017)
- 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 luminaires throughout the scheme, 3x AktraLED 150w LED, 4K, Asymmetric, 3x AktraLED 60w LED, 4K, Asymmetric, 1x Durostar 70w LED 4K Forward Throw 2 Optic, 1x Durostar 70w LED 4K Street Optic

Proposed Light Fitting

The lighting design is based on the following light fittings:

3x AktraLED 150w LED, 4K, Asymmetric, 3x AktraLED 60w LED, 4K, Asymmetric mounted on the building at 8m hight, 1x Durostar 70w LED 4K Forward Throw 2 Optic, 1x Durostar 70w LED 4K Street Optic mounted on 8m columns.

AktraLED:

Construction: Die-cast aluminum. IP66. Asymetric as standard.
Finish: Black as standard
Luminaire: 40w -240w LED/ 4000K.
Life: 100,000h - L90@25°C
Height: Mounted on the building at 8 m hight.

Durostar:

Construction: Die-cast aluminum. IP66. IK08 as standard.
Finish: Grey RAL 9006 as standard
Luminaire: 30w -180w LED/ 4000K.
Life: 100,000h - L90@25°C
Height: Mounted on 8 m poles

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 LFR-DR-CCE-EE-0100, LFR-DR-CCE-EE-0101, LFR-DR-CCE-EE-0102.

General Data Dimensions in Meters, Angles in Degrees

Luminaire Reference	Type	Location			Angle	Tilt
		X	Y	Height		
1	D7F2	46	107.4	8	328	5
2	A6A	75.9	88.5	8	153	15
3	A6A	82.3	86.5	8	65	0
4	A6A	93.4	80.8	8	65	0
5	A15A	70.4	76.9	8	153	15
6	A15A	72	71.2	8	245	15
7	A15A	95.4	63.4	8	245	15
8	D7	92	36.6	8	91	0

Carpark

The average light level is 20.26 lux with a minimum of 6 lux (0.30 uniformity).

Yard

The average light level is 22.90 lux with a minimum of 6 lux (0.26 uniformity).

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/ MCC.

3-0 FUTURE DESIGN SUBMISSION TO GALWAY COUNTY COUNCIL

In accordance with Galway County Council Public Lighting requirements, a formal design submission shall be made to Galway 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 WCC 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 WCC 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 - PUBLIC LIGHTING LAYOUTS - LFS-DR-CCE-EE-0100

APPENDIX II - LIGHTING CONTOURS – LFS-DR-CCE-EE-0101

APPENDIX III - PUBLIC LIGHTING CALCULATIONS - LFS-DR-CCE-EE-0102