FALLON DESIGN
M&E ENGINEERING

PUBLIC LIGHTING REPORT

RESIDENTIAL DEVELOPMENT AT SOUTHGREEN ROAD, KILDARE, COUNTY KILDARE.

Residential Development
Southgreen Road,
Kildare,
County Kildare.

Project: 2602

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Project Details

Project:	Residential Development at Southgreen, Kildare, County Kildare.
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Architect:	MCORM Architecture and Urban Design, 1 Grantham Street, Saint Kevin's, Dublin 8, D08 A49Y.
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Document Details:

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1. Introduction

This report will outline the design intent for the public lighting design for the proposed residential development at Southgreen Road, Kildare, County Kildare.

This report outlines the lighting design as developed by Fallon Design to provide adequate illuminance to meet all regulations and requirements as follows:

- To provide adequate illumination to contribute toward the safe use of the access roads and pathways for vehicular and pedestrians.
- Minimise lighting pollution on surrounding areas and neighbours
- Reduce glare on pedestrians and other users of the access areas
- Use of highly efficient artificial lighting to reduce energy consumption

The complete installation will be required to meet the following regulatory standards and policies:

- S.I. No.291 of 2013: Safety, Health and Welfare at work (Construction Reg. 2013)
- ETCI National Rules for electrical Installation ET101-2008
- BS 5489-1:2013 Code of Practice for the design of road lighting
- IS EN 13201-1 & 2 -2015
- IS EN 13201-5-2015 S2 & ME4A
- CIBSE Lighting Guide 7
- Housing Scheme: Guidebook ESB Networks Standards for Electrical Services
- Guidance Note 08/18:Bats and artificial lighting in the UK (Bat Conservation Trust, 2018)
- Bats & Lighting Guidance notes for: Planners, engineers, architects and developers (12/2010)
- Local County Council Street Lighting Technical Specification

2. Development Description

Pousterle Limited intend to apply for permission for development of a Large - Scale Residential Development (LRD) on a site of approx. 6.13 ha at Southgreen Road, Kildare, Co. Kildare. The site is generally bounded to the north by agricultural fields; to the south by the recently constructed Southern Internal Link Road; to the west by Southgreen Road and an existing Electricity Station; and to the east by Old Road and existing residential properties.

The proposed development will consist of:

• The construction of a new residential scheme of 146 No.house type units ranging in height from 1-3 storeys as follows:

  o 136 No.houses (7 No. 2 bed units; 102 No. 3 bed units; and 27 No. 4 bed units) in a mixture of bungalow, detached, semi-detached, and terrace style units.

  o 10 No. Duplex apartment units (5 No. 1 beds, 3 No. 2 beds, and 2 No. 3 beds).

• Each residential unit will be afforded with private open space in the form of a front/rear/side garden for houses or terrace / balconies for duplex apartment units.

• The provision of a creche facility (approx. 161 sq m GFA) and associated areas of external open space (approx. 60 sq m).

• Public open space (approx. 6,992 sq m) is proposed in the form of 2 No. New large public open space areas within the site (approx. 3,046 sq m and 3,946 sq m respectively).

• Communal open space (approx. 82 sq m) is proposed adjacent to Block A.

• A total of 321 No.car parking spaces (305 No. For residential units and 16 No. For the creche facility) are provided. This provision includes 2 No. Accessible spaces and 17 No. Visitor spaces.

• A total of 527 No. Cycle parking spaces (517 No. For residential units and 10 No. For the creche facility) are provided. This provision includes 75 No. Visitor spaces. Resident cycle parking is proposed in the form of secure bicycle store enclosures to the front of terraced units; on curtilage spaces to the rear of units with side access; and a bicycle store for apartment units. Visitor parking is proposed in the form of Sheffield stands.

• The development shall be served via a new vehicular access point from Southgreen Road. An additional private vehicular access point is proposed via Old Road to service 1 No. New bungalow 4 bed residential unit.

• Pedestrian and Cyclist access is also proposed via Southgreen Road and via a new secondary access point from the Southern Internal Link Road to the south of the site and Old Road to the east of the site.

• 2 No. Directional single lane cycle tracks on either side of the Southgreen Road, together with amendments to the existing cycle tracks and footpaths on Southgreen Road north of the east west link road.

• A new pedestrian/cycle link is delivered to the north connecting South Green Road to Old Road.

• The associated site and infrastructural works include provision for an ESB Sub Station; water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works; boundary treatment; internal roads and footpaths; waste storage areas, all electrical services and all associated site development works.

3. Design Concept

The public lighting design for residential development is to provide adequate illuminance for vehicular and pedestrian access for the residents and general public.

The design of the public lighting includes low energy LED lighting throughout. Energy efficient light fittings are a key element in reducing the developments energy consumption.

4. Detailed Design

The design now uses the following:
63 x Metro Streetlights 19w LED 2700K - 36 x Street Optic R03 (Single), 10 x Forward Throw A Optic (1 x Twin & 8 x Single) and 17 x Street Optic R01 (Single), mounted on 62 x 6m columns with no tilt to light the roads & paths within the development.
14 x Metro Streetlights 38w LED 3000K Street Optic R03 mounted on 8m columns with no tilt to light Southgreen Road.

Light levels are as follows:
Road & Paths – Section 1 : 5.1 lux average, 1.0 lux minimum (0.20 uniformity).
Road & Paths – Section 2 : 5.0 lux average, 1.0 lux minimum (0.20 uniformity). These levels comply with class P4 of IS EN13201-2:2015 / BS 5489-1:2020 for roads / paths (5.0 lux average, 1.0 lux minimum).
Southgreen Road – 8.3 lux average, 3.3 lux minimum, 0.40 uniformity. This complies with IS EN13201-2:2015 / BS 5489-1:2020 for roads - class P3 (7.5 lux average, 1.5 lux minimum) and class C5 (7.5 lux average, 0.40 uniformity).

Proposed luminaire design layout as per drawings:

STG-XX-60-SW-XXX-DR-FDE-EE-1000_1001

Lighting Calculations:

Results

Eav	5.14
Emin	1.01
Emax	20.35
Emin/Emax	0.05
Emin/Eav	0.20

5. Luminaires:



Luminaire A Data

Supplier	
Type	Veelite Metro Streetlight 19w LED Forward T hrow A Optic
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	1.88
File Name	5MTA08LGA-FTA.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	401.3, 47.0, 0.5
No. in Project	10



Luminaire B Data

Supplier	
Type	Veelite Metro Streetlight 19w LED Street Opti c R03
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	1.89
File Name	5MTA08LGA-R03.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	36



Luminaire C Data

Supplier	
Type	Veelite Metro Streetlight 19w LED Street Opti c R01
Lamp(s)	8LED 2700K G4
Lamp Flux (klm)	1.79
File Name	5MTA08LGA-R01.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	680.3, 387.6, 0.6
No. in Project	17



Luminaire D Data

Supplier	
Type	Veelite Metro Streetlight 38w LED Street Opti c R03
Lamp(s)	24 LED 3000K G4
Lamp Flux (klm)	4.94
File Name	5MTA14LGB-R03-3K.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	14

5.1 Metro Series



Metro Series

External Lighting







Modern functional LED streetlight, available in 3 sizes. Ideal for roadway, path or carpark applications.

Construction: Die-cast aluminium. IP66. IK09 as standard. Driver and LED Modules are accessible for maintenance or replacement.

Lens: Tempered glass as standard.

Installation: Luminaire supplied with 76mm mastfitter for post-top mounting or 60mm for side entry installation. Tiltable: 0°, 5° or 10°

Finish: Grey RAL 9006 as standard. Other RAL colours on request.

LED: Available in 10w to 134w LED (see ordering codes). CRI 70 4000K (standard). 3000K or other on request. Asymmetric street optic as standard. See ordering codes for more details.

Life: L90 B10 >100,000 hours. (at 25°C).

Driver: 220-240V AC 50/60 Hz. 700mA as Standard. 350mA, 500mA, 1050mA or custom setting on request. Lifetime (<10% failures): 100,000 hrs.

Mains Surge Protection: 10kV device included as standard.

Temperature: -30°C +50°C (-20°C +40°C with Emergency Kit)

Options: Dimming, DALI, Photocell, various optics available. Emergency available in some versions, please check with Veelite to clarify which.

Manufactured: Ireland

Product Compliance: EN 60598; CE.

VeeLite

6. Grid Results

6.1 **Horizontal Illuminance (lux) –** Road & Paths – Section 1 : Class P4



Results

Eav	5.14
Emin	1.01
Emax	20.35
Emin/Emax	0.05
Emin/Eav	0.20

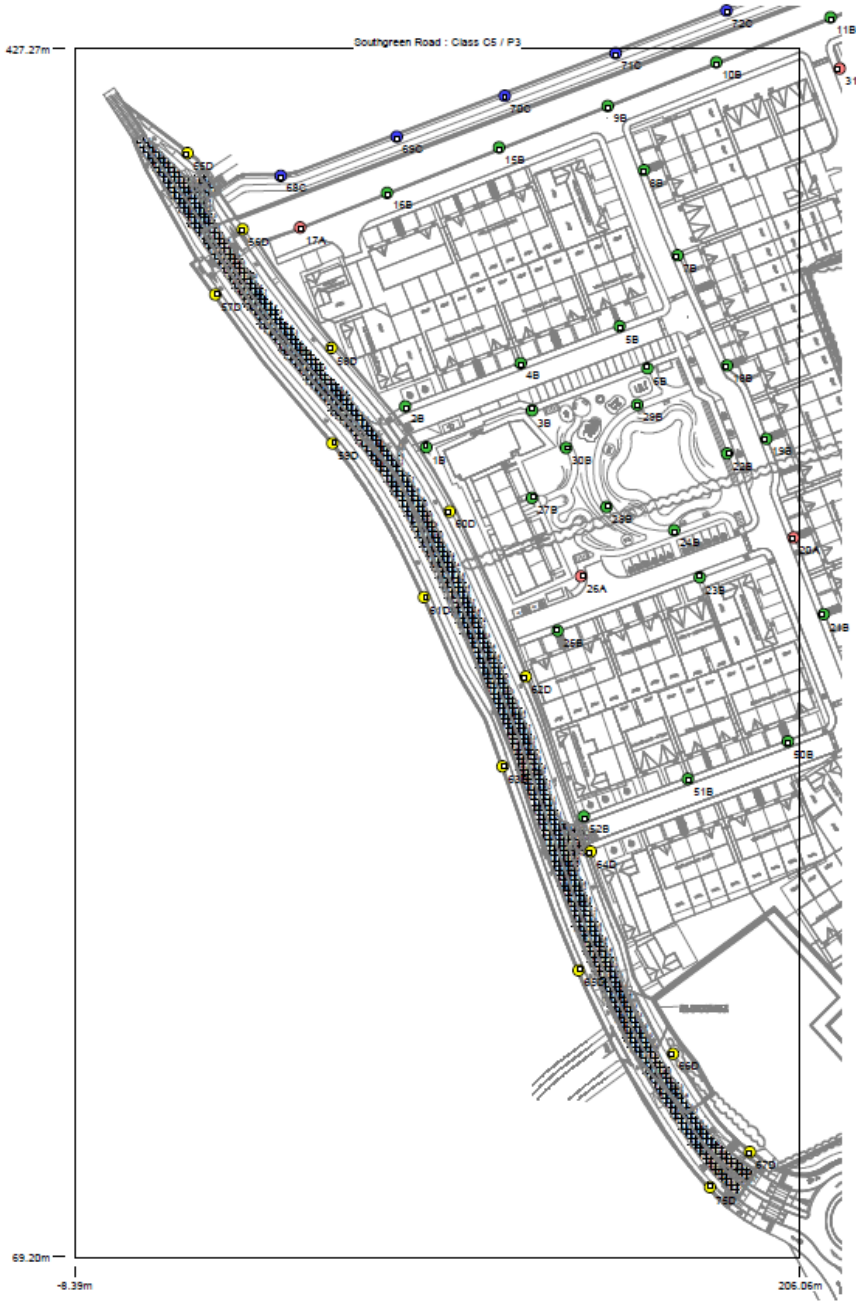
6.2 **Horizontal Illuminance (lux) –** Road & Paths – Section 2 : Class P4



Results

Eav	5.09
Emin	1.00
Emax	21.04
Emin/Emax	0.05
Emin/Eav	0.20

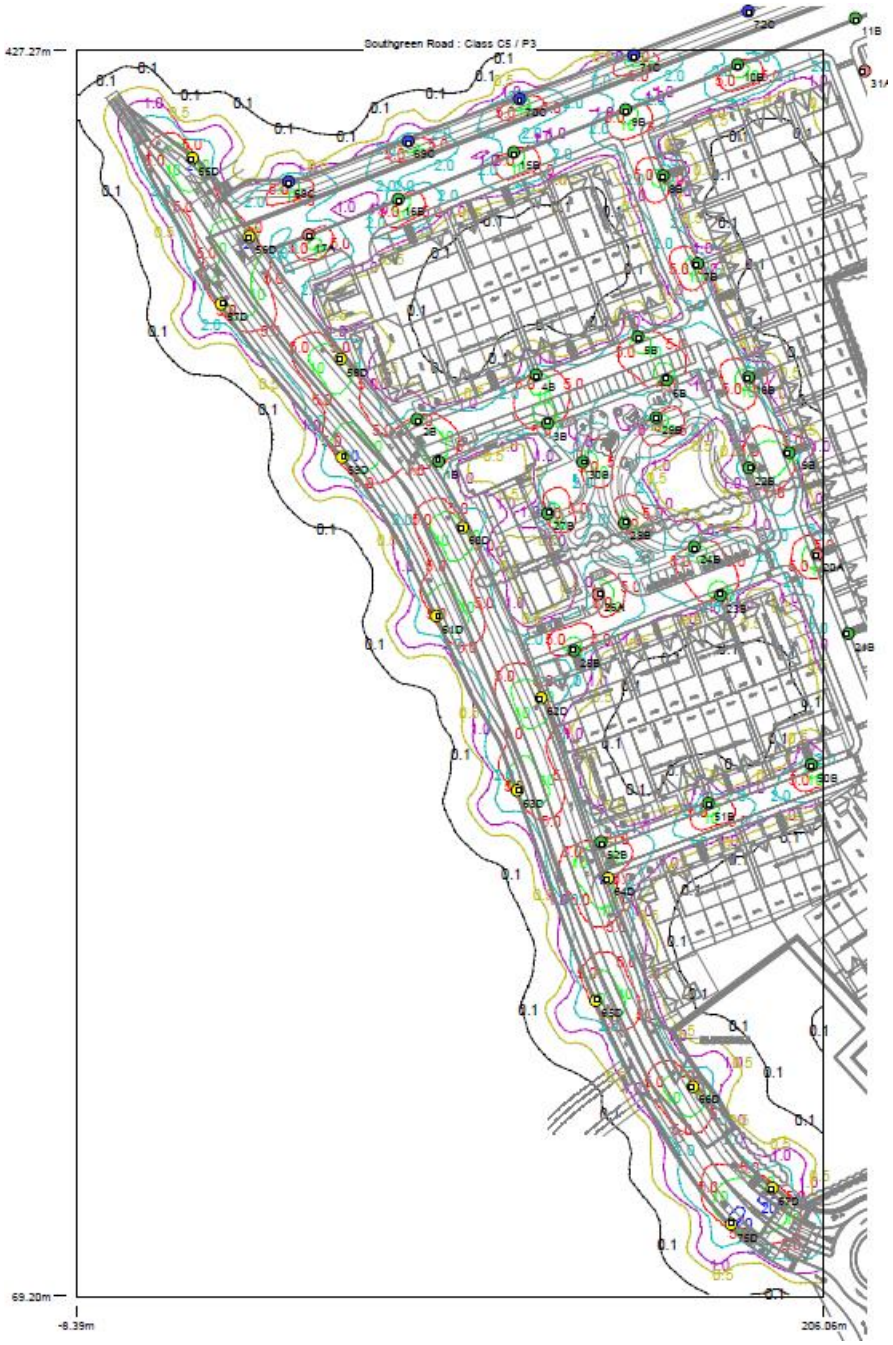
6.3 **Horizontal Illuminance (lux) –** Southgreen Road : Class C5 / P3



Results

Eav	8.31
Emin	3.31
Emax	20.65
Emin/Emax	0.16
Emin/Eav	0.40

6.4 **Horizontal Illuminance (lux) –** Southgreen Road : Class C5 / P3



Results

Eav	8.31
Emin	3.31
Emax	20.65
Emin/Emax	0.16
Emin/Eav	0.40

6.5 Lux Point Levels

Reference drawing STG-XX-60-SW-XXX-DR-FDE-EE-1000_1001 for a full lux plot across the development.

7. Energy Efficiency

The design of Public Lighting with regard to the energy consumption has been carefully considered for the lifetime of the development.

- Low energy LED light fittings with high quality efficient lamps will provide considerable operational saving for the development.

- Greater energy savings will also result using the inbuilt multi-step dimming program during late hours of darkens along the public lighting spaces.

8. Ecological Impact Design Considerations:

Careful consideration has been given to the design of Public Lighting with regard to the existing natural habitat and the wildlife. The chosen luminaire Veelight Metro Series has a full cut off lantern type, that offers with a G6 Glare rating and no upward light making it dark sky friendly.

- An inbuilt multi step dimming program within this luminaire allows for night time hours to be dimmed by up to 25%. This means during peak hours of nocturnal foraging, feeding and activity the adjacent public lighting can be further designed to minimize impact on the local wildlife.

- The colour rendering of the selected light fitting is 2700k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife.

- Greater energy savings will also result using the inbuilt multi-step dimming program during late hours of darkens along the public lighting spaces.

- Unnecessary light spill controlled through a combination of directional lighting and luminaire optics design.

- No floodlighting will be used on the scheme.

The public lighting design references the following documents and best practice guides as outlined below:

- Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2011;

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011.

- Bats and Lighting – Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland);

- The Eurobats Mitigation of Lighting Document