FALLON DESIGN
M&E ENGINEERING

PUBLIC LIGHTING REPORT

DEVELOPMENT AT LANDS KILBRIDE, ARKLOW, COUNTY WICKLOW.

Proposed Residential Development,
Lands at Kilbride,
Arklow,
County Wicklow.

Project: 2290
Issue: Planning

Date: 21st May 2025

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Project Details:

Project:	Proposed Residential Development at Lands at Kilbride, Arklow, County Wicklow.
Client:	Certain Assets of Dawnhill & Windhill Limited. "Lands at Kilbride", Arklow, Co. Wicklow
Architect:	Conroy Crowe Kelly, Architects & Urban Designers, 65 Merrion Square, Dublin 2. D02 DT32
Planning Consultant:	McGill Planning 22 Wicklow St, Dublin 2, D02 VK22
M&E Consultant:	Fallon Design Ltd. Avocet House, Riverwalk, Arklow, Co. Wicklow Y14 XD68

Document Details:

Version	Title	Author
Rev A	Public Lighting Report	Fallon Design Ltd
Rev B	Public Lighting Report	Fallon Design Ltd
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Rev E	Public Lighting Report	Fallon Design Ltd
Rev F	Public Lighting Report	Fallon Design Ltd
Rev G	Public Lighting Report	Fallon Design Ltd
Rev H	Public Lighting Report	Fallon Design Ltd

1. Introduction

This report outlines the lighting design for the proposed residential development and access road at Lands at Kilbride, Arklow, County Wicklow, as developed by Fallon Design to provide adequate illuminance to meet all regulations and requirements as follows;

- To provide adequate illumination contributing 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)
- County Council Street Lighting Technical Specification

2. Design Concept

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

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

3. Development Description

The proposed mixed use Large scale Residential Development will result in the demolition of an existing dwelling and 2 no. sheds/outbuildings and the construction of 666 no. residential units with a mix of semidetached and terraced houses along with duplex apartments and apartments. These will comprise 1, 2, 3 and 4 bed units. All residential units will have associated private open space facing north/ south/ east/ west. The proposal will also deliver a local centre containing 3 no. retail units, 3 no. community/ medical units and 1 no. creche unit. A new pedestrian/ cyclist link is provided via a new boardwalk and bridge across the marsh and over the Avoca River adjoining the existing greenway and the Main Street. A new road providing vehicular access is also proposed connecting to the north to Kilbride Road along with road improvements in the surrounding area. The development will also provide for landscaping, public open spaces and all associated site development works to enable the development including boundary treatments, attenuation storage area and other service provision including ESB works.

4. Detailed Design

The design uses the following:
183 x Metro Streetlight LED 3000K with 0/5 degree tilt with the following wattages, optics and mounting arrangements:
15 x 27w Forward Throw A Optic (All single head) mounted on 6m columns to light the roads and paths
124 x 27w Street Optic R03 (All single head) mounted on 6m columns to light the roads and paths
29 x 68w Street Optic R03 (All single head) mounted on 8m columns to light the link road
14 x 36w Symmetric Optic (7 x twin head) mounted on 7 x 6m columns in the carpark
1 x 36w Forward Throw A optic mounted on a 6m column at the carpark entrance

47 x City Streetlight 36w LED 3000K Street Optic R03 with internal black shield mounted on 6m columns with 0/5 degree tilt at the open areas / pathways
5 x City Streetlight 27w LED 3000K Forward Throw B Optic with internal black shield mounted on 6m columns with 0/5 degree tilt at the open areas / pathways

Light levels are as follows:
Road & Paths – Section 1 : 8.7 lux average, 1.7 lux minimum (0.20 uniformity).
Road & Paths – Section 2 : 7.5 lux average, 1.5 lux minimum (0.20 uniformity).
Road & Paths – Section 3 : 8.3 lux average, 1.6 lux minimum (0.20 uniformity).
Road & Paths – Section 4 : 8.0 lux average, 1.5 lux minimum (0.20 uniformity).
Road & Paths – Section 5 : 9.0 lux average, 1.7 lux minimum (0.20 uniformity).
Road & Paths – Section 6 : 9.8 lux average, 1.9 lux minimum (0.20 uniformity).
These levels comply with IS EN 13201-2:2015/BS 5489-1:2020 for residential roads and paths - Class P3 (7.5 lux average 1.5 lux minimum).

Link Road – Section 1 : 10.9 lux average, 2.1 lux minimum (0.20 uniformity).
Link Road – Section 2 : 10.7 lux average, 2.1 lux minimum (0.20 uniformity).
These levels comply with IS EN 13201-2:2015/BS 5489-1:2020 for roads and paths - Class P2 (10.0 lux average, 2.0 lux minimum).

Carpark : 10.6 lux average, 2.6 lux minimum (0.25 uniformity). This complies with IS EN 12464-2:2014 for parking areas – medium traffic (10 lux average, 0.25 uniformity).

Proposed luminaire design layout as per drawings.

- 2290-FDE-SS-50-01 Site Services – Public Lighting Sheet 1 of 3 (Lux Plot & Contour Lines)
- 2290-FDE-SS-50-02 Site Services – Public Lighting Sheet 2 of 3 (Lux Plot & Contour Lines)
- 2290-FDE-SS-50-03 Site Services – Public Lighting Sheet 3 of 3 (Lux Plot & Contour Lines)
- 2290-FDE-SS-50-07 Site Services – Public Lighting Board Walk Sheet 1 of 2
- 2290-FDE-SS-50-08 Site Services – Public Lighting Board Walk Sheet 2 of 2
- 2290-FDE-SS-50-09 Site Services – Public Lighting Sheet 1 of 3 (Ducting Layout)
- 2290-FDE-SS-50-10 Site Services – Public Lighting Sheet 2 of 3 (Ducting Layout)
- 2290-FDE-SS-50-11 Site Services – Public Lighting Sheet 3 of 3 (Ducting Layout)

5. Luminaires:

Luminaire A Data

Supplier	
Type	Veelite Metro Streetlight 27w LED Forward Throw A Optic
Lamp(s)	12 LED 3000K G4
Lamp Flux (klm)	3.44
File Name	5MTA10LGA-FTA.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	401.3, 47.0, 0.5
No. in Project	15

Luminaire B Data

Supplier	
Type	Veelite Metro Streetlight 27w LED Street Optic R03
Lamp(s)	12 LED 3000K G4
Lamp Flux (klm)	3.45
File Name	5MTA10LGA-R03.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	124

Luminaire C Data

Supplier	
Type	Veelite Metro Streetlight 68w LED Street Optic R03
Lamp(s)	32 LED 3000K G4
Lamp Flux (klm)	9.21
File Name	5MTB16LGA-R03.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	537.8, 56.5, 0.3
No. in Project	29

Luminaire D Data

Supplier	
Type	Veelite Metro Streetlight 36w LED Symmetric Optic
Lamp(s)	16 LED 3000K G4
Lamp Flux (klm)	4.43
File Name	5MTA12LGA-SYM.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	375.5, 40.5, 0.0
No. in Project	14

Luminaire E Data

Supplier	
Type	Veelite Metro Streetlight 36w LED Forward Throw A Optic
Lamp(s)	16 LED 3000K G4
Lamp Flux (klm)	4.58
File Name	5MTA12LGA-FTA.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	401.3, 47.0, 0.5
No. in Project	1

Luminaire F Data

Supplier	
Type	Veelite City Streetlight 36w 16LED - Street Optic R03 IS
Lamp(s)	16 LED 3000K - Internal Black Shield
Lamp Flux (klm)	3.52
File Name	City Streetlight 36w 16LED 4K - R03 Optic with Black Shield.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	518.1, 10.5, 0.4
No. in Project	47

Luminaire G Data

Supplier	
Type	Veelite City Streetlight 27w LED Forward Throw B Optic IS
Lamp(s)	12 LED 3000K G4 - Internal Black Shield
Lamp Flux (klm)	2.23
File Name	5CTA10LGA-FTB-SHB.ies
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	1181.9, 54.1, 0.7
No. in Project	5

Supplier	
Type	PLANET LIGHTING LED PUCK SNAP UNI 1.4w
Lamp(s)	LED 2200K
Lamp Flux (klm)	0.37
File Name	
Maintenance Factor	0.37
Imax70,80,90(cd/klm)	110. 80. 79.2
No. in Project	500

5.1 Veelite 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

5.2 Veelite City Streetlight

City Streetlight

External Lighting

Modern functional LED luminaire, easy access for maintenance. Ideal for roadway applications.

Construction: Die-cast aluminium. IP66. IK08 as standard. Driver and LED Modules are accessible for maintenance or replacement.

Lens: Tempered glass as standard.

Installation: Luminaire supplied with 76mm mastfitter for direct post-top mount. 60mm mastfitter as an option for side entry or post-top mount. Tiltable: -10° to +10°

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

LED: Available in 10w to 36w LED (see ordering codes). CRI 70 4000K as 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

Options: Dimming, DALI, Photocell, various optics available. Internal Shield for reduced backlight available.

Manufactured: Ireland

Product Compliance: EN 60598; CE.

Internal Shields to Reduce Backlight

VeeLite

5.3 Planet Lighting LED PUCK – Snap Uni

SNAP UNI

The next revolution in integrated lighting and uniformity performance is here.

Snap Uni combines the best of our Planet LED Puck Snap family with an all-new design for exceptional beam and glare control, now delivering up to twice the uniformity performance.

Engineer the experience with Snap Uni.

SPECIFICATIONS*

IK10 IP68 CE Intertek ETLus Intertek cETL

ETLus conforms to UL2108
cETL conforms to CSA C22.2 #250.0

Technical
1.4W / 500mA / 2.8Vf
CRI 80+ (90+ optional)
3 Step MacAdam Ellipse
L_{90} B_{10} >100,000 h†

Performance
135lm (3000K)
144lm (4000K)

Colour
CCT options from 2200K to 7000K, and 17 colours

Distribution
Elliptical asymmetric distribution

Material
316 Stainless Steel, electropolished

Ambient Operating Conditions
Min. -40°C / Max. 55°C

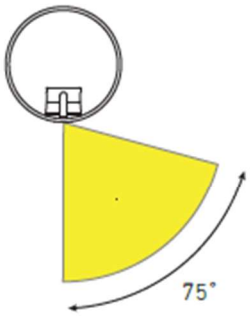
Protection Class
IK10 | IP68 (2m for 2 weeks)

Electrical
Coolsplice Connector

Installation

- Installation Surface:
  - Metal substrates only
  - Min. 1.5 mm Wall Thickness
  - Min. Ø35 mm Rail (Curved face only)
- Hole Size:
  - Ø15 mm (Counterbore is required for a flush finish)
- Counterbore:
  - Ø16 mm x 1.6 mm (Curved Face)
  - Ø16 mm x 0.5 mm (Flat Face)

Control
1-10 v | DALI | DMX | ZigBee | Casambi
Blue Light Link | BasicDIM Wireless



Snap Uni's elliptical asymmetric distribution has a forward throw and sharp cut off to help eliminate back spill.

LED BY CREE
ANTI GLARE
HIGH lm/mm²
SUPERIOR BEAM CONTROL
FAST INSTALL
DESIGN VERSATILITY
WEATHER RESISTANT
IMPACT RESISTANT
5 YEAR WARRANTY
MADE IN AUSTRALIA

†Test for LED emitter at 500 mA and below 55 °C ambient temp.
*Specifications are subject to change without notice.

6. Grid Results

6.1 Horizontal Illuminance – Road & Paths – Section 1

Results

Eav	8.74
Emin	1.71
Emax	34.56
Emin/Emax	0.05
Emin/Eav	0.20

6.2 Horizontal Illuminance – Road & Paths – Section 2

Results

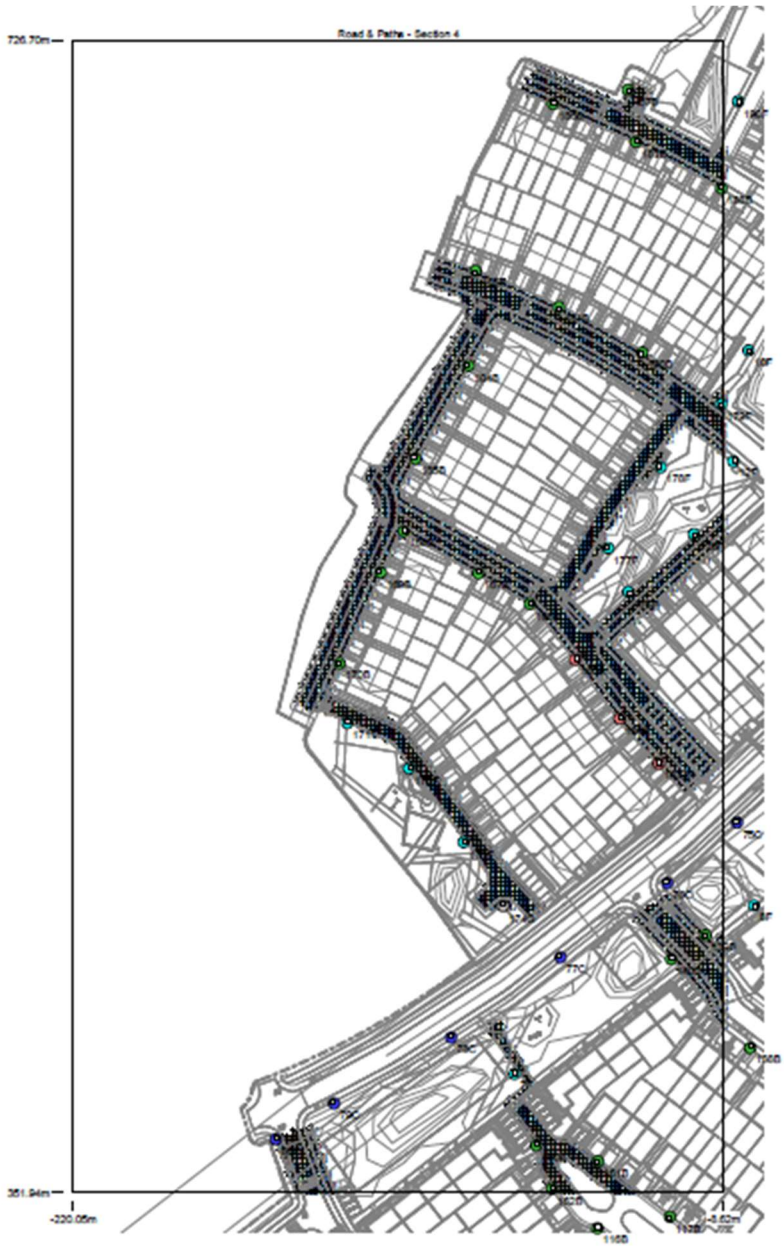
Eav	7.50
Emin	1.50
Emax	29.13
Emin/Emax	0.05
Emin/Eav	0.20

6.3 Horizontal Illuminance – Road & Paths – Section 3

Results

Eav	8.34
Emin	1.64
Emax	27.87
Emin/Emax	0.06
Emin/Eav	0.20

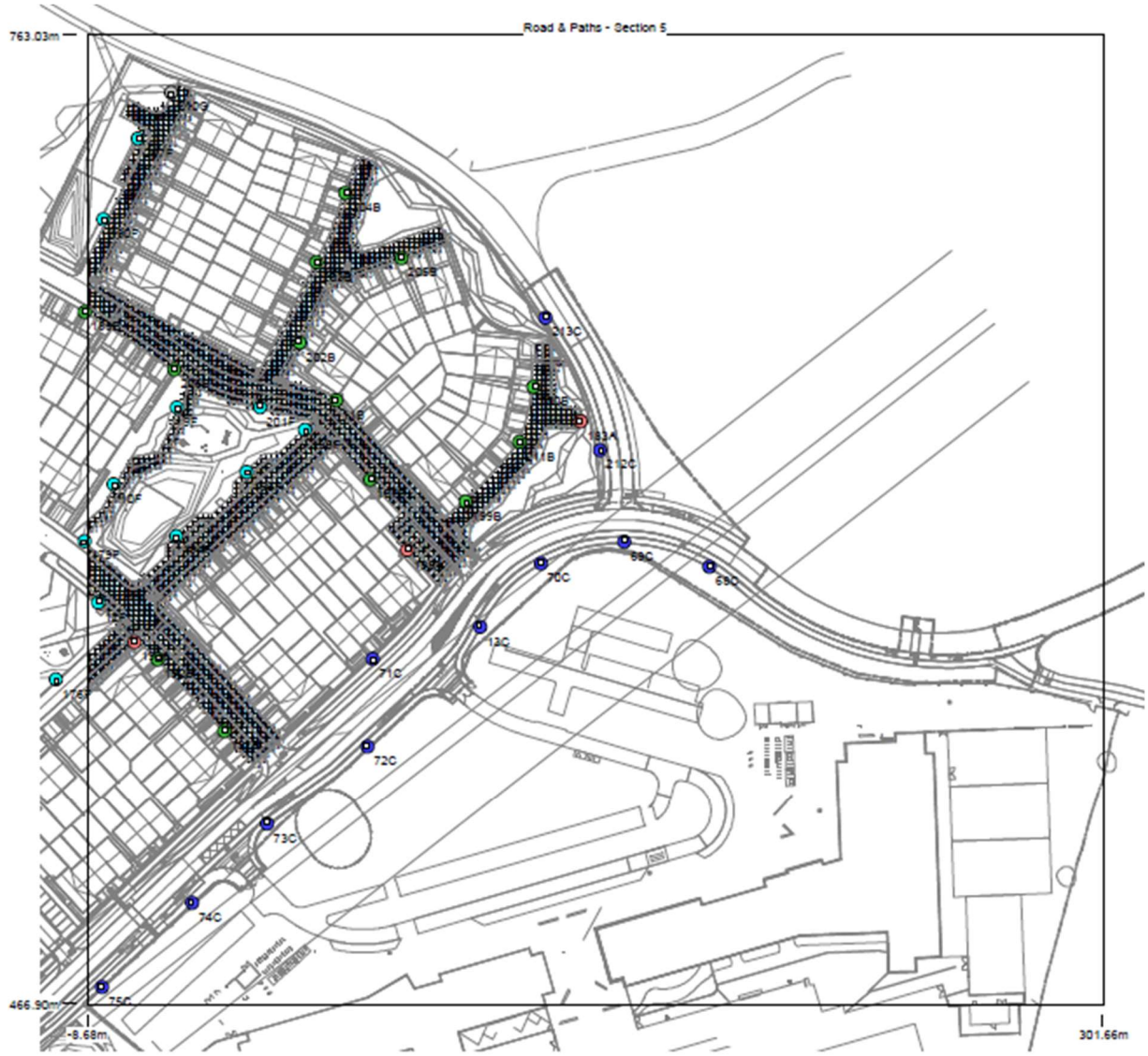
6.4 Horizontal Illuminance – Road & Paths – Section 4



Results

Eav	8.06
Emin	1.59
Emax	34.51
Emin/Emax	0.05
Emin/Eav	0.20

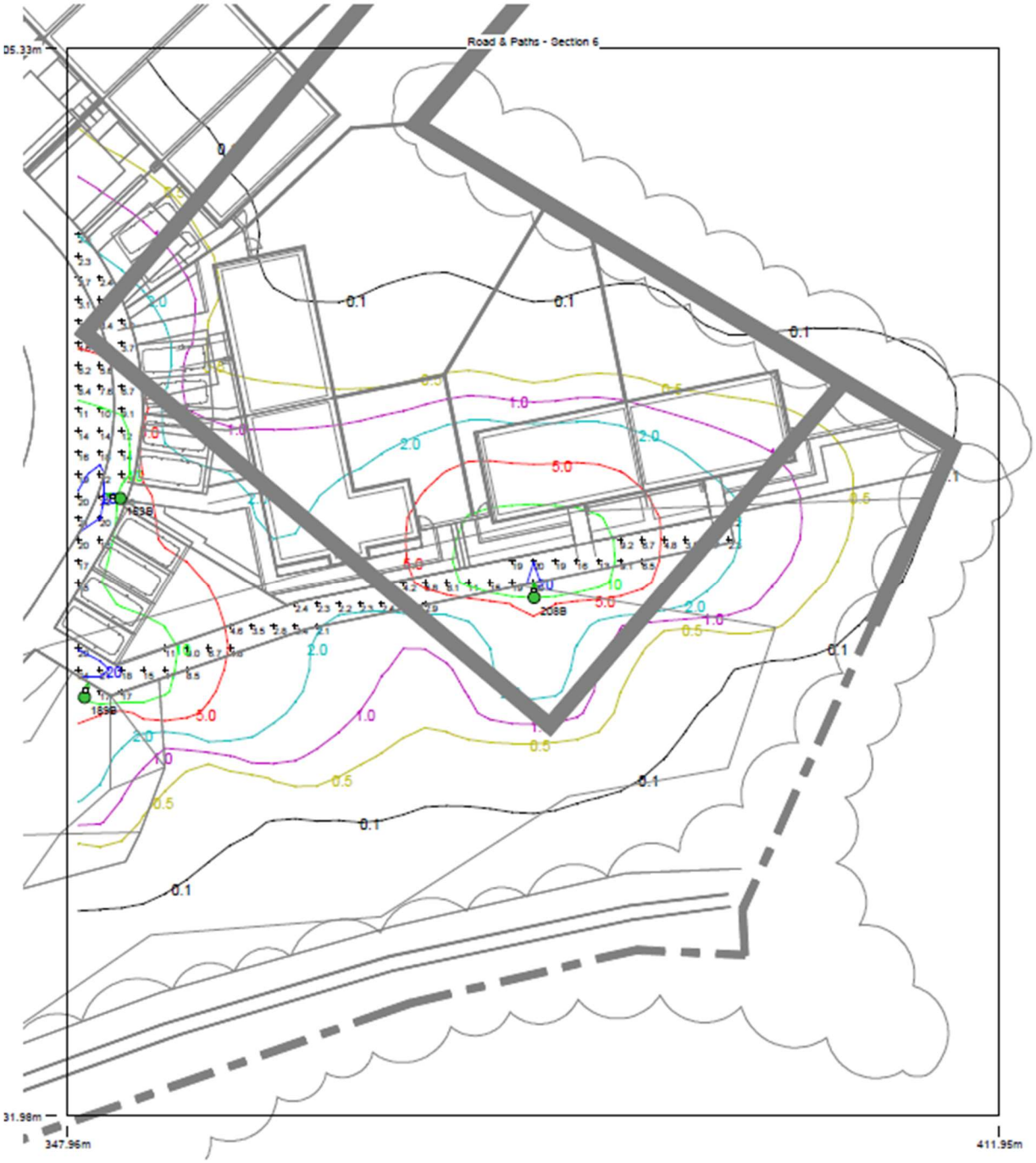
6.5 Horizontal Illuminance – Road & Paths – Section 5



Results

Eav	9.08
Emin	1.77
Emax	28.31
Emin/Emax	0.06
Emin/Eav	0.20

6.6 Horizontal Illuminance – Road & Paths – Section 6



Results

Eav	9.89
Emin	1.98
Emax	23.62
Emin/Emax	0.08
Emin/Eav	0.20

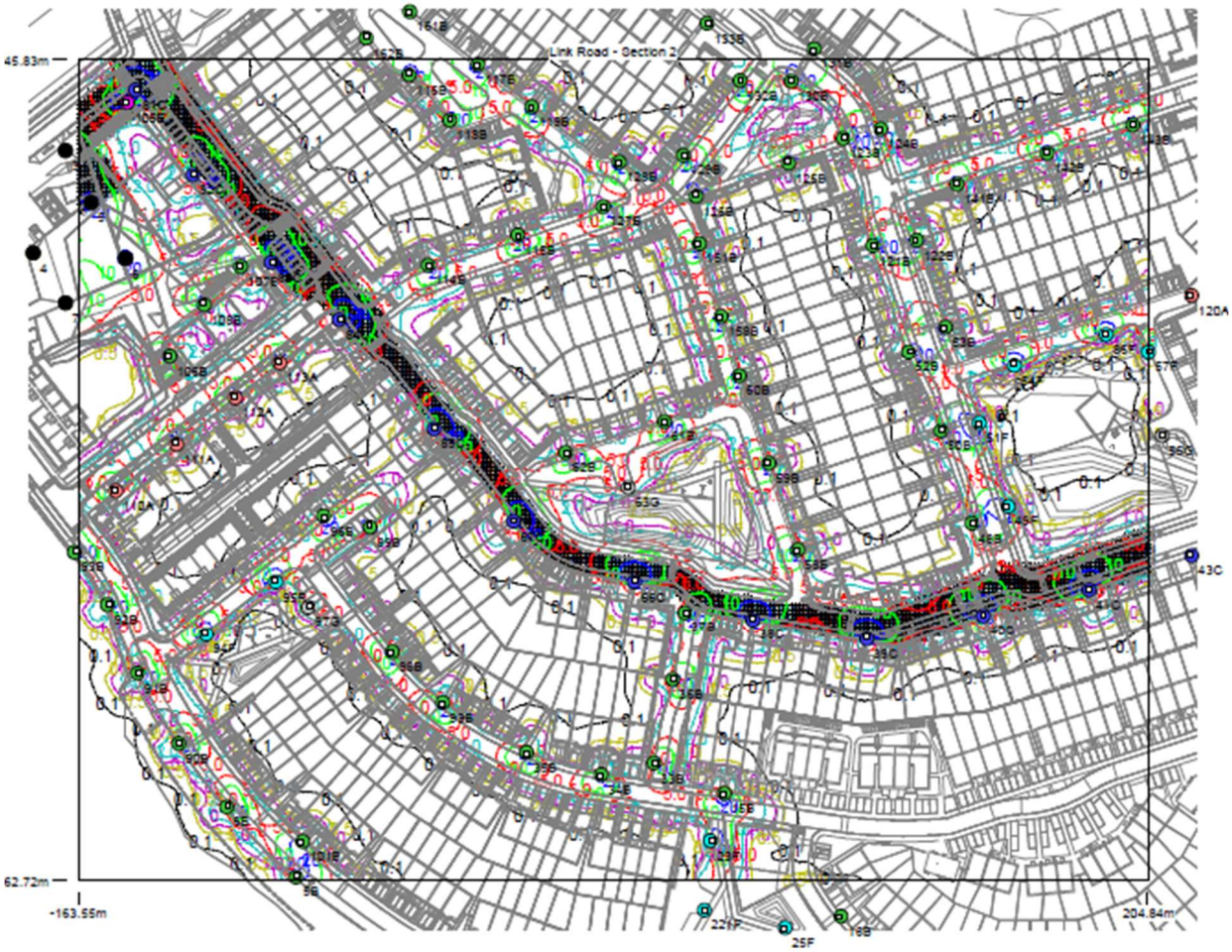
ISO 002

6.7 Horizontal Illuminance – Link Road – Section 1

Results

Eav	10.94
Emin	2.17
Emax	34.94
Emin/Emax	0.06
Emin/Eav	0.20

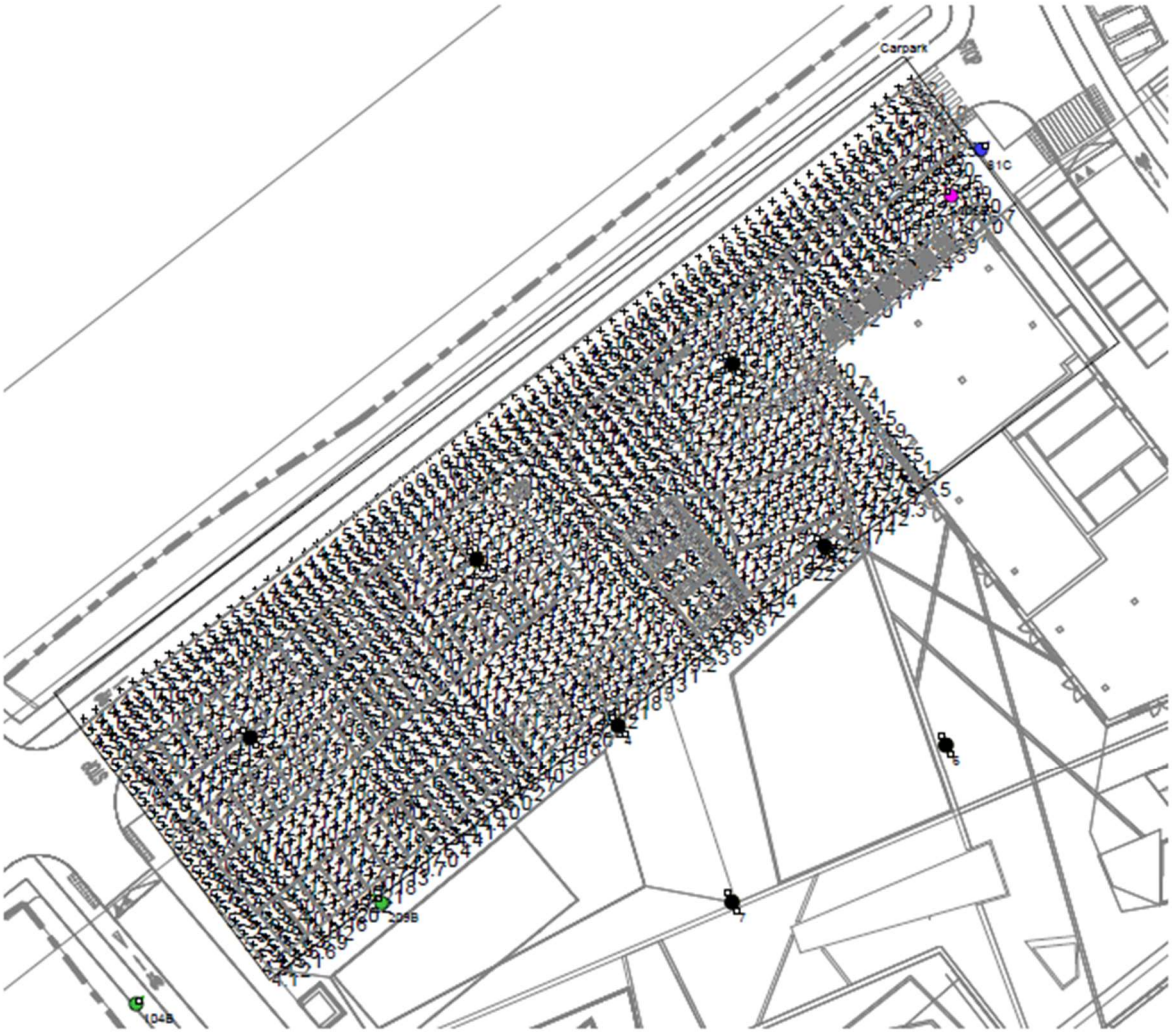
6.8 Horizontal Illuminance – Link Road – Section 2



Results

Eav	10.78
Emin	2.10
Emax	41.18
Emin/Emax	0.05
Emin/Eav	0.20

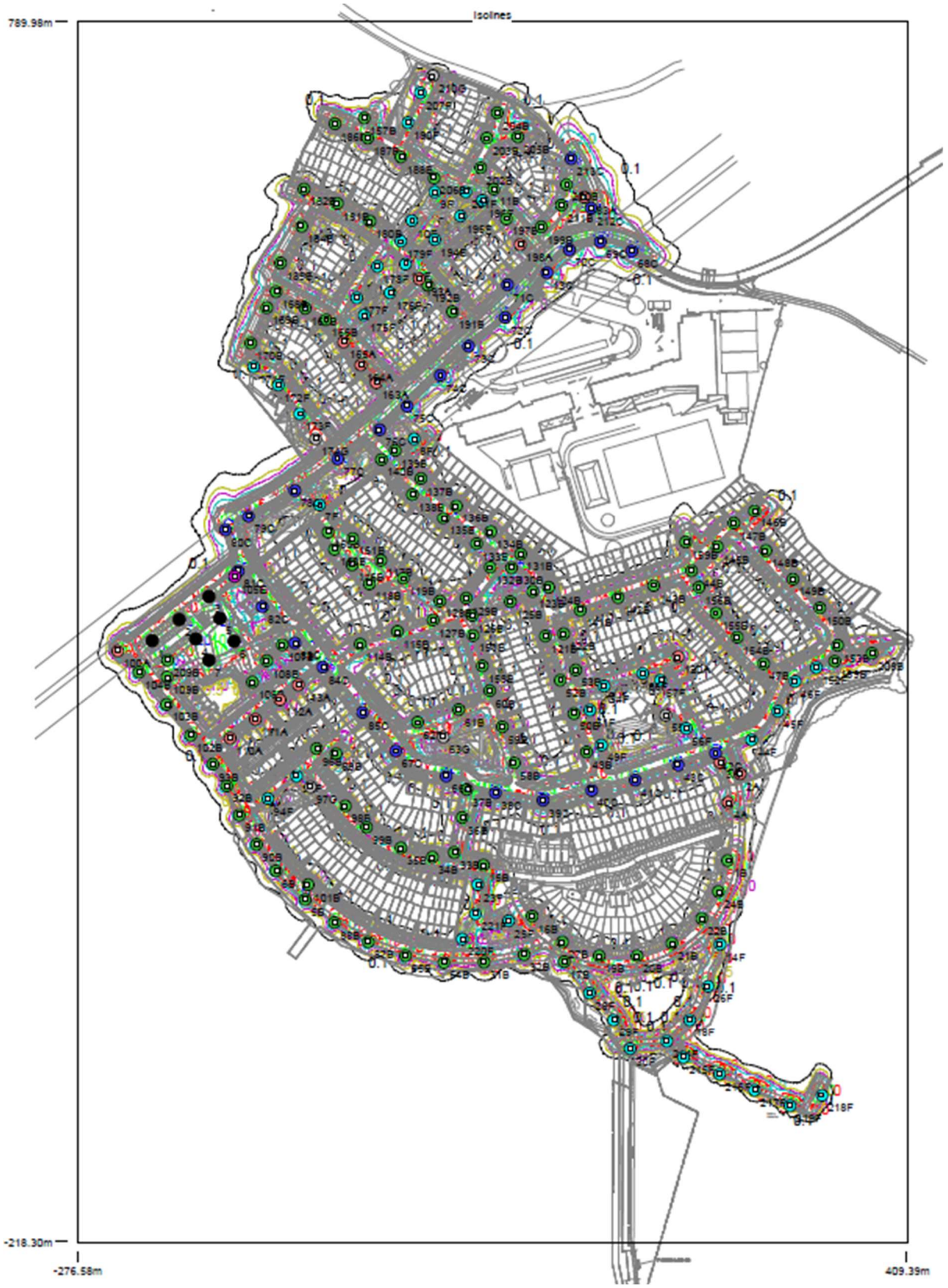
6.9 Horizontal Illuminance – Carpark



Results

Eav	10.63
Emin	2.65
Emax	31.76
Emin/Emax	0.08
Emin/Eav	0.25

6.10 Horizontal Illuminance – Isolines



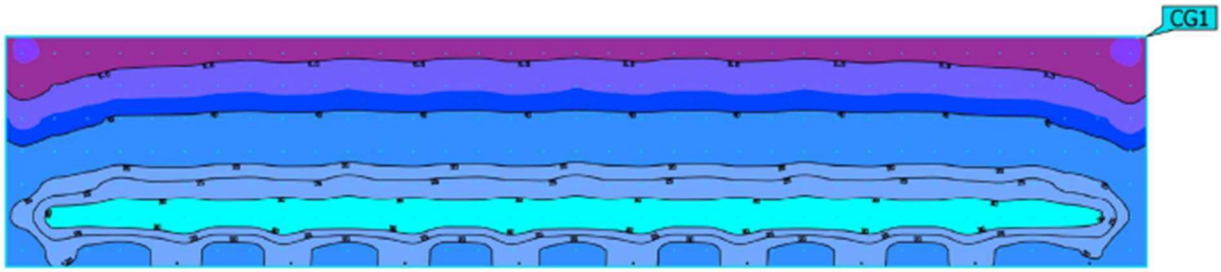
ISO 002

6.11 Horizontal Illuminance – Isolines

ISO 002

6.12 Boardwalk / Bridge Crossing

P	1.4 W
Φ_{Lamp}	110 lm
$\Phi_{Luminaire}$	110 lm
η	100.10 %
Luminous efficacy	79.2 lm/W
CCT	2200 K
CRI	80



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Calculation surface 1 Perpendicular illuminance Height: 0.000 m	16.6 lx	2.65 lx	36.3 lx	0.16	0.073	CG1

7. 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.

The public lighting design has been developed in conjunction with the ecological impact assessment carried out for this application.

- 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 3000k & 2200k for boardwalk/bridge crossing 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 is controlled through a combination of directional lighting and luminaire optics design.

- No floodlighting will be used on the scheme.

- The design is in reference to the 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);