



PUBLIC LIGHTING

DESIGN CALCULATIONS  
REPORT

TEMPLAR PLACE SHD,  
BALBRIGGAN,  
CO DUBLIN

Rev: 0

Date: 09/07/2021

LINKED PRACTICES

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## CONTENTS

1.	Introduction: .....	1
2.	Development Description .....	2
3.	Design Concept.....	3
4.	Detailed Design .....	4
5.	Grid Results .....	7
5.1.	Lux Isolines .....	7
5.2.	Lighting False Colour Rendering.....	8

Project Details:

Project:	Templar Apartments SHD,
Client:	Rhonellen Development
Architect:	McCauley Daye O'Connell Architects Limited 11 Merrion Square, Dublin 2, D02 P962, Ireland
M&E Consultant:	Varming Consultant Engineers., Classon House Dundrum Business Park Dundrum Road, Dublin 14

## TEMPLAR APARTMENTS SHD

### 1. Introduction:

The proposed development comprises a Build to Rent (BTR), Strategic Housing Development (SHD) as follows: Demolition of the existing buildings (former shopping centre and associated structures). Construction of 3 no. apartment blocks (Blocks A - C) ranging in height from 3 to 6 storeys (with Block B over 3 no. lower courtyard floors) providing a total of 101 units (19 no. studios, 41 no. 1-beds, 41 no. 2-beds).

Provision of Resident Support Facilities/Resident Services and Amenities, 2 no. retail units, car parking (at ground floor car park), cycle parking, ESB substation/switch room, plant, bin stores, open space, landscaping, boundary treatments, all associated site works and services provision

This report will outline the design intent for the proposed public lighting scheme for Templar Apartments, Balbriggan, Co. Dublin

This report outlines the lighting design as developed by Varming Consultant Engineering 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 neighbors
- 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)
- IS 10101-2020 National Rules for electrical Installation
- I.S. EN 12464-2 2014 Lighting of Outdoor Work Places
- CIBSE Lighting Guide 9 (Lighting for Communal Residential Buildings 2013)
- 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)

## 2. Development Description

The proposed development comprises a Build to Rent (BTR), Strategic Housing Development (SHD) as follows: Demolition of the existing buildings (former shopping centre and associated structures). Construction of 3 no. apartment blocks (Blocks A - C) ranging in height from 3 to 6 storeys (with Block B over 3 no. lower courtyard floors) providing a total of 101 units (19 no. studios, 41 no. 1-beds, 41 no. 2-beds).

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### 3. Design Concept

The public lighting design concept for the proposed development is to provide adequate illuminance for pedestrian accessing the development and communal court yard. The lighting levels shall be compliant with all the relevant standards and guidelines while complementing the Architecture of the development.

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.

High quality optics selected around the ecologically sensitivity areas of the development have also been a key part of the concept design.

All bats are sensitive to light pollution. Dark skies areas (under 3 Lux) must be maintained to the north and south of the buildings.

Lighting design will be in accordance with Bats and Lighting—Guidance Notes for Planners, Engineers, Architects, and Developers (Bat Conservation Ireland, 2010).•Bats and Lighting in the UK—Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018).•Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011).

## 4. Detailed Design

The design proposes to use 61 No. Luminaires types mounted at varying heights and with varying beam widths across the development..

Proposed luminaire design layout as per drawing 20723-VCE-ZZ-XX-DR-E-1000 for lighting locations and lux levels.

Lighting Dialux Calculations:

Development Lighting - Residential Zone/Walk exclusively for pedestrians (I.S. EN 12464-2 2014 Lighting of Outdoor Work Places table 5.4):

- The Average Horizontal Illuminance is 5 Lux ( $E_m \geq 5$  Lux) to be compliant.  
Average achieved: 16

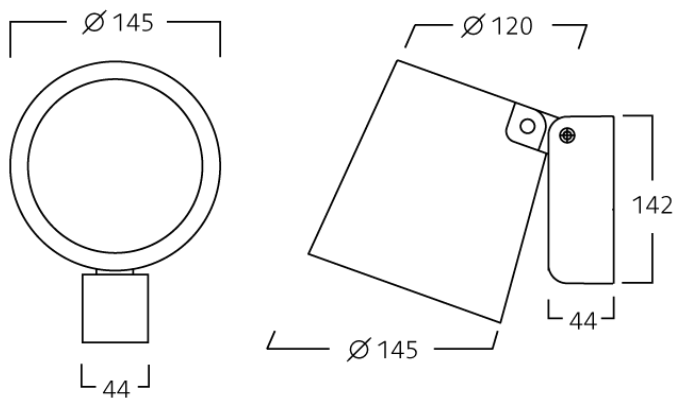
Luminaires:



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Product	Art.no.	Title	Description	Position code	Page
PoleLITE wall	305906-329				1
On Ground LED	303562-461				2
Verda bollard	301075				3
Cirrus	311650-20024				4
Vik LED	65706				5

## Art.no. 305906-329



With a choice of three beam angles PoleLITE creates both a sense of security and beautiful surroundings.

**Installation** Luminaire for wall installation. Mounted with the supplied wall bracket.

**Connection** Connection via the supplied adapter inside the bracket.

**Design** Body of cast aluminium with high corrosion resistance. Clear safety glass, 8 mm. Stainless steel details. Silicone gaskets. UV- and weather resistant polyester powder paint.

**Dimming** DALI on request.

**Standard colour** Alugrey or anthracite grey.

## PoleLITE wall

### DESIGN

Colour Anthracite grey

Weight, kg 2.6

### TECHNICAL DATA

Protection class 2

IK rating 10

IP rating 65

### ELECTRICAL DATA

Effect, W 16

### LIGHTING DATA

Lumen output 1076

lm/W 67

SDCM 5

CRI 80

CCT, K 4000

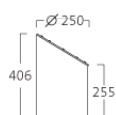
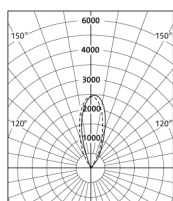
Light source LED

Light source colour 840

Beam angle, ° 61°

## Art.no. 303562-461

EAN 7320048048479



An ultra-robust ground floodlight that sits above the ground, avoiding many of the traditional operational issues of ground floodlights and creating beautiful exteriors even in demanding environments.

**Installation** Luminaire for cast in-situ or mounting in Ø108 foundation. Foundation for in-situ casting is buried in the ground. The rest of the luminaire is above ground. Mounting tube for foundation or in-situ casting are ordered separately.

**Connection** Terminal block 5x1,5 mm<sup>2</sup> in IP65-box.

**Design** Body in hot-dip galvanised steel with protective cover either in sturdy PMMA or in steel with light opening. Separate ballast box that is mounted protected inside the steel body. Acrylic cover plate for the steel cover light opening can be ordered as an accessory.

**Reflector** Reflector of anodised aluminium in either 20° or 42° angle.

**Dimming** DALI as standard.

**Designed by** Olsson & Linder.

**Standard colour** Anthracite grey (Gris 900 Sablé).

## On Ground LED

DALI, PMMA Cover

### DESIGN

Colour Anthracite grey/aluminium grey	Weight, kg 18
Height, mm 406	Diameter, mm 250

### TECHNICAL DATA

Tilt, ° 14	Protection class 1
IK rating 10	IP rating 65
Min. ambient temperature, °C -45	Max. ambient temperature, °C 25
Light control DALI	Brand of driver Philips

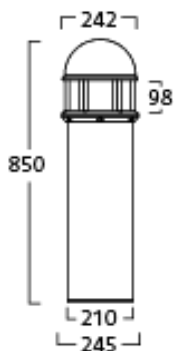
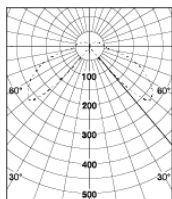
### ELECTRICAL DATA

MCB B10A 18	MCB B16A 30
MCB C10A 31	MCB C16A 51
AM Yes	Power on last level Yes
Stand by W 0.5	Rated supply voltage, V 220-240
Mains frequency, Hz 0, 50, 60	Start W 14
Average W 14.5	End W 15
NTC function Yes	Power factor, 100 % 0.94
Power factor, 30 % 0.76	Surge protection CM, kV/kA 10
Surge protection DM, kV/kA 6	THD, % 13
No of Dali Addresses 0	

### LIGHTING DATA

Lumen output 1080	lm/W 78
Lumen maintenance L100 B50, h 100 000	Lumen maintenance 100 000 h L100
Lumen maintenance at 50 000 h 1	LED driver, h/max failure % 100000/10
CLO function on Yes	CLO time, h 100 000
SDCM 3	CRI 80
CCT, K 4000	Beam angle, ° 42

## Art.no. 301075



## Verda bollard

### DESIGN

Colour Anthracite grey

Height, mm 850

### TECHNICAL DATA

Protection class 1

IK rating 10

IP rating 65

### ELECTRICAL DATA

Effect, W 20

### LIGHTING DATA

Lumen output 1290

lm/W 65

Lumen maintenance L80 B10, h 50 000

LED driver, h/max failure % 100000/10

SDCM 3

CRI 80

CCT, K 4000

Light source LED

Light source colour 840

A robust bollard available in three different heights makes it possible to combine high and low light points. Verda offers a simple and flexible installation even with heavy cables and smooth onward connection.

**Installation** Luminaire for assembly on foundations. Can also be cast in-situ or mounted on ground plate. Supplied with ground plate.

**Connection** Terminal block 5x16 mm<sup>2</sup>.

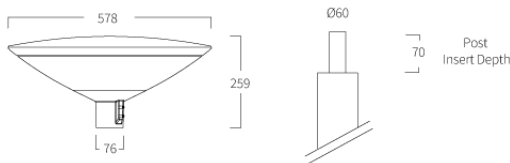
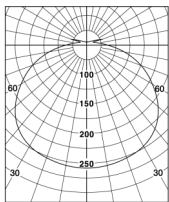
**Design** Body of cast aluminium with screw joints of stainless steel. Diffuser of polycarbonate (PC). The ballast and fuse insert are built into the body.

**Reflector** Enamelled aluminium.

**Standard colour** Anthracite grey (Gris 900 Sablé).

## Art.no. 311650-20024

EAN 7320048965196



A lamppost that offers Scandinavian contemporary design along with high light comfort from the evenly lit top reflector.

Adapt and optimise Cirrus by using Fagerhult Configure. For example, choose from CRI, colour temperatures, luminous flux, various accessories and connection options. All of your choices are saved in a product datasheet, which you can download together with unique light data files. The articles listed below are examples.

**Installation** Luminaire for installation on posts with post top Ø 60 mm.

**Connection** Supplied with 5m 1.5 mm<sup>2</sup> connecting cable (H05RN-F). Can be selected with FQO, PFXP or PNN cable in 4-6m.

**Design** Post bracket, heat sink and cover of cast aluminium. Cup of impact-resistant UV-stabilized PMMA. Ballast integrated in the luminaire.

**Reflector** The inside of the aluminium cover is lacquered in white and serves as a reflector.

**Light distribution** Symmetrical.

**Dimming** Night reduction, DALI and e-Sense Motion on pole.

**Accessories** Anti-glare protection at 125 and 165 degrees.

**Designed by** Lyhne Design.

**Standard colour** Alu-grey (RAL 9006 G70). Available in traffic grey (RAL 7042 G70), Anthracite grey (Gris 900 Sablé), Graphite grey (RAL 7024 G70), Black (RAL 9005 G70/str.) and Green (RAL 6009 G70). More colours available on request.

**LED-information** Driver with integrated surge protection: 6 kV between phase and neutral conductor (DM), 10 kV between phase/neutral conductor and protective earth (CM).

**Miscellaneous** CLO (Constant Light Output) entails that the luminaire provides the same amount of light for the duration of its specified burn time. More variants and properties available via Fagerhult Configure.

The articles listed below are examples. Use Fagerhult Configure to adapt and optimise your own version of Cirrus with CRI, colour temperatures, luminous flux, accessories and connection options.

## Cirrus

Symmetrical

### DESIGN

Colour Grey

Height, mm 259

Weight, kg 7.7

Diameter, mm 578

### TECHNICAL DATA

Protection class 1

IP rating 66

Max. ambient temperature, °C 25

IK rating 09

Min. ambient temperature, °C -40

Brand of driver Philips

### ELECTRICAL DATA

MCB B10A 20

MCB C10A 33

AM Yes

Mains frequency, Hz 50, 60

Average W 19

Power factor, 100 % 0.95

Surge protection CM, kV/kA 10

THD, % 10

MCB B16A 32

MCB C16A 40

Rated supply voltage, V 220-240

Start W 18

End W 20

Power factor, 30 % 0.79

Surge protection DM, kV/kA 6

### LIGHTING DATA

Light distribution Symmetrical

lm/W 109

Lumen maintenance 100 000 h L100

LED driver, h/max failure % 100 000/10

CLO time, h 100 000

CRI 80

Light source colour 840

Lumen output 2000

Lumen maintenance L100 B50, h 100 000

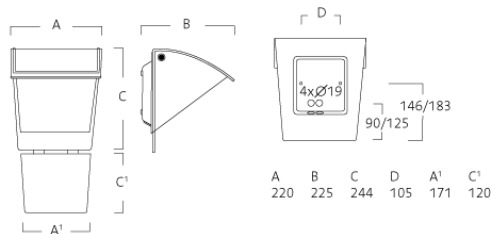
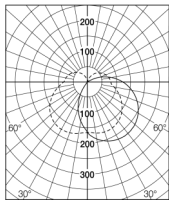
Lumen maintenance at 50 000 h 1

CLO function on Yes

SDCM 3

CCT, K 4000

Art.no. 65706



A wall mounted luminaire in two sizes with a timeless design suitable for most environments. The opal diffuser creates a well-balanced luminance on wall, while the clear shade offers a more direct light.

**Installation** Luminaire for wall mounting.

**Connection** Large version: terminal block 4x2.5 mm<sup>2</sup>. Small version: terminal block 3x2.5 mm<sup>2</sup>.

**Design** Body of aluminium. Diffuser of impact resistant opal or clear PC.

**Standard colour** Grey (NCS 6000).

Vik LED

Opal, Opal

DESIGN	
Colour Grey	Diffuser Opal
Weight, kg 2.2	Length, mm 244
TECHNICAL DATA	
Protection class 1	IKrating 08
IP rating 44	
ELECTRICAL DATA	
Effect, W 12	
LIGHTING DATA	
Lumen output 674	lm/W 57
Lumen maintenance L80 B50, h 60 000	LED driver, h/max failure % 50 000 /10
SDCM 3	CRI 80
CCT, K 4000	Light source LED
Light source colour 840	

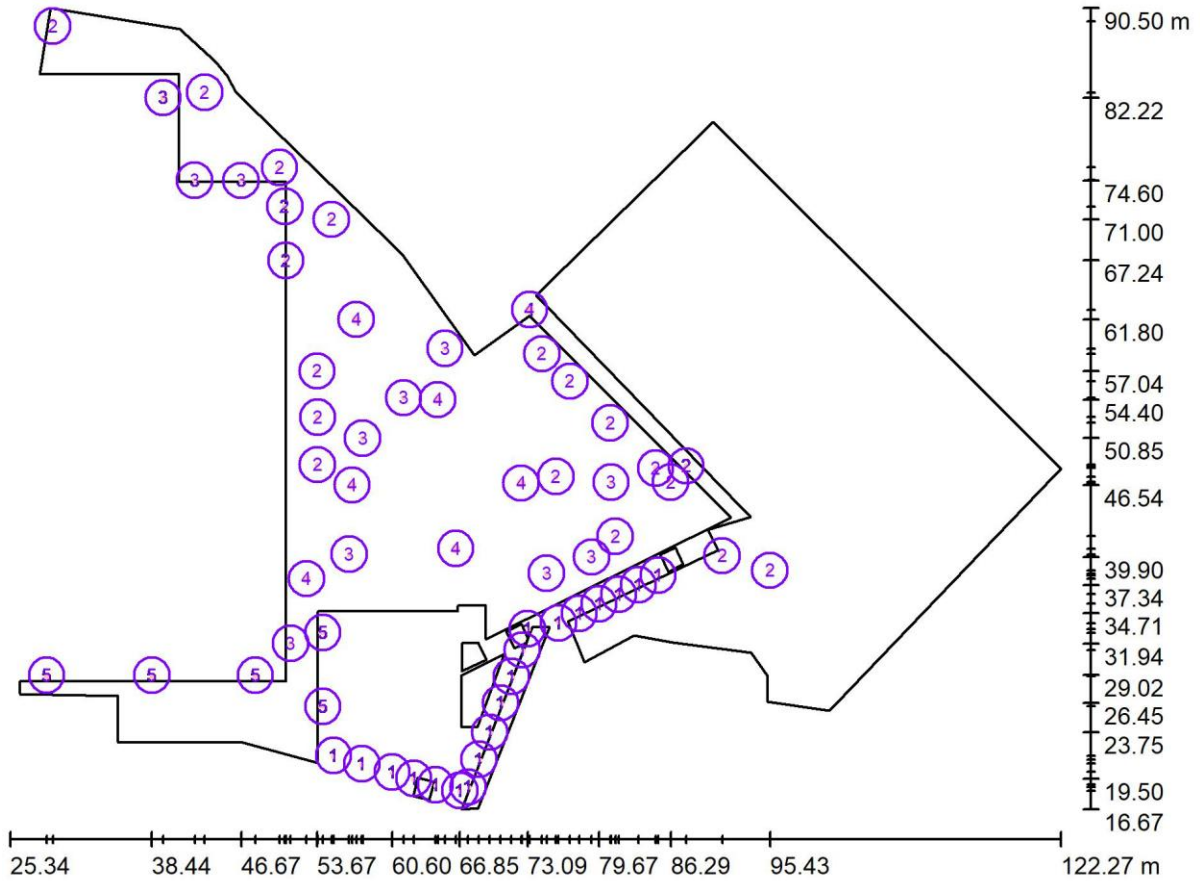
## Layout:

### Exterior Scene 1 / Planning data



#### Luminaire Parts List

No.	Pieces	Designation (Correction Factor)	Φ (Luminaire) [lm]	Φ (Lamps) [lm]	P [W]
1	19	ATELJELYKTAN 205386-233 Tall Lite Wall - LED 8W 830, DALI - Anthracite Grey (1.000)	541	541	8.0
2	19	FAGERHULT 301075 Verda Bollard medium 840 CL1 CLO (1.000)	1290	1290	20.0
3	11	Fagerhult 303562-461 On Ground LED 20DG 840 CL1 CLO (1.000)	1075	1080	14.0
4	7	FAGERHULT 311650-20024 Cirrus CL1 840 CLO (1.000)	2000	2000	19.0
5	5	FAGERHULT 65706 Vik LED LL 840 Opal (1.000)	674	674	12.0
Total:			63987	64039	879.0



#### Luminaire Parts List

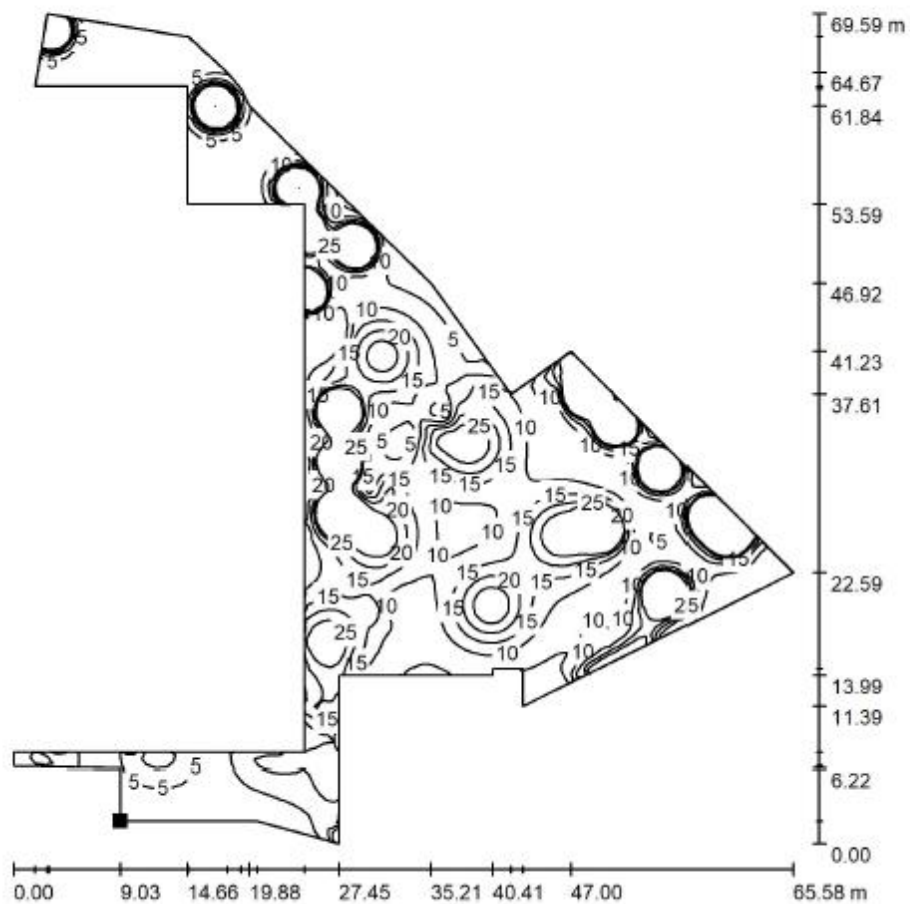
No.	Pieces	Designation
1	19	ATELJELYKTAN 205386-233 Tall Lite Wall - LED 8W 830, DALI - Anthracite Grey
2	19	FAGERHULT 301075 Verda Bollard medium 840 CL1 CLO
3	11	Fagerhult 303562-461 On Ground LED 20DG 840 CL1 CLO
4	7	FAGERHULT 311650-20024 Cirrus CL1 840 CLO



## 5. Grid Results

### 5.1. Lux Isolines

Exterior Scene 1 / Low Level Plaza / Surface 1 / Isolines (E)



## 5.2. Lighting False Colour Rendering

Exterior Scene 1 / False Colour Rendering

