

**Plot 5700,
North Wales Business Park, Abergele, Conwy, LL22 8LJ**



Exterior Lighting Design Calculation Report

Date of issue - 28.09.2026 Rev C

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LL22 8LJ

Exterior Lighting
Calculation Report

Revision. C

28.09.2026

Project No. 2607-13

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Introduction / project review Details and Information

Client
Project Site address:
Architect / Landscape Architect
Planning consultant
Planning application No. and details:
Ecologist / Report

Danan Group Ltd
Plot 5700, North Wales Business Park, Abergele, Conwy, LL22 8LJ
Jack Felgate, Felgate & Partners (Architect) & Theresa Dinkel (Landscape Architect).
Jack Felgate, Felgate & Partners
n/a
Arbtech

Brief and Planning Conditions

Our brief was to provide a lighting design report for this commercial development to be used as a retirement home complex in Abergele, Conwy.
To satisfy all necessary ecological and dark-zone setting requirements.
This report is a sensitive exterior lighting plan for the site and coordinated with the client's architect, planning consultant and ecologist.
Extracts from the planning shown below if applicable:

Planning condition notes to be added here is applicable

Survey details

N/a – Desktop Light pollution assessment only

Report Contents

- Basic 3D model and plans of the site were used in Lighting Industry standard DIALUX EVO to create the lighting plan and subsequent lighting calculations.
- Reflectance values are used and are appropriate for the materials and surfaces encountered.
- Lamps and Luminaires used were those that we can rely on from reputable companies and suppliers for accurate photometric data and technical support.
- Lighting equipment was selected based on quality, reliability, cost for the client, sustainability, maintainability and life cycle.
- Compliance to ILP (Institute of Lighting Professionals) documents:
 - ILP Guidance Note 08/23 Bats and artificial lighting at night
 - GN01_ILP_Guidance_Note_1_the_reduction_of_obtrusive_light_-_2021

Introduction

1.1

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SKR
Lighting Design

SKR Lighting Design Consultant profile

SKR Lighting Design was formed in 2012 and is headed up by its founder Neil Skinner.

Neil's career in lighting began with the MSc Light & Lighting, The Bartlett, University College London in 1994 and was sponsored by and worked for THORN Lighting. From 1997 to 2006 he worked in the lighting design consultancy profession for design consultancies, architects and commercial lighting companies. Neil's project experience has ranged from residential, to historic, to large scale commercial and public realm projects in over 20 countries.

Neil is a member of the ILP (Institute of Lighting Professionals), and SKR Lighting Design is also a corporate member of DARK SKY UK.

In recent times, SKR's work has increased in the areas of planning permission and sensitive exterior lighting where dark sky, rural, historic and wildlife issues, such as bats were key factors.

Recent projects for planning have included:

- New build residential single houses & extensions.
- Conservation area projects.
- Sports & Leisure. Including Tennis, Netball, 5-a-side and Padel courts.
- Housing developments.
- Commercial premises and industrial sites.
- Hospitality, hotels and restaurants.
- Rural, listed and historic setting projects.

Locations of these projects recently have been in Kent, Surrey, Cambridgeshire, Oxfordshire, Northumberland, Yorkshire, Wiltshire, Hampshire, Gloucestershire, Somerset, Yorkshire, Co. Dublin, Cumbria, Jersey and London.

Examples of previous projects and reports can be made available for reference, if requested in writing from the planning case officer.

For more information:

<https://www.skrlight.com/>

LinkedIn

<https://www.linkedin.com/in/neil-skinner-b0965b15/>



Introduction 1.2

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Survey 2.0

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Survey – Desktop

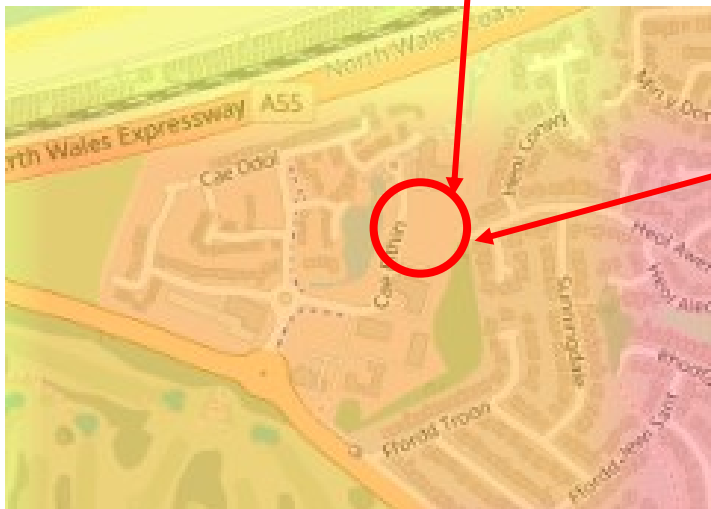
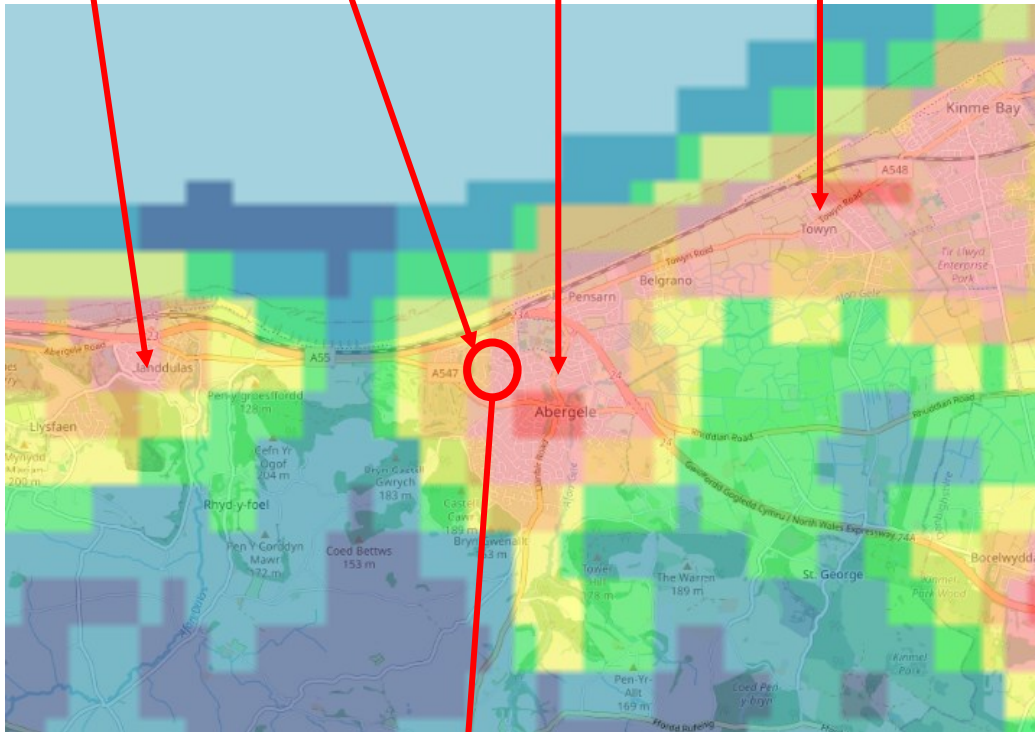
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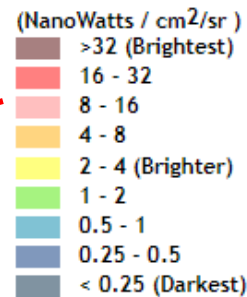
Plot 5700

Abergele

Towyn



Night Lights



Each pixel shows the level of radiance (night lights) shining up into the night sky. These have been categorised into colour bands to distinguish between different light levels. Please see the [REPORT](#) for more information on this.

Existing site Desktop survey

Part of the study within this report is to recognise the location in terms of the surrounding area and current light pollution levels. For this we refer to the CPRE website ('The Countryside Charity' also known previously as the Campaign for Rural England).

<https://www.cpre.org.uk/light-pollution-dark-skies-map/>

As the setting sits in a suburban zone, therefore based on ILP guidance, this area would be classed as an E3 zone.

For the basis of the report the project should be weighted more towards the neighbouring zone with the more rigorous requirements, in this case ZONE E2. For best practice.

Survey 2.1

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Environmental Zones

It is recommended that Local Planning Authorities specify the following environmental zones for exterior lighting control within their Development Plans.

Table 2: Environmental zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

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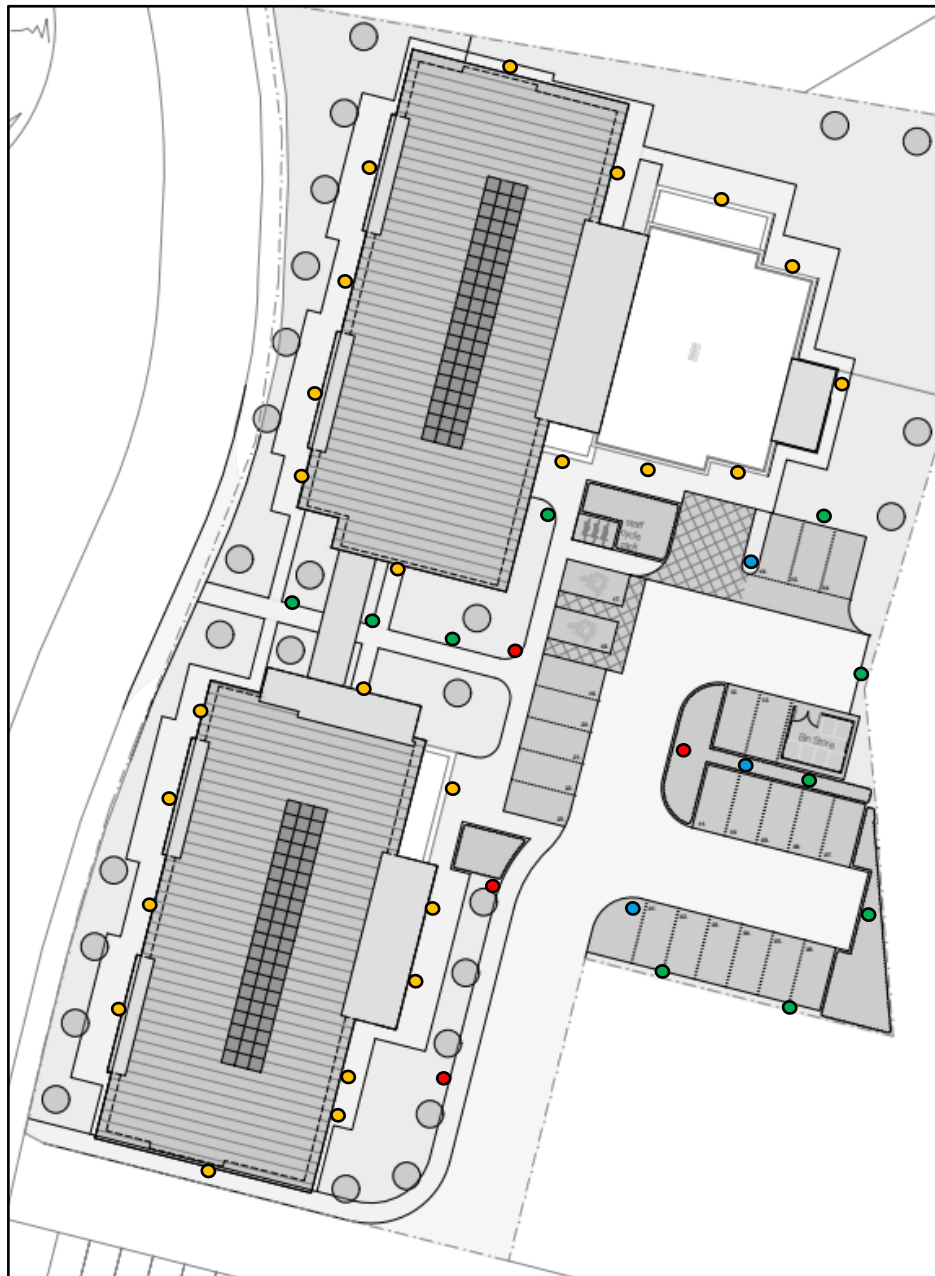
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Strategy and Design



Coloured symbols show the general locations of all lighting within the scheme. Precise coordination by landscape architect.

- **EX1a** – 4m High lighting column. 2700K Very warm white. Forward lighting optic. Zero up-light.
- **EX2a** – 1m High lighting bollard. Forward 180° optic. 2700K Very warm white. Zero up-light.
- **EX2b** – 1m High lighting bollard. Forward 360° optic. 2700K Very warm white. Zero up-light
- **EX3** – Wall mounted downlight. 2700K Very warm white. Zero up-light.

Site Plan and exterior lighting strategy

Outline scope and requirements for buildings and access:

- Safety wayfinding and security for users of the buildings.
- Lighting for exterior landscape access.
- Light that is applicable to the area and environment.
- Sensitive application of light for key areas.
- 2700k very warm white light sources will be used.
- Sustainable, reliable and maintainable LED low energy light sources are used.
- Lighting locations in the site and positions on façade precise locations to be coordinated by architect.
- Light control, switching, PIR sensor and timing to be used as required for working purposes.
- Light levels for the distribution of light around the site and spill up to and beyond any boundaries.
- Light levels cut off to below <1.0 lux at, within or before boundaries.
- Colour LUX lighting scales are shown for guidance.
- All the lighting are down-facing luminaires with zero-Up-light.
- All specifications can be found in section 4 of this report.
- This is a lighting fixture location plan for guidance. Exact setting out by architect or landscape architect.

Design 3.1

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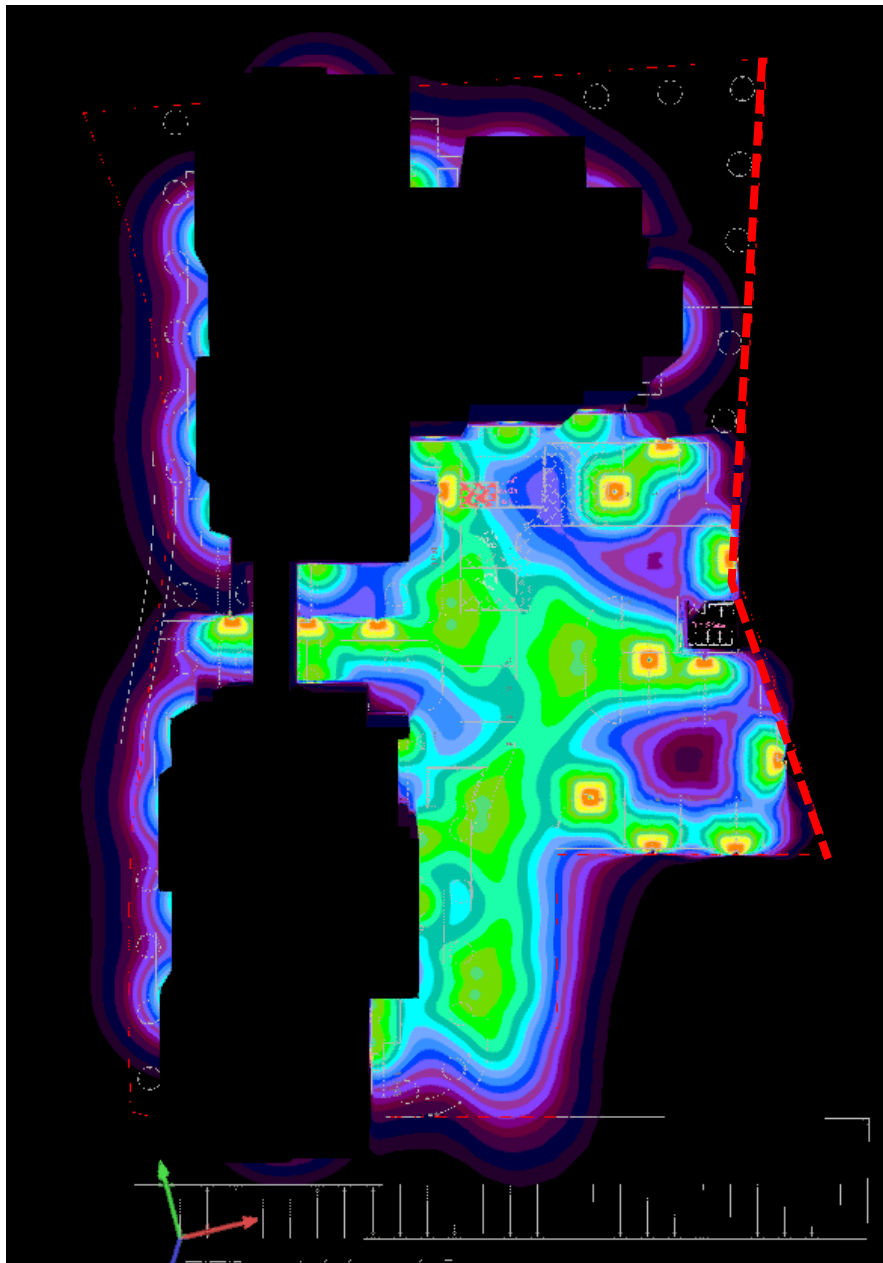
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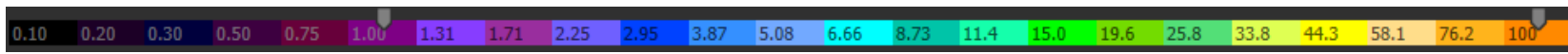
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Isolux contour chart; colours indicating illumination lux level.



Site Plan Night Map – Birds Eye View

This page shows the effective 'light map' from above but as contoured coloured lines showing indicated light levels with all lighting ON full.

The scheme control will ensure that lighting is only on when required following the timing schedule or triggered by a PIR.

The lighting effects and distribution provide orientation, task and guidance, while still allowing significant areas of necessary dark (<1.0lux) for flying and ground wildlife to follow ILP guidance and any subsequent requirements from an ecologist.

Light spill into hedgerow boundaries (red dash line) is cut off.

Control

Scene 1 = Dusk to 22.30 at 100%

Scene 2 = 22.30 to 00.00 at 50%

Scene 3 = OFF 00.00 to dawn, however switched ON via PIR sensor at 50%, with a 2 min time delay cut off.

And

Scene 4 = Client override switch on at full 100% for maintenance or emergency.

Light level summary

<1.0LUX horizontally and vertically at the boundary.

Car Park = 11Lux average

Design 3.2

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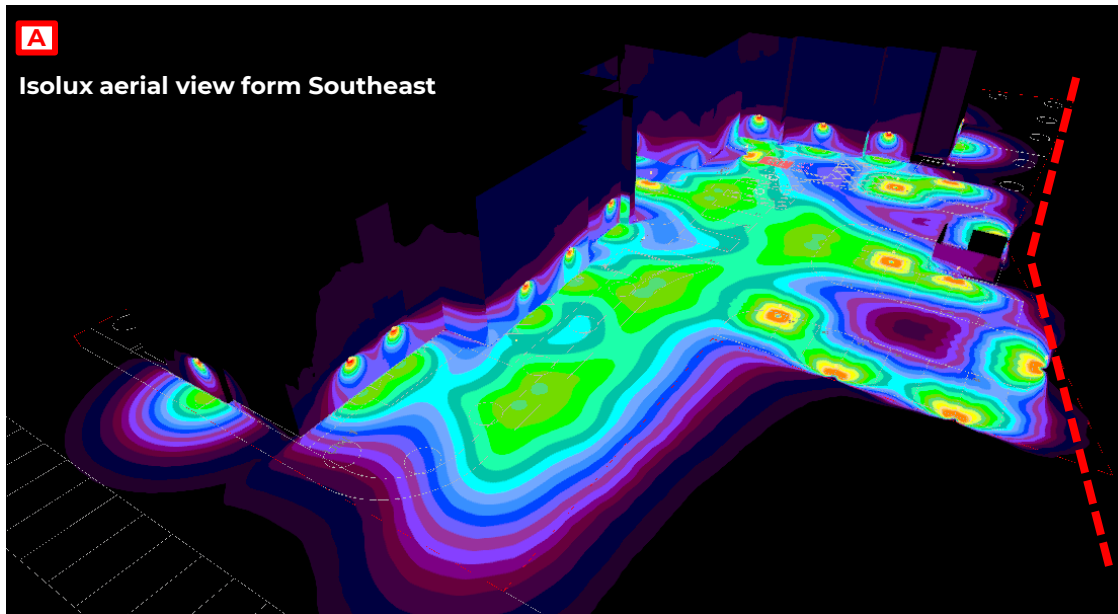
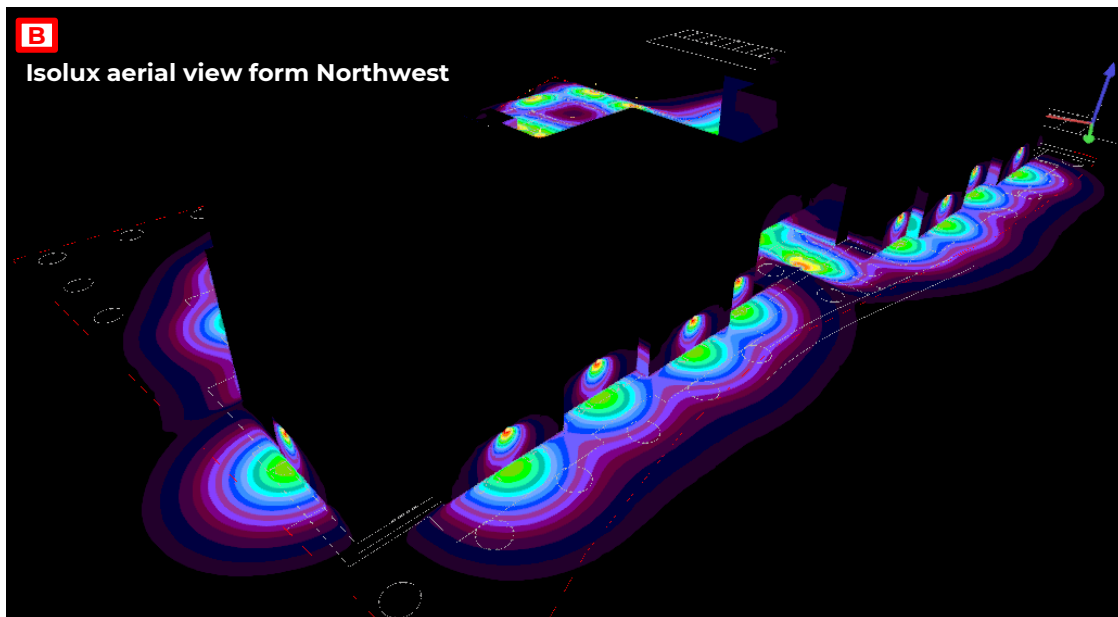
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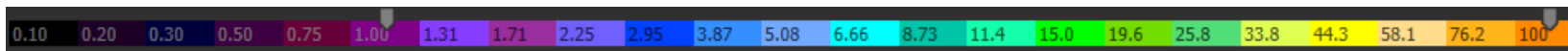
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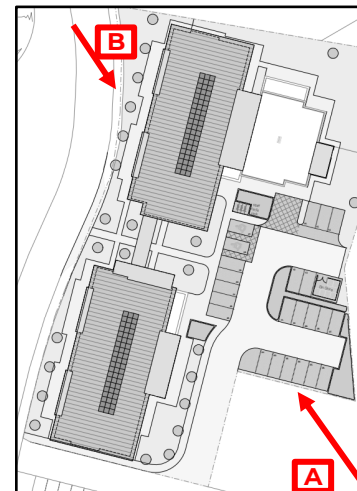
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A**Isolux aerial view form Southeast****B****Isolux aerial view form Northwest**

Isolux contour chart; colours indicating illumination lux level.



Site Plan Night Map – Birds Eye View View from Southeast and Northwest



Light spill into hedgerow boundaries (red dash line) is cut off.

All lighting is downward facing and 2700k warm white.

Lighting is located for precise task or location requirements.

Design 3.3

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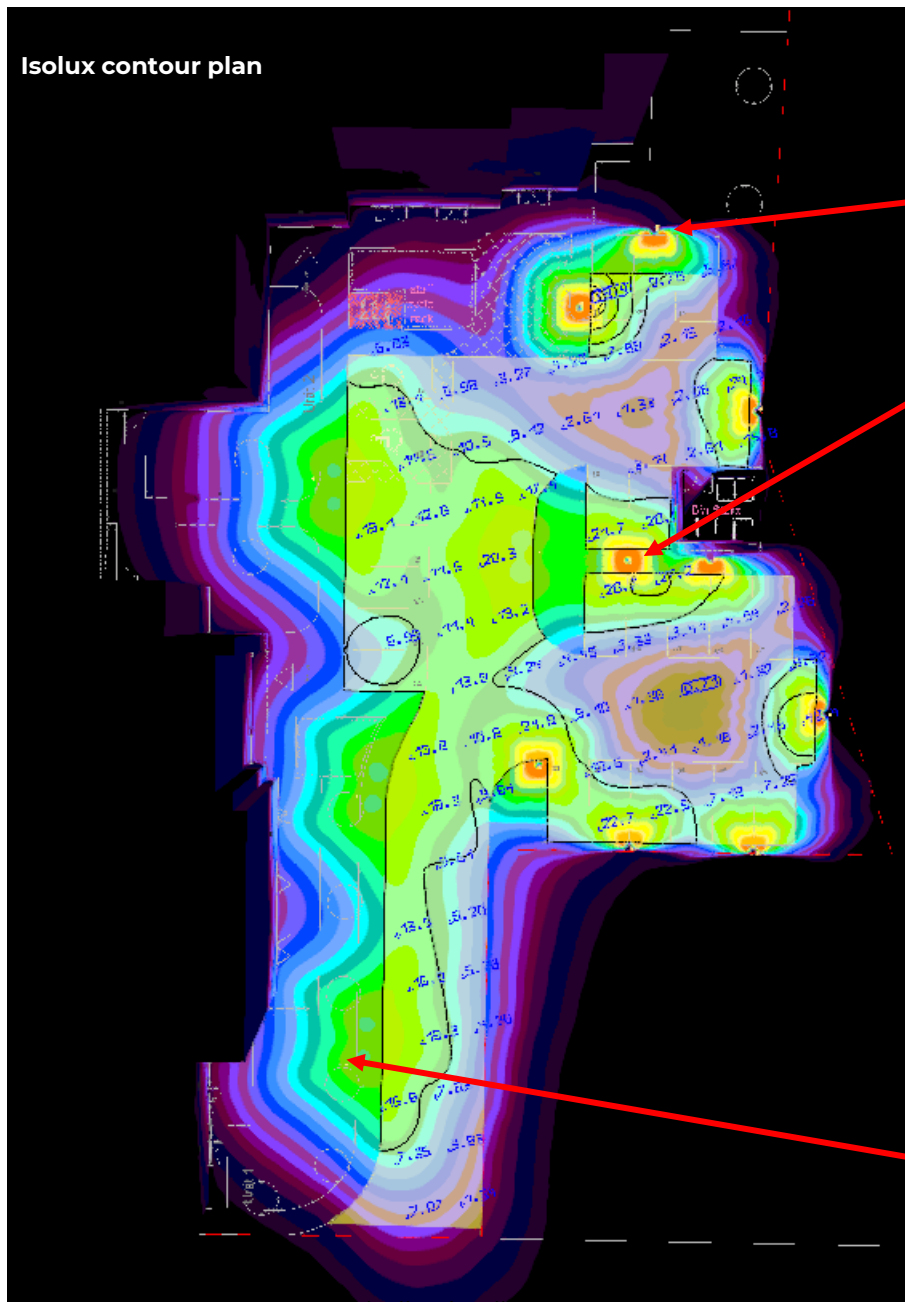
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Isolux contour plan



EX2a

1m High lighting bollard,
180° forward downlight.
2700k very warm white
LED. Zero up-light.

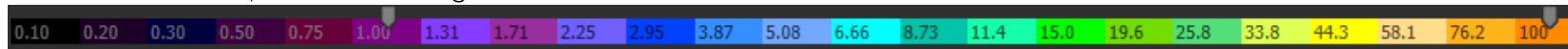
EX2b

1m High lighting bollard,
360° downlight. 2700k
very warm white LED.
Zero up-light.

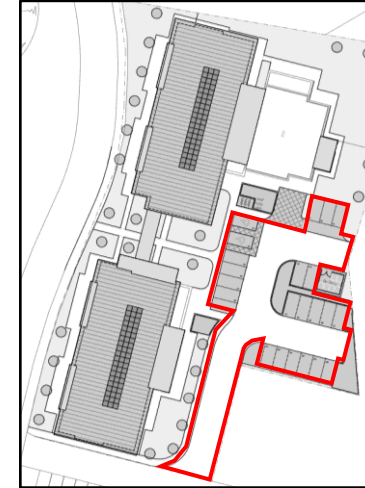
EX1

4m High lighting column. 2700k
very warm white LED. Forward
light optic. Zero up-light.

Isolux contour chart; colours indicating illumination lux level.



Site Plan Car Park



Design 3.4

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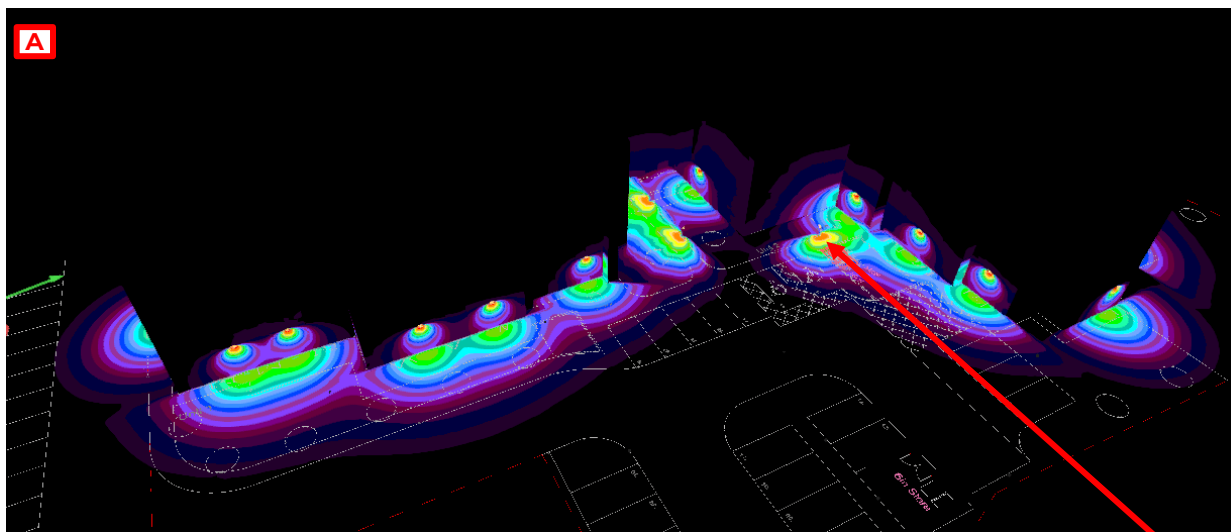
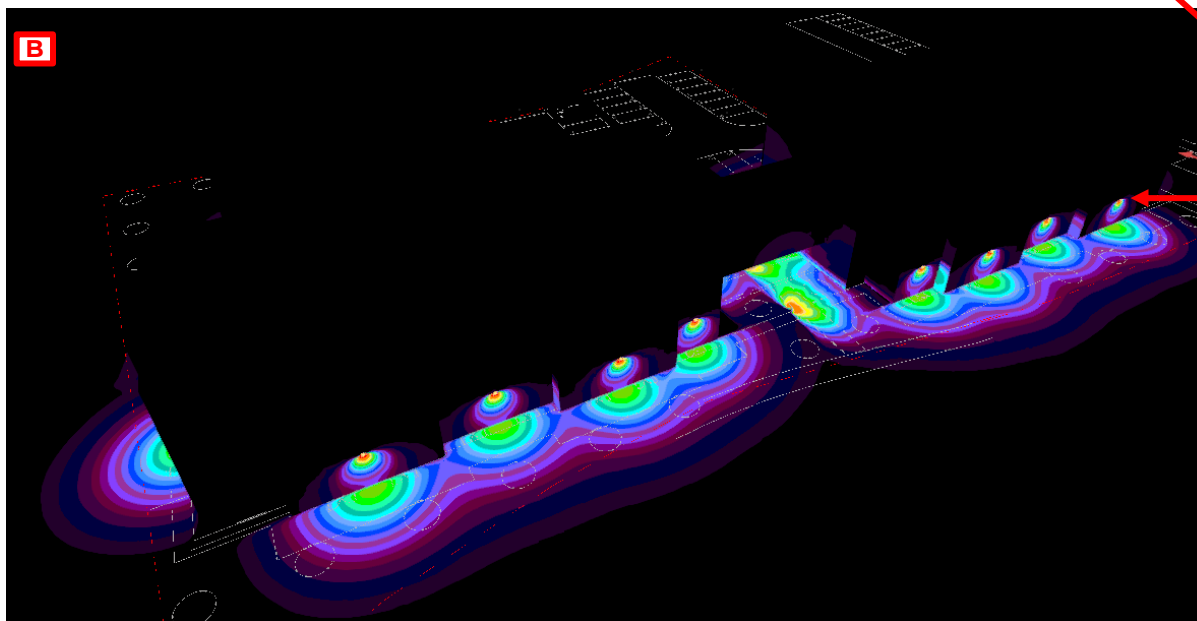
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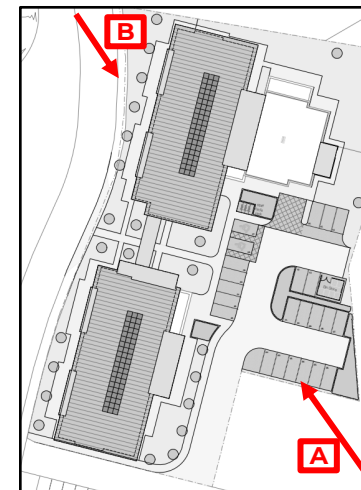
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A**B**

Site Plan Circulation, Entrances & Exits



EX2a

1m High lighting bollard, 180° forward downlight. 2700k very warm white LED. Zero up-light.

EX3

Wall mounted downlight. 2300K Very warm white. Zero up-light. Located for resident doors or exits.

Light level summary

Sufficient levels of illumination at doorway thresholds and exterior guidance.

Design 3.5

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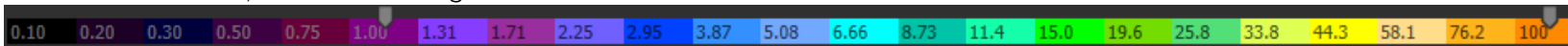
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Lighting Specifications and guidelines

Specification outline guidance for exterior lighting:

- a) Use High-frequency / non-flicker control gear for LED where possible.
- b) <2700k warm white range LED colour temperature to ensure wildlife sensitivity compliance.
- c) Integration with PIR sensors to be used where possible with suggested 1min cut off times.
- d) Luminaires used in this design and report are for the purposes of design and calculation. They are a guideline of design and performance, and any alternative suggested subsequently must follow the guidelines set out in this document. If there is any doubt, the user and/or contractor is advised to reach out to the lighting design consultant for guidance.
- e) Flexibility for future luminaire change should be allowed within the constraints of this design and report, as the future availability of luminaires and lamps from lighting manufacturers can change or even become obsolete within the time frame of a planning permission.
- f) The products specified are chosen with a view to use with the project dimming control system. The electrical consultant, contractor and or controls integrator need to verify compatibility of dimming to avoid any flicker, flashing, strobing or audible buzzing.

Plot 5700,
North Wales Business
Park, Abergele, Conwy,
LL22 8LJ

Exterior Lighting
Calculation Report

Revision. C

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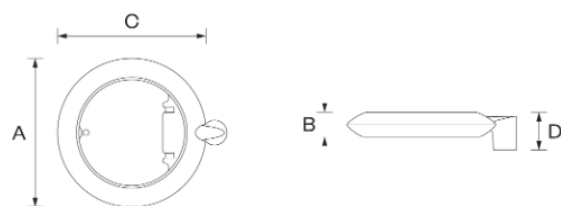
Project No. 2607-13

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CONTRACTOR TENDER:
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better quality than that shown.
SKR LIGHTING DESIGN reserve
the right to view working
samples in a light test
environment and / or request
lighting calculations for
comparison which will be
completed by their chosen
lighting suppliers.

SKR LIGHTING DESIGN
16 Pearce Drive, Chipping
Norton, Oxfordshire, OX7 5HY
– UK
T: +44(0)333 880 8001
and
E: info@skrlight.com Web:
www.skrlight.com

(SKR Lighting Design is the
trading name of NSLD Ltd.)
Company Number: 8255099

Direct Post



Dimensions (mm):

A 621 **B** 106 **C** 709
D 163

Weight (kg):

14.0

Windage (m²):

0.063

Manufacturer / Supplier:
Luminaire Name:

DW Windsor
Sephora 450 V2 12 UA1 2700 250mA
UMSUG 42 0019 0000 100

Luminaire Catalogue No:

Colour / Finish:

Dark grey TBC

IP Rating:

IP66

IK Rating:

IK09

Max Power Watt:

18.2W

LED Luminaire lumen output:

2755lm

Efficacy:

151lm/W

Voltage to driver:

250mA

Light source colour:

2700k

CRI (Colour rendering Index):

70CRI

Lamp life (Hrs & L):

100,000hr L90 B10

Warranty (See manufacturer):

5 Years

Construction / Materials:

Aluminium and toughened glass

Cooling Management:

Passive

Weight:

14kg

Control method:

DALI-dimmed

Beam angle / light distribution:

UA1 Area lighting optic

Description and Use:

Car parking and mini-bus parking
forward area lighting fixture, mounted
on 4m high columns.

Accessories:

1.

4m Root mounted lighting column

2.

Contact:

Paul Murphy
Tel: 07791313356
E-mail: paulmurphy@dwwindsor.com

Ref: EX1

**Specification
4.2**

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SKR guidance note:

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If equipment becomes unavailable or even obsolete in the future, any alternative luminaire and changes to the specification will follow similar good lighting practice and details set in the report.



Dimensions (mm):

A 1000 **B** 300 **ØC** 152
D 200



Back shield
accessory for
EX2a

Ref: EX2a and EX2b

Manufacturer / Supplier:	DW Windsor
Luminaire Name:	Pharola Max DS 9LED 2700k
Luminaire Catalogue No:	
Colour / Finish:	Black or grey TBC
IP Rating:	IP66
IK Rating:	IK10
Max Power Watt:	29W max
LED Luminaire lumen output:	716lm
Efficacy:	25lm/w
Voltage to driver:	1050mA
Light source colour:	2700k
CRI (Colour rendering Index):	70CRI
Lamp life (Hrs & L):	100,000hrs L80
Warranty (See manufacturer):	5 Years
Construction / Materials:	Die-cast aluminium
Cooling Management:	Passive
Weight:	8Kg
Control method:	Passive
Beam angle / light distribution:	EX2a = 180° Asymmetric down. EX2b = 360° down.
Description and Use:	1m high lighting bollard, root mounted.
Accessories:	
1.	Back shield for EX2a
2.	
Contact:	Paul Murphy Tel: 07791313356 E-mail: paulmurphy@dwwindsor.com

Specification 4.3

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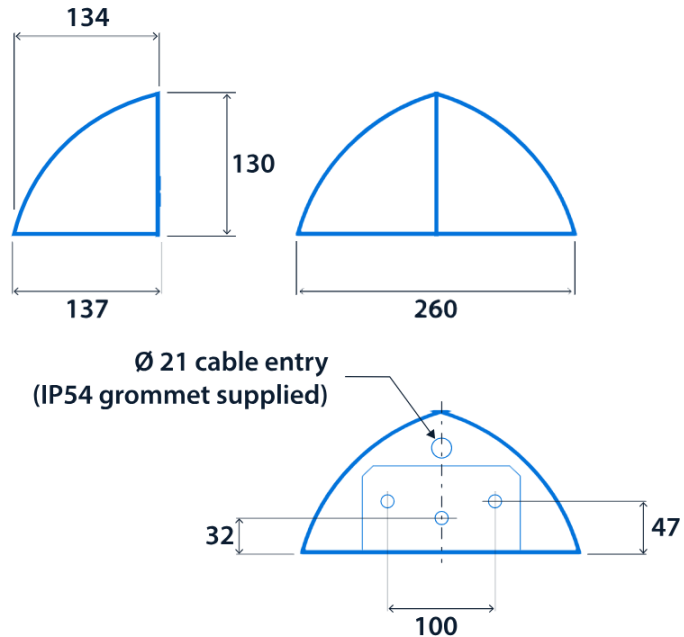
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Manufacturer / Supplier:
 Luminaire Name:
 Luminaire Catalogue No:
 Colour / Finish:
 IP Rating:
 IK Rating:
 Max Power Watt:
 LED Luminaire lumen output:
 Efficacy:
 Voltage to driver:
 Light source colour:
 CRI (Colour rendering Index):
 Lamp life (Hrs & L):
 Warranty (See manufacturer):
 Construction / Materials:
 Cooling Management:
 Weight:
 Control method:
 Beam angle / light distribution:
 Description and Use:

Thorlux
 Realta MICRO
 TRL 16607LFC827
 Grey or graphite TBC
 IP66
 IK11
 8W
 550lm
 69lm/w

2700K (Special)

100,000hrs K-L90/B10
 5 Years

Passive

On/off
 Area

Façade mounted downlight for
 building entrances/exits, with
 emergency battery pack. Fixed
 output,
 Emergency version available.
 Thorlux special request 2700k

Accessories:

Emergency battery for escape use,
 with standard key switch test.
 Electrical contractor to confirm.

Contact:

Peter Smith
 07767273006
 Peter.smith@thorlux.co.uk

Ref: EX3

Specification **4.4**

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