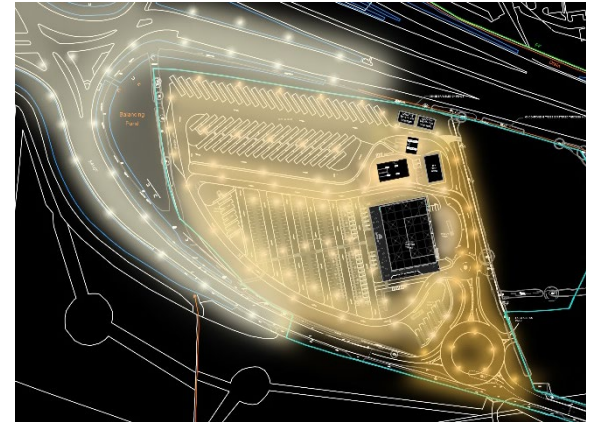


Swindon Services

Junction 16, M4, Swindon



Lighting Design

Exterior Lighting Survey, Design & Calculation Report

17.10.2023

Contents

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

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Company Number:
8255099



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1.1	Introduction and project review	3
1.2	SKR Lighting Design Consultant profile	4
2.0	Site survey report – August 2023	5 - 17
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Introduction and project review

SKR Lighting Design were appointed in August 2023 by MOTO HOSPITALITY LTD and Planning consultant SMITH & JENKINS to carry out the necessary exterior lighting survey and new exterior lighting design for the following property as part of this planning application:

SWINDON SERVICES
MOTO, Junction 16, M4, Swindon.

A briefing was provided by Smith & Jenkins, with additional briefings and support from Beech Design & Build Architects.

SKR provided a full day and night survey (shown in this report).

The report in the following pages includes the following:

- A day / night survey of the current exterior setting and surrounding situation.
- 3D calculation study using new exterior lighting.
- Proposals for all practical and necessary task, amenity and security lighting.
- SKR created simple representative 3D models of the buildings on site for reference, planning and design.
- Industry standard DIALUX EVO software is used for lighting calculations.
- Interior lighting for the buildings was not included for this project.
- Exterior luminaires and lamps / light sources used were those that we can rely on for accurate photometric data and technical support.

Introduction 1.1

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
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SKR Lighting Design Consultant profile

SKR Lighting Design is in its 11th year of business and is headed up by 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).

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 in conservation areas, housing developments, commercial premises, industrial sites, restaurants and rural listed historic setting hotels. Locations of these projects recently have been in Kent, Surrey, Cambridgeshire, Northumberland, Hampshire and London.

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

Introduction 1.2

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Survey 2.0

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Project No. 182

Site analysis and survey report

August 2023

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Existing site
Desktop survey
Satellite view of area

Survey
2.1

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

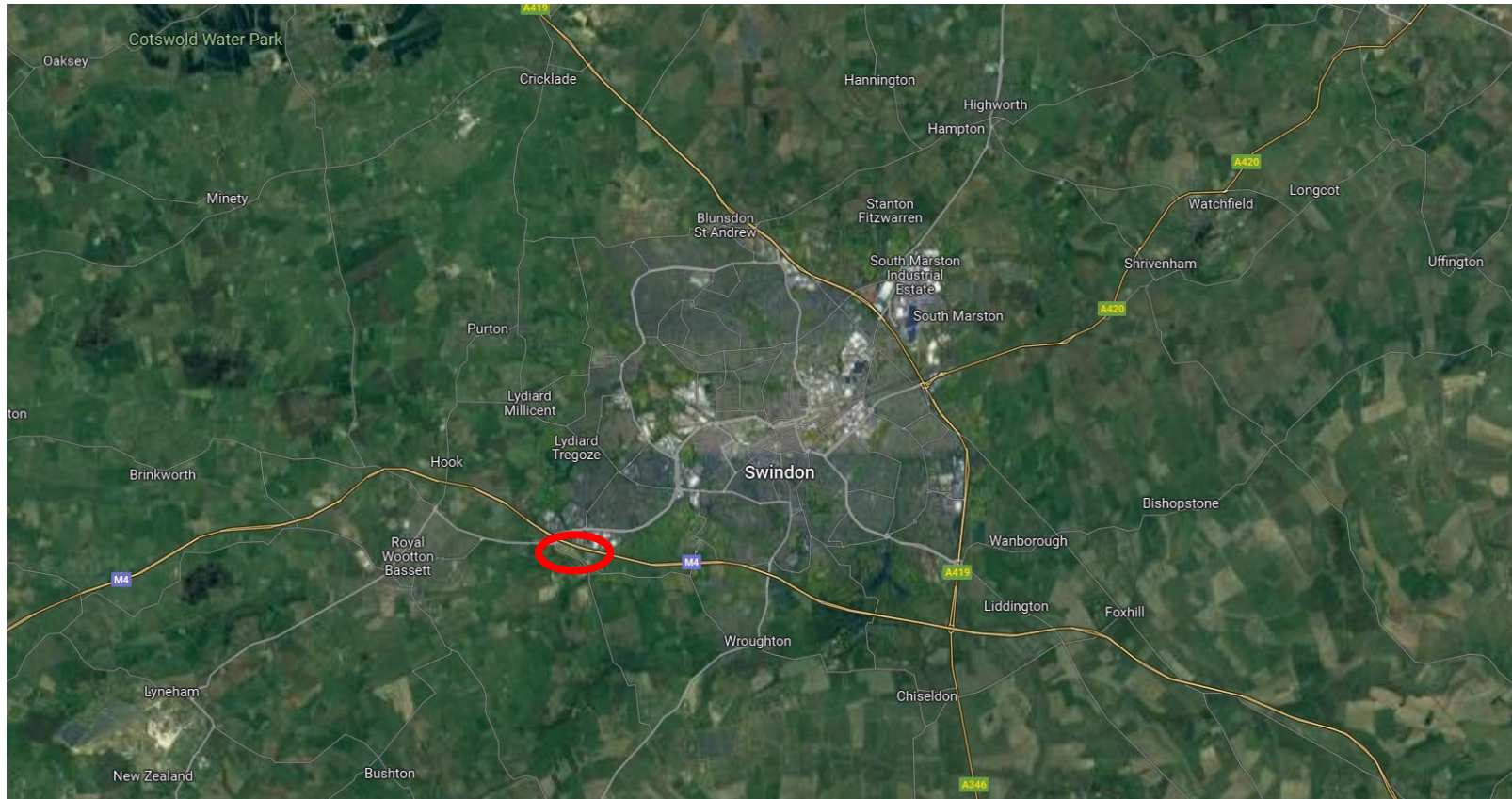
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Desktop analysis of site prior to site visit.

**Existing site
Desktop survey
Satellite view of location**



The site sits next to Junction 16, and on the south side of the M4 motorway.

The city of Swindon lies to the north side of the M4, while to the south the area is predominantly rural and lightly populated.

The site is effectively Green-field with no current buildings.

Deep woodland lies to the south and will be a factor in this report.



**Survey
2.2**

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
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Existing site Desktop survey

Survey 2.3

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
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17.10.2023

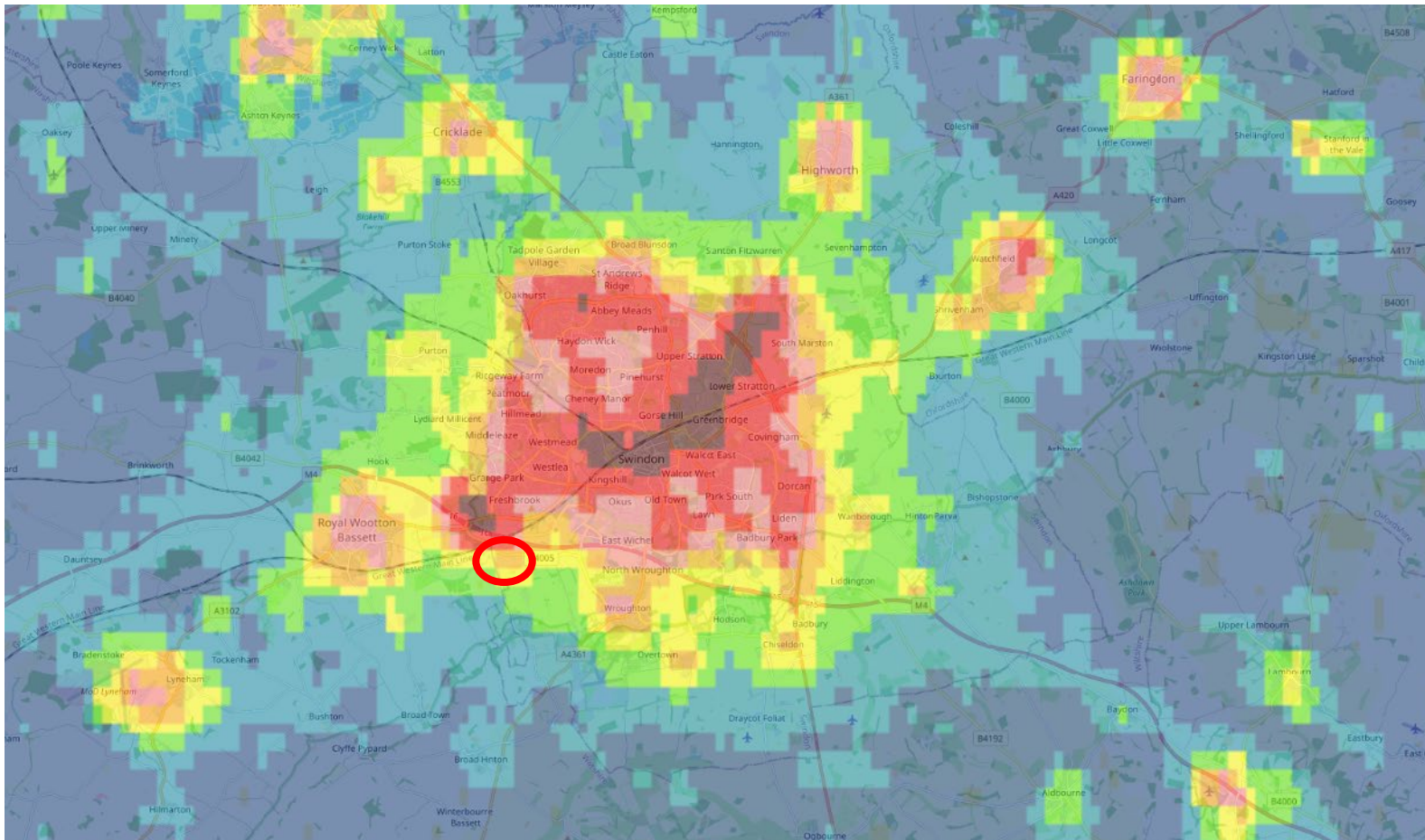
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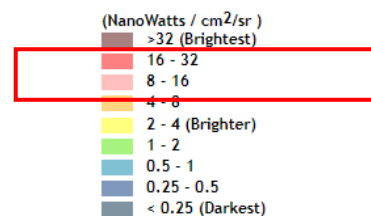
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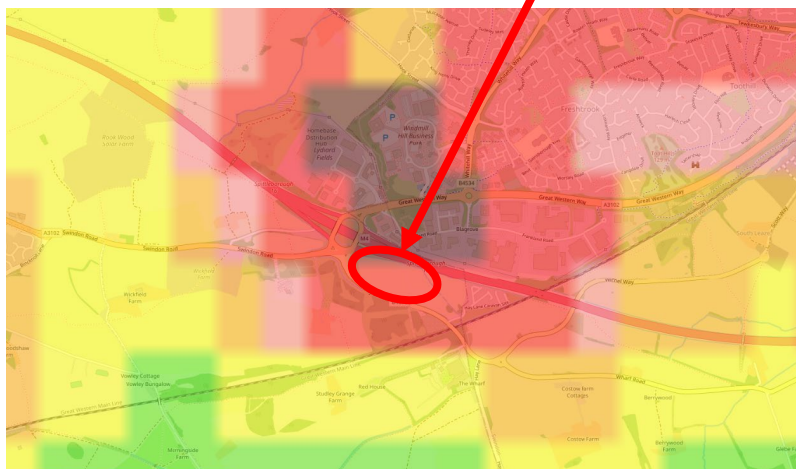
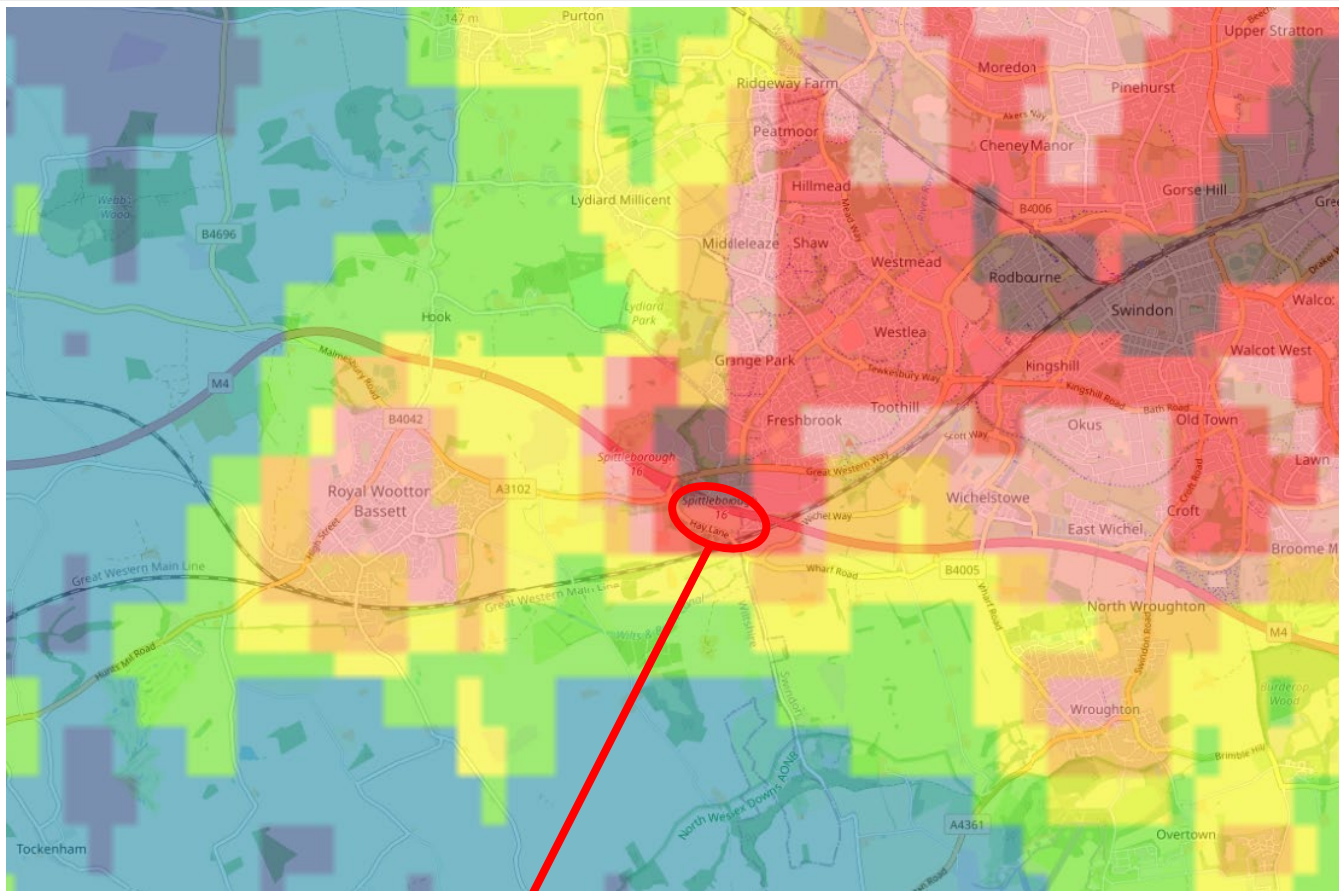


Source: <https://www.nightblight.cpre.org.uk>

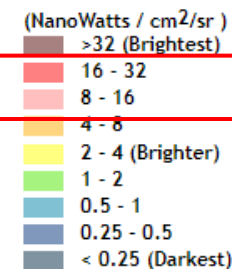
Based on ILP guidance, this
area would be classed as an
E3 zone.



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.



Source: <https://www.nightblight.cppe.org.uk>



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

Based on ILP guidance, this area would be classed as an E3 zone.

Due to the proximity of dense woodland to the south, the basis of the report, the project will follow zone E3 criteria, but with an emphasis and weighting towards ZONE E2 for best practice. For the more sensitive south and east boundaries.

Survey 2.4

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Swindon, Wiltshire

Exterior Lighting Survey
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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

Surrounding area – Day landscape survey

Survey 2.6

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Swindon, Wiltshire

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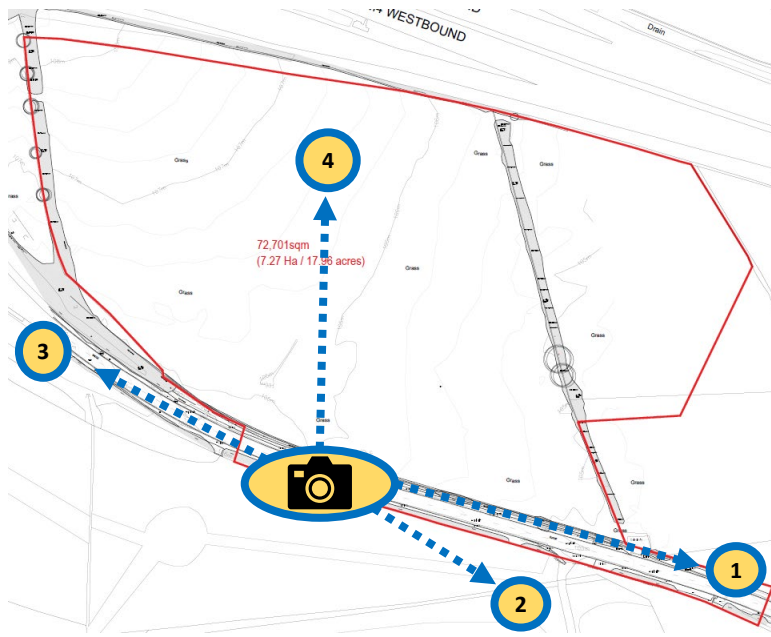
B4005 – Dense woodland screen to the south.

Date: 7 Aug 2023
Weather: Dry, light cloud

B4005 – Existing 12m
column lighting from
the junction area. This
stops at this point.



B4005 – View across the site to the M4 south exit slip-road and it's lighting. No other buildings or lighting present on the site.



Survey 2.7

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Surrounding area – Day landscape survey



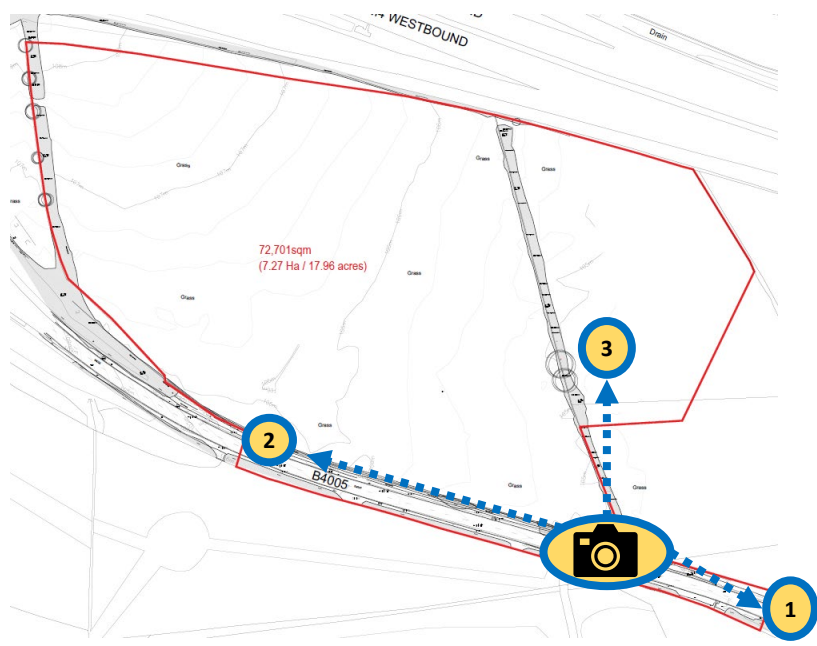
B4005 – More woodland screen to the southeast.



B4005 – Deep woodland to the south, viewed from the east. This location would have the main site new roundabout.



View from the B4005 looking north up and behind the hedgerow.



Survey 2.8

Exterior Lighting Survey and Calculation Report

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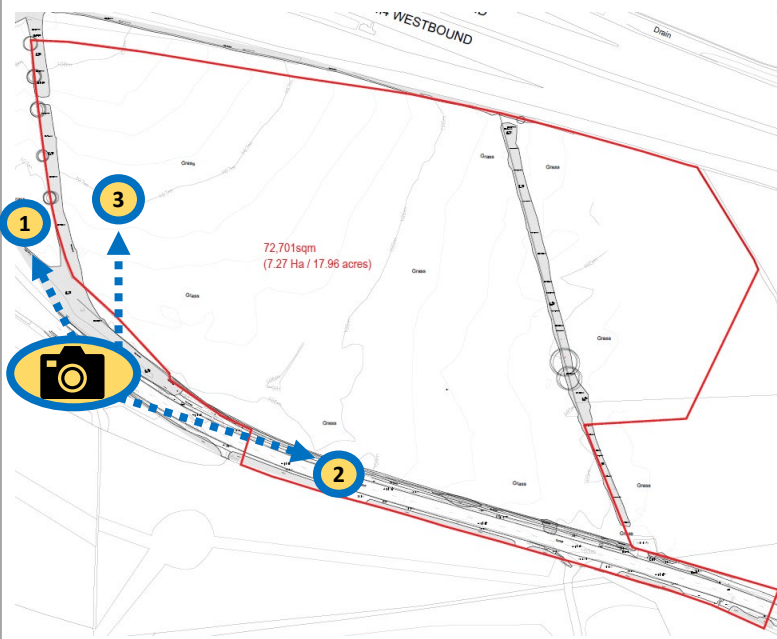
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View across the site to the M4 Junction 16 and slip road. There is significant light spill into the current site and pond.

A nighttime photograph showing a dark, grassy field in the foreground. In the background, a line of tall, illuminated streetlights stretches across the horizon. The sky is dark, and some distant structures are visible on the right side. A blue oval with the number 3 is in the bottom right corner.

View across the dark site to the M4 slip road.
The slip road is illuminated, however the M4 itself is
unlit at this location.



B4005 – View near junction.

The road is illuminated to 17 LUX in this area using 4000k luminaires on 12m columns.



Surrounding area – Night light level survey



B4005 – View near junction.

Elevated view across site to M4 slip road and it's lighting.

B4005 – View back east towards the dark tree line to the south and the site in darkness.



Survey 2.9

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Survey 2.10

Exterior Lighting Survey and Calculation Report

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 Existing Road Lighting Column

 Existing Road Lighting Column

 Existing Traffic Lights

M4 EASTBOUND
M4 WESTBOUND

M4 Motorway

17

B-1005

Woodland

The centre and east side of the site is effectively a dark zone.



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Surrounding area – Night light level survey

Survey 2.11

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View from the north boundary fence across to the B4005 and its elevated lighting.

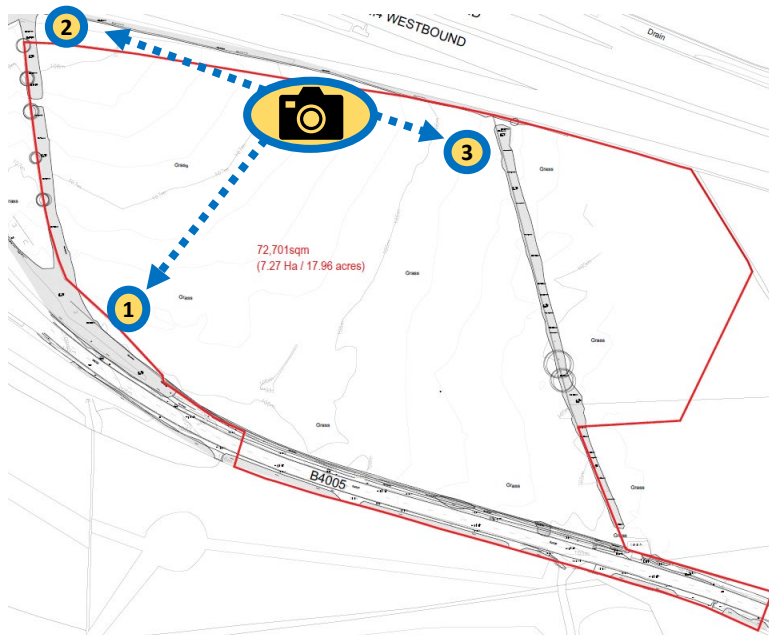


View from the north boundary fence looking west towards the M4 slip road and Junction 16.
An average of 1.8-2.0 LUX falls into the site from the 4000k 12m tall slip road lighting.



View from the north boundary fence looking east towards the M4 slip road and the dark east boundary hedgerow.

1.8-2.0 LUX falls into the site from the 4000k 12m tall slip road lighting.



Surrounding area – Night light level survey

Survey 2.12

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Exterior Lighting Survey
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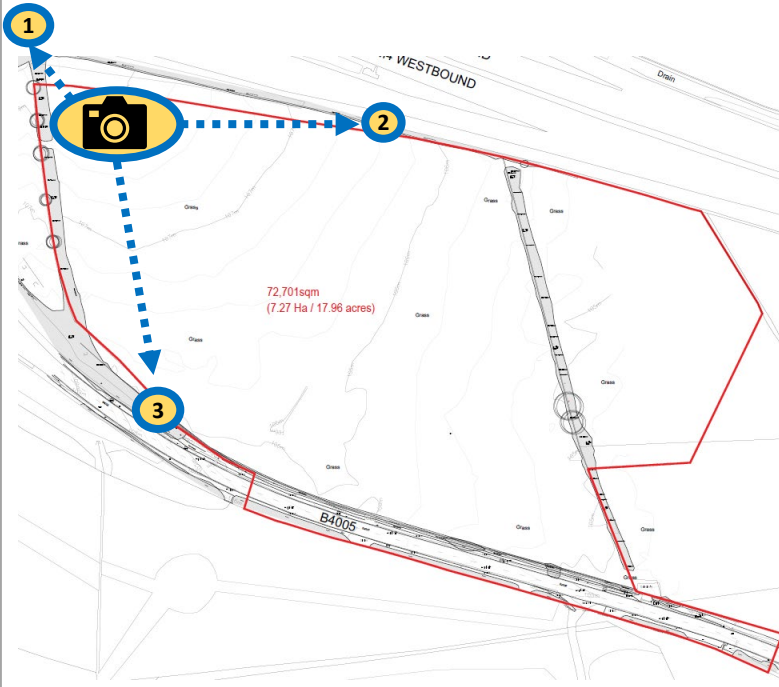
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View from the northwest boundary fence looking west towards the elevated M4 slip road and Junction 16. An average of 1.8-2.0 LUX falls into the site from the 4000k 12m tall slip road lighting.



View from the northwest boundary fence looking east towards the M4 slip road and the dark east boundary hedgerow. 1.8-2.0 LUX falls into the site from the 4000k 12m tall slip road lighting.



View from the northwest boundary fence looking south towards the B4005 elevated lighting from the Junction 16. 1.8-2.0 LUX falls into the site from the elevated 4000k 12m tall slip road lighting.

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
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Lighting Calculation Study and Design

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Lighting Design Concept

Each specific area will be addressed individually in terms of task, function, light level, light colour, impact, architectural and landscape coordination and equipment specification.

Lighting equipment, criteria and zones

- Ref: EX1
Roundabout access to site.
- Ref: EX2
Mini-roundabout.
- Ref: EX3
Car Parking circular road.
- Ref: EX4
Coach Parking.
- Ref: EX5
Main Car & Caravan parking.
- Ref: EX6
Service yard.
- Ref: EX7
HGV Parking.
- Ref: EX8
Petrol Stations.
- Ref: EX9
Exterior of Amenity building.
- Ref: EX10
Pathways
- Ref: EX11
B4005 road

See the subsequent pages in this section 3.0 to see the lighting design approach for each zone.

All lighting equipment specifications can be found in section 4.0

Design 3.1

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Swindon, Wiltshire

Exterior Lighting Survey and Calculation Report

17.10.2023

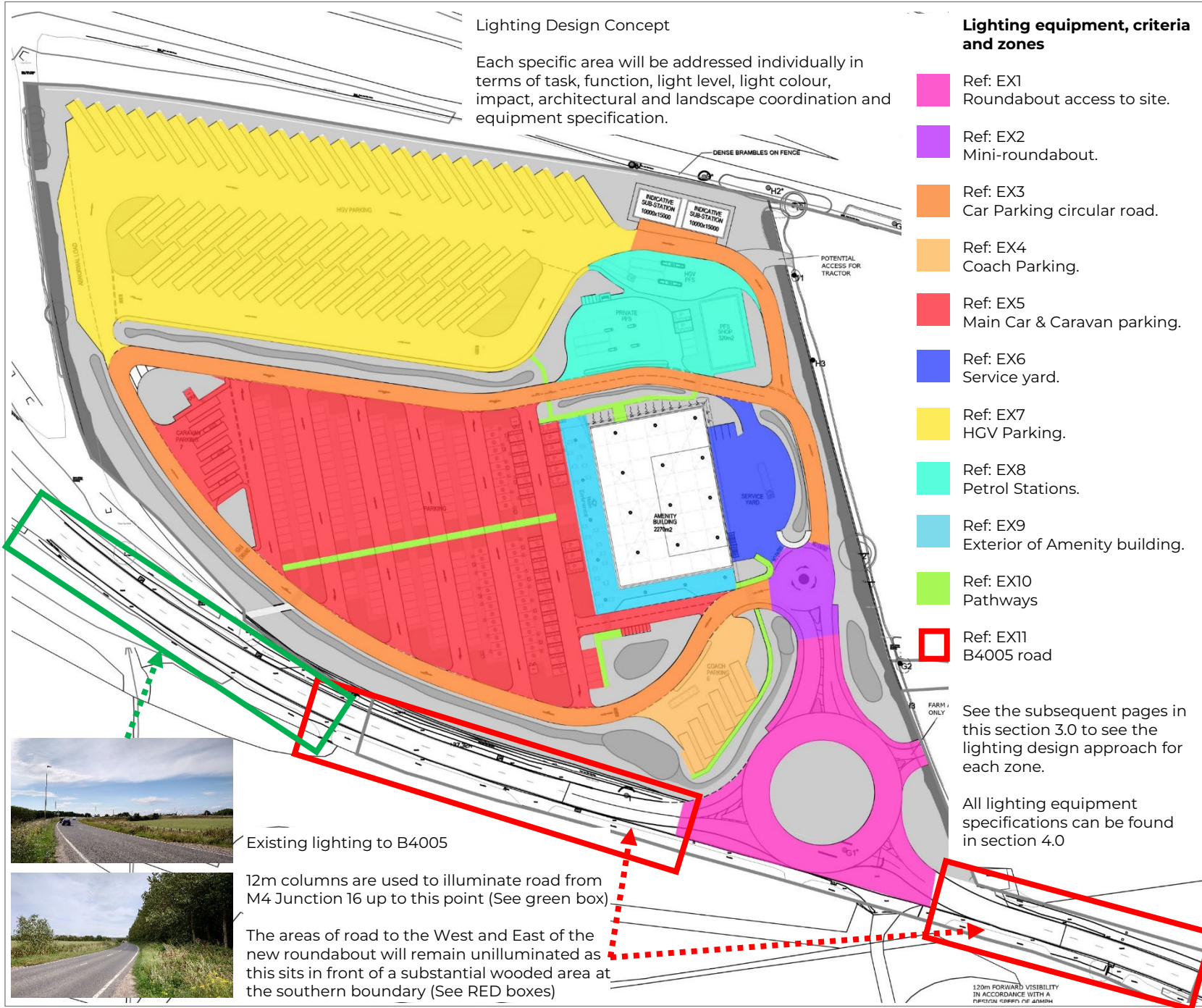
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Existing lighting to B4005

12m columns are used to illuminate road from M4 Junction 16 up to this point (See green box)

The areas of road to the West and East of the new roundabout will remain unilluminated as this sits in front of a substantial wooded area at the southern boundary (See RED boxes)

120m FORWARD VISIBILITY
IN ACCORDANCE WITH A
PRACTICE CODE OF DESIGN

**Proposed Exterior Lighting
Birds / Bats eye view
Lighting colour temperature diagram**

Design 3.2

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey and Calculation Report

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Light colour strategy:

This page indicates a graphical representation of the intended map of lighting colour temperature across the site.

M4 slip road, Junc.16
and B4005 existing
roads
4000k cool white

New roundabout on
B4005 & Eastern site
roads
2200k very warm white

All Parking and
landscaping
2700k warm white

Petrol Stations
2700k warm white

The areas of road to the West and East of the new roundabout will remain unilluminated as this sits in front of a substantial wooded area at the southern boundary.

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Exterior Lighting Survey
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Project No. 182

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Light level strategy:

This page shows the effective calculated 'light level map' from above with the landscape plan in the background and the 3D models of the project buildings shown.

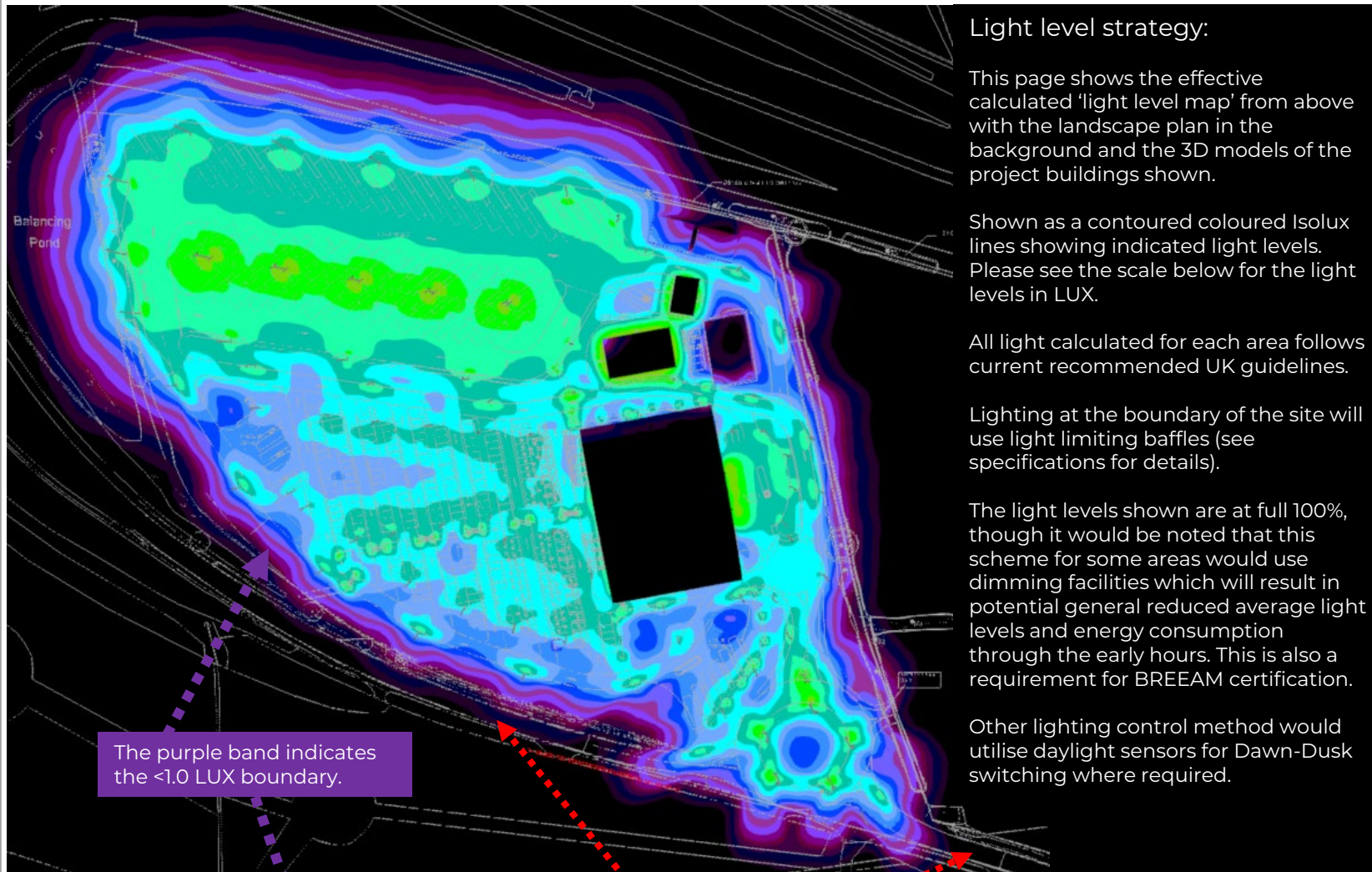
Shown as a contoured coloured Isolux lines showing indicated light levels. Please see the scale below for the light levels in LUX.

All light calculated for each area follows current recommended UK guidelines.

Lighting at the boundary of the site will use light limiting baffles (see specifications for details).

The light levels shown are at full 100%, though it would be noted that this scheme for some areas would use dimming facilities which will result in potential general reduced average light levels and energy consumption through the early hours. This is also a requirement for BREEAM certification.

Other lighting control method would utilise daylight sensors for Dawn-Dusk switching where required.



The purple band indicates the <1.0 LUX boundary.

The areas of road to the West and East of the new roundabout will remain unilluminated as this sits in front of a substantial wooded area at the southern boundary.

Lux Level False Colour Chart



EX1A & EX1B

8M High columns with M1 optic

EX1A = Single luminaire head

EX2B = Double luminaire head

2200k very warm white.

To be adopted and controlled by local authority.

Light Level Designed Criteria

BS5489-1:2020 Lighting Class C2

Eav MIN = 20.00 LUX

Emin/Eav MIN = 0.40 (40%)

Perimeter spill light control.

Luminaires on the south and east sides of the roundabout will be fitted with light blocking baffles to limit spill into undergrowth and hedgerows.

Lighting Control

Daylight sensing, dusk to dawn.

Proposed Exterior Lighting design & calculation

EX1A & EX1B

Roundabout Access

Design 3.4

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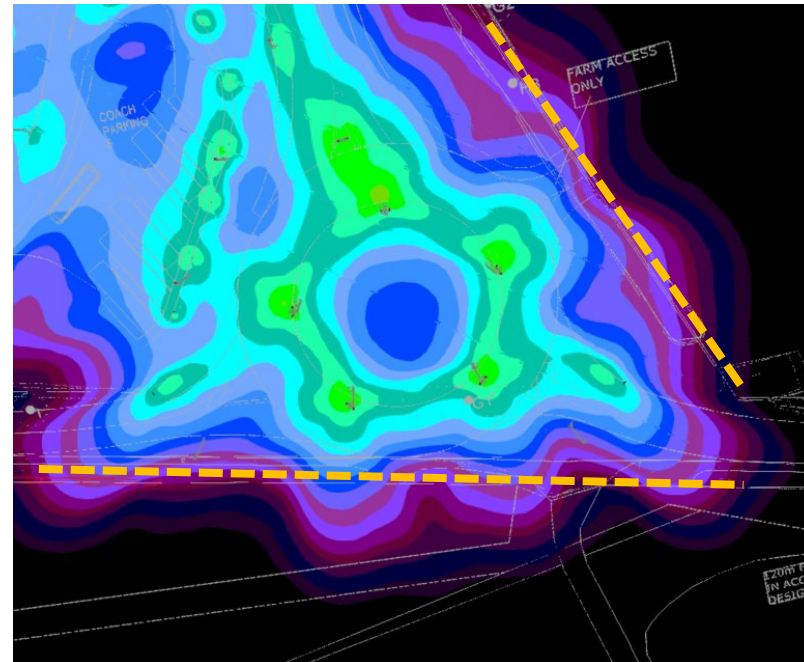
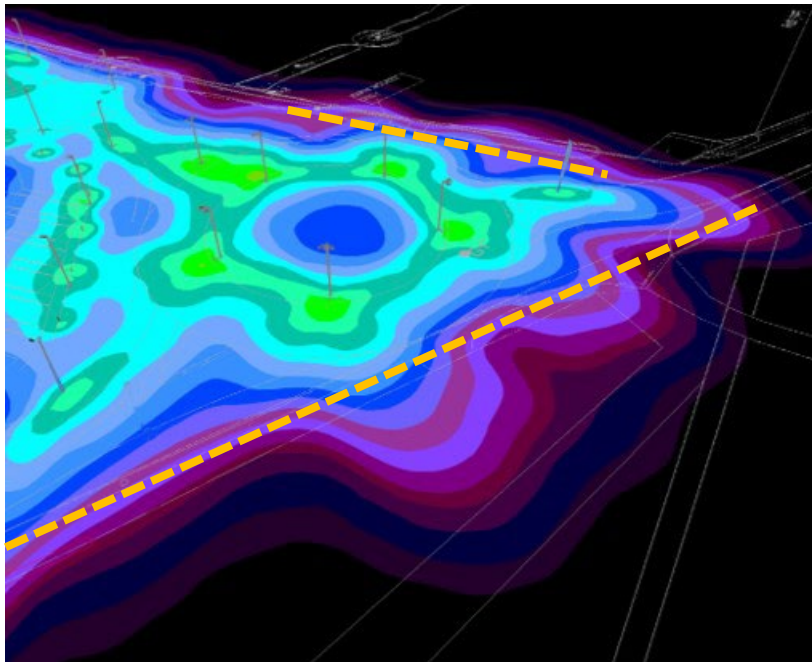
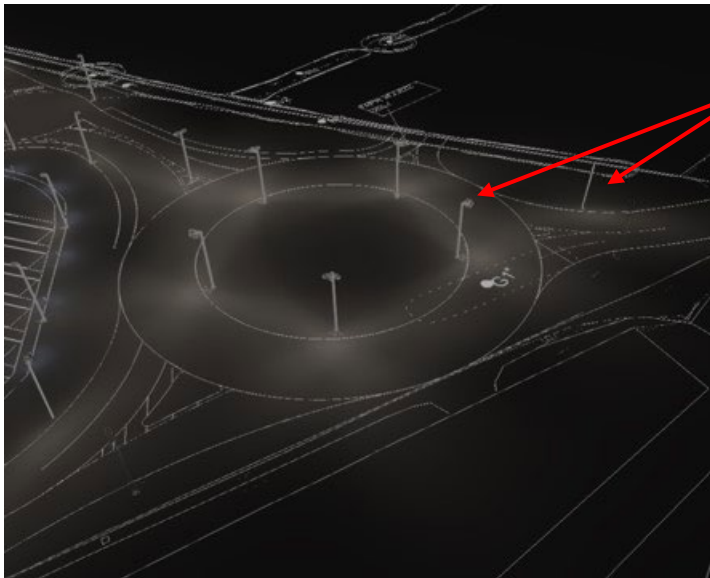
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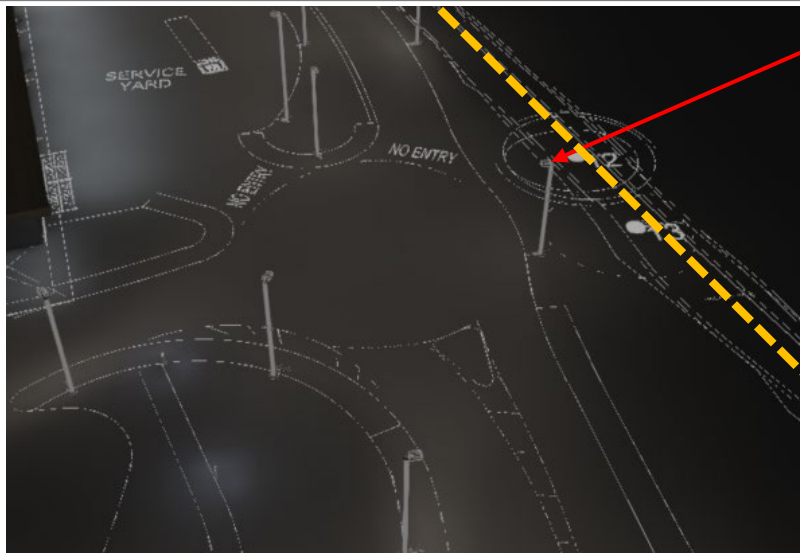
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Lighting Design



Lux Level False Colour Chart





EX2

8M High column, with street lighting optics.
2200k very warm white.

Light Level Designed Criteria

BS5489-1:2020 Lighting Class C2 Eav
MIN = 20.00 LUX
Emin/Eav MIN = 0.40 (40%)

Perimeter spill light control.

Luminaires on the east side of the roundabout will be fitted with light blocking baffles to limit spill into undergrowth and hedgerows.

Lighting Control

Daylight sensing, dusk to dawn.

Proposed Exterior Lighting design & calculation EX2 Mini-Roundabout

Design 3.5

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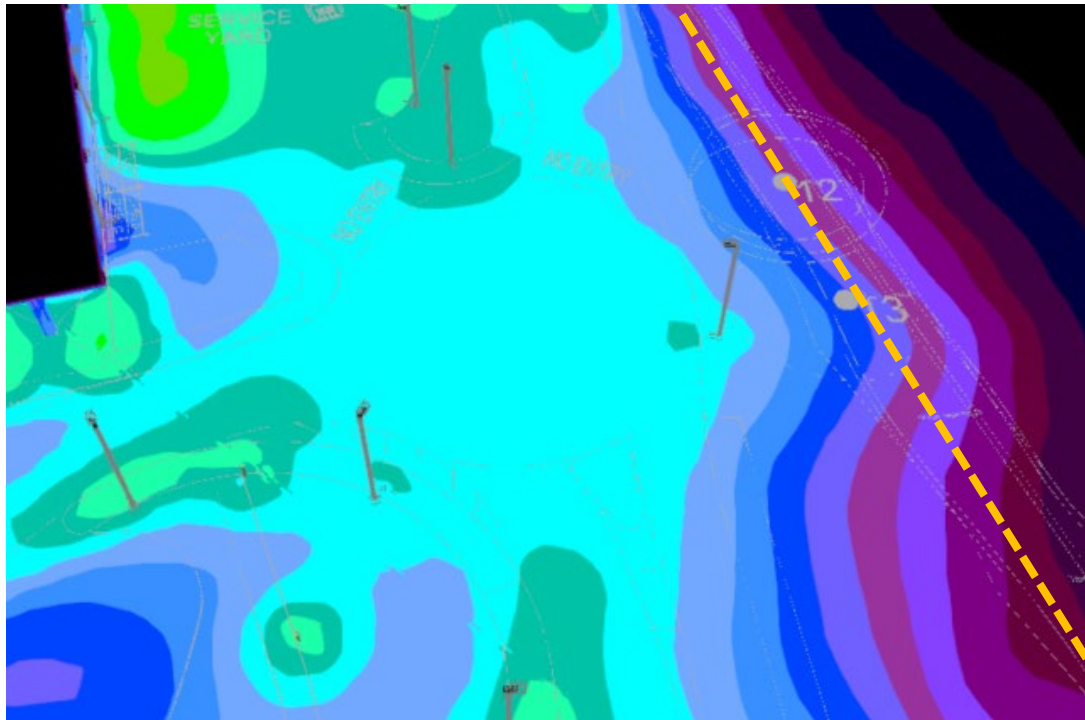
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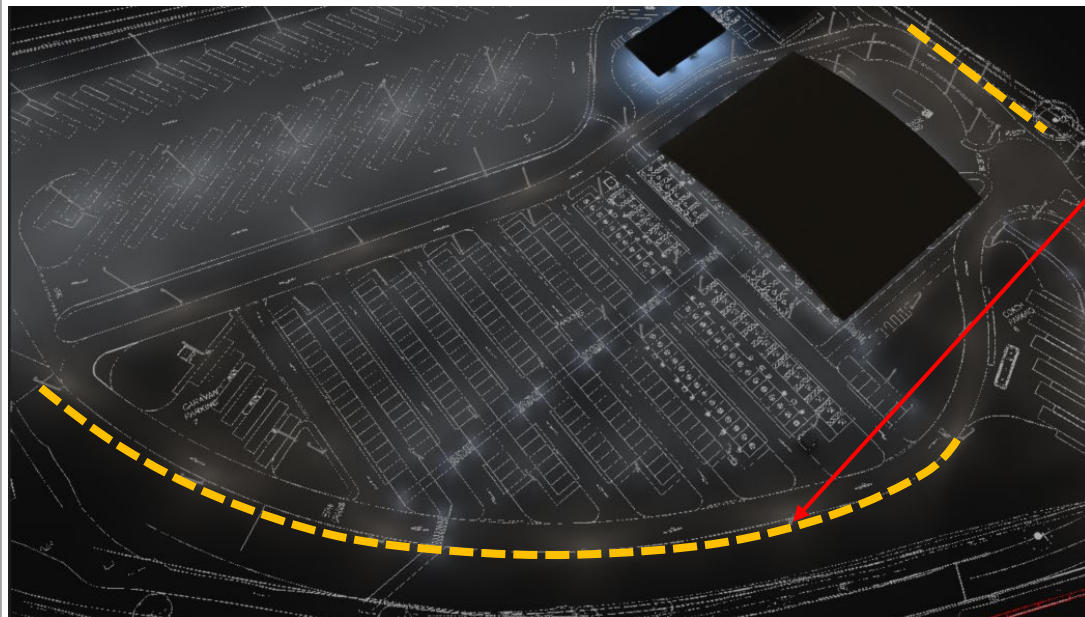
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Lux Level False Colour Chart





Proposed Exterior Lighting design & calculation

EX3

Circular Road

EX3

8M High column,
with street lighting optics.
2700k warm white.

Light Level Designed Criteria

BS5489-1:2020 Lighting Class P1

Eav = 15.00 to 22.50 LUX

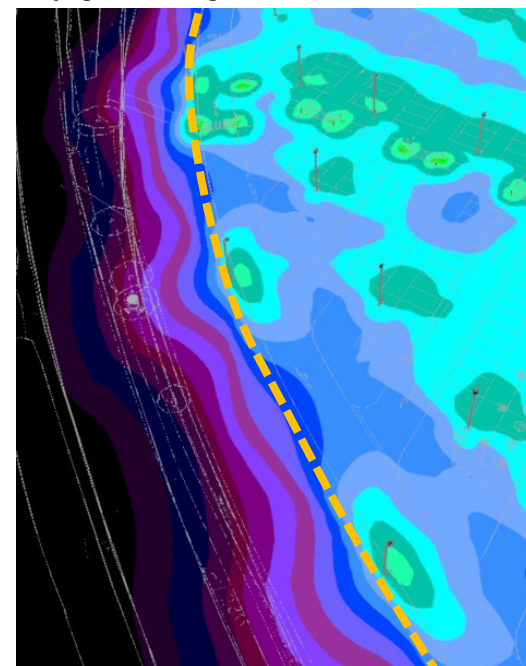
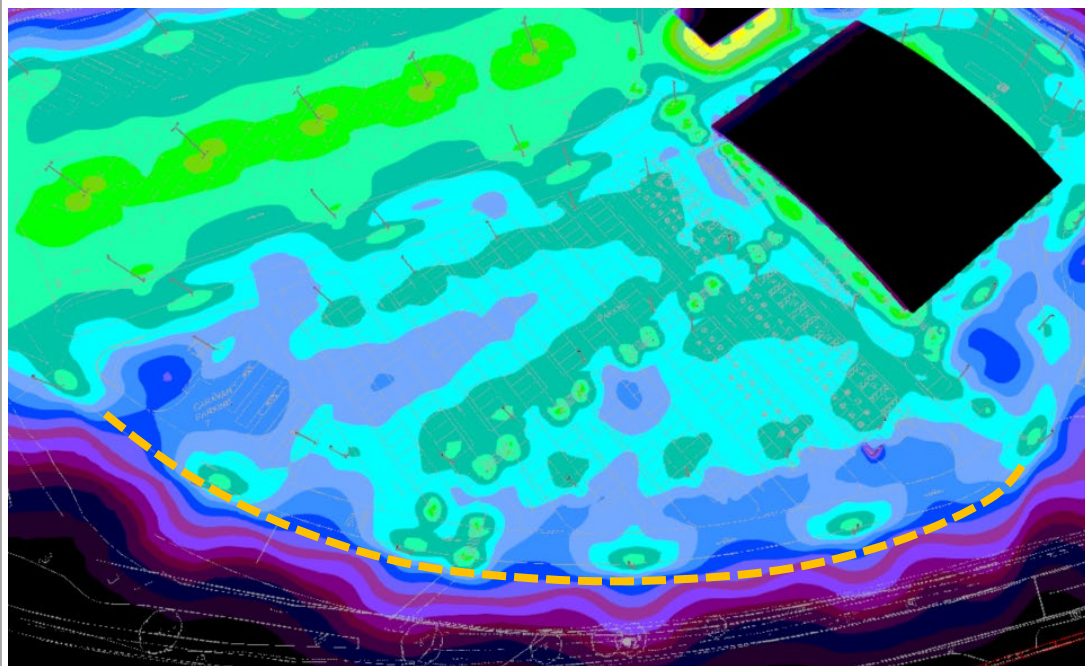
Emin/Eav MIN = 0.30 (30%)

Perimeter spill light control.

Luminaires on the east and south Circular Road of the will be fitted with light blocking baffles to limit spill into undergrowth and hedgerows.

Lighting Control

Daylight sensing, dusk to dawn.



Lux Level False Colour Chart



Design 3.6

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EX4

8M High column, with street lighting optics.
2700k warm white.

Light Level Designed Criteria

BS5489-1:2020 Lighting Class P1
Eav = 15.00 to 22.50 LUX
Emin/Eav MIN = 0.30 (30%)

Lighting Control

Daylight sensing, dusk to dawn.

Proposed Exterior Lighting design & calculation

EX4

Coach Parking

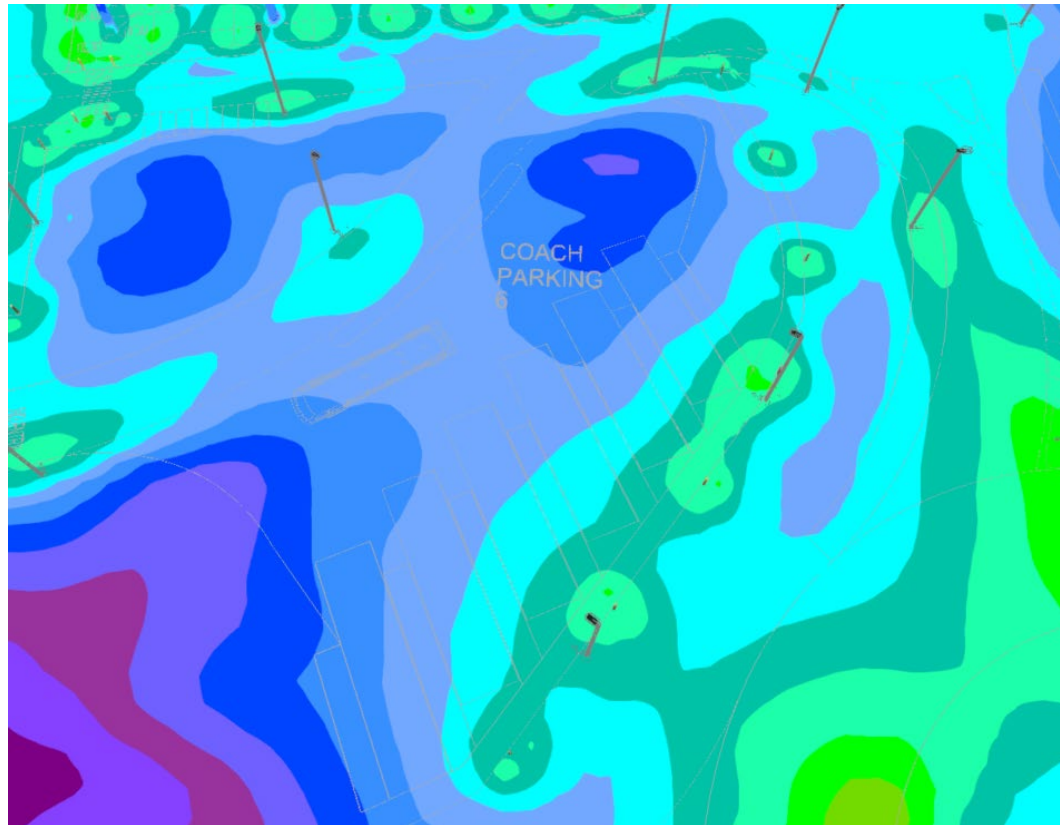
Design 3.7

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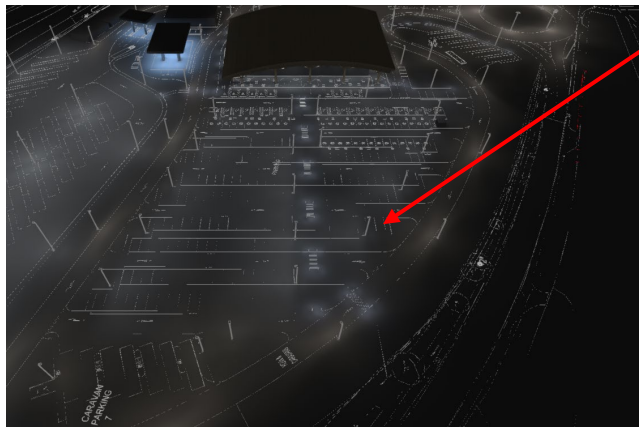
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Lux Level False Colour Chart



SKR
Lighting Design



EX5

8M High column, with street lighting optics.
2700k warm white.

Light Level Designed Criteria

BS5489-1:2020 Table 4
Eav MIN = 20 LUX
Emin/Eav MIN = 0.25 (25%)

Lighting Control

Daylight sensing, dusk to dawn.

Proposed Exterior Lighting design & calculation

EX5 Car & Caravan Parking

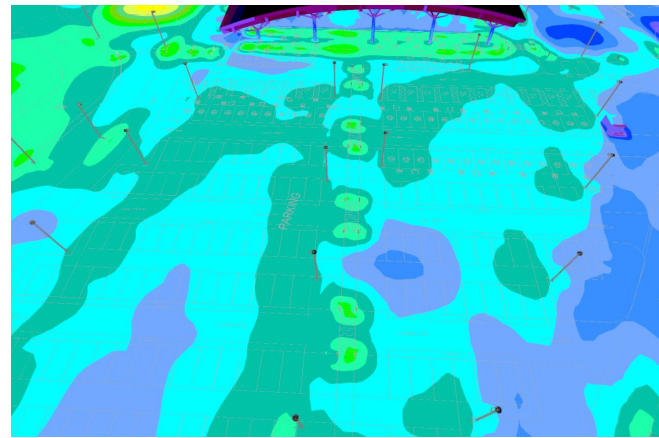
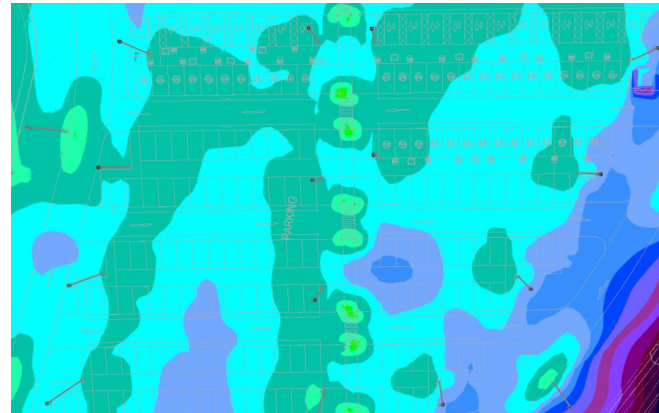
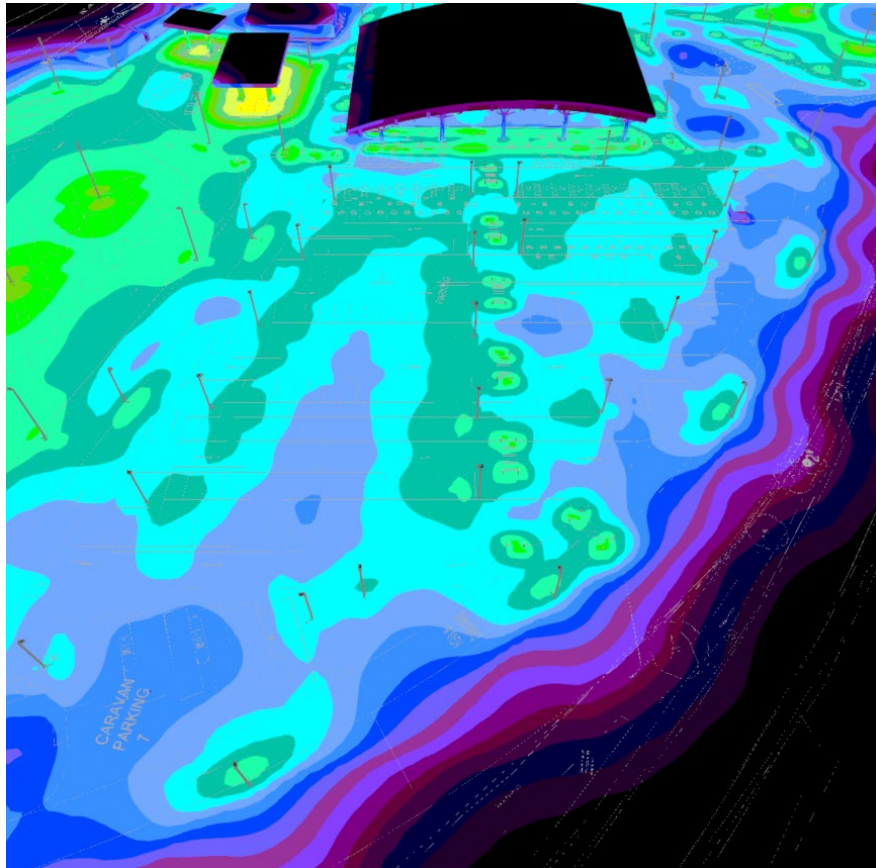
Design 3.8

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Lux Level False Colour Chart



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EX6A & EX6B

EX6A = 8M High column, with street lighting optics.
EX6B = Building mounted flood light, with flood optics.
Both as 2700k warm white.

Light Level Designed Criteria

(Suggested) HSG38, Health and Safety Executive _ Lighting at Work.
Activity, Movement of people, machines and vehicles in hazardous areas; rough work not requiring any perception of detail.
Eav MIN = 50.00 LUX
Emin/Eav MIN = 0.20 (20%)

Lighting Control

EX6A: Daylight sensing, dusk to dawn.
EX6B Manual override of floodlights for task use only when required.

Proposed Exterior Lighting design & calculation EX6A & EX6B Service Yard

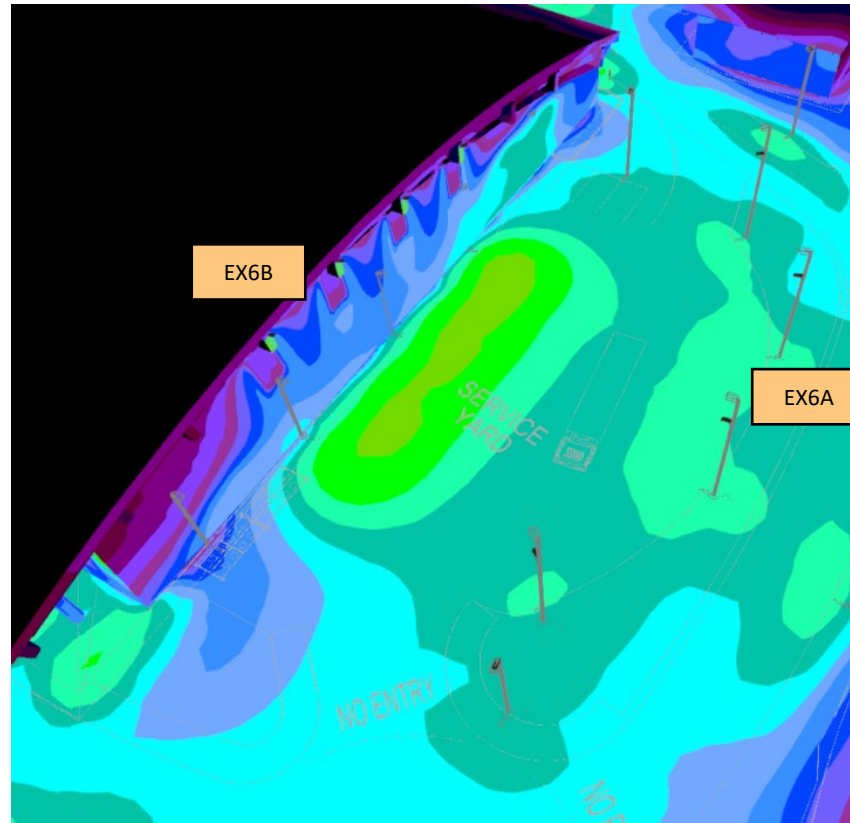
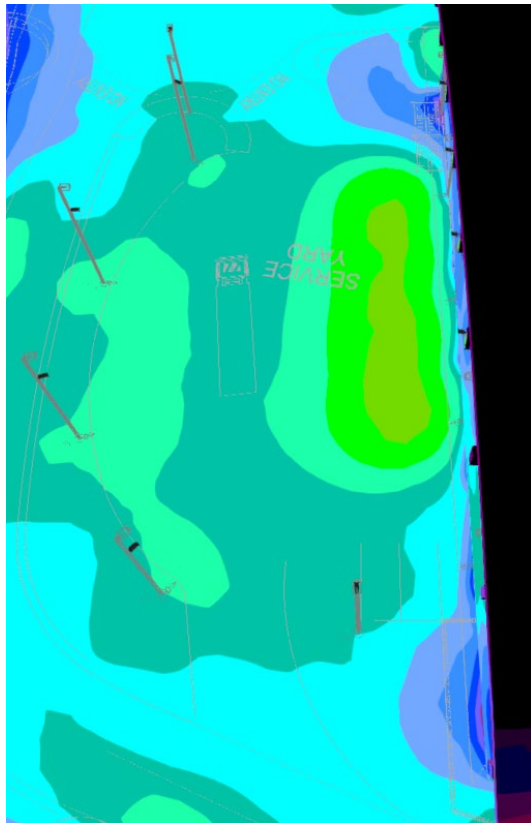
Design 3.9

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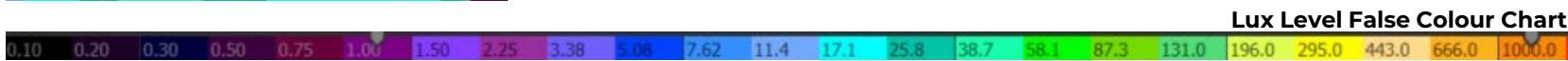
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EX7A & EX7B

12M High column, with street lighting optics.
EX1A = Single luminaire head
EX2B = Double luminaire head
2700k very warm white.

Light Level Designed Criteria

(Suggested) HSG38, Health and Safety
Executive _ Lighting at Work.

Light Level Designed Criteria .cont.

Activity: Movement of people, machines and vehicles.

Typical locations/types of work: HGV Park, circular routes.

Eav MIN = 20.0 LUX

Emin/Eav MIN = 0.50 (50%)

NOTE: This area has been increased to an Eav MIN of 30.0 LUX and uniformity is approx. 50%. This mark-up is due to the safety and security implications for HGV's when parked in services.

Proposed Exterior Lighting design & calculation EX7A & EX7B HGV Parking

Design 3.10

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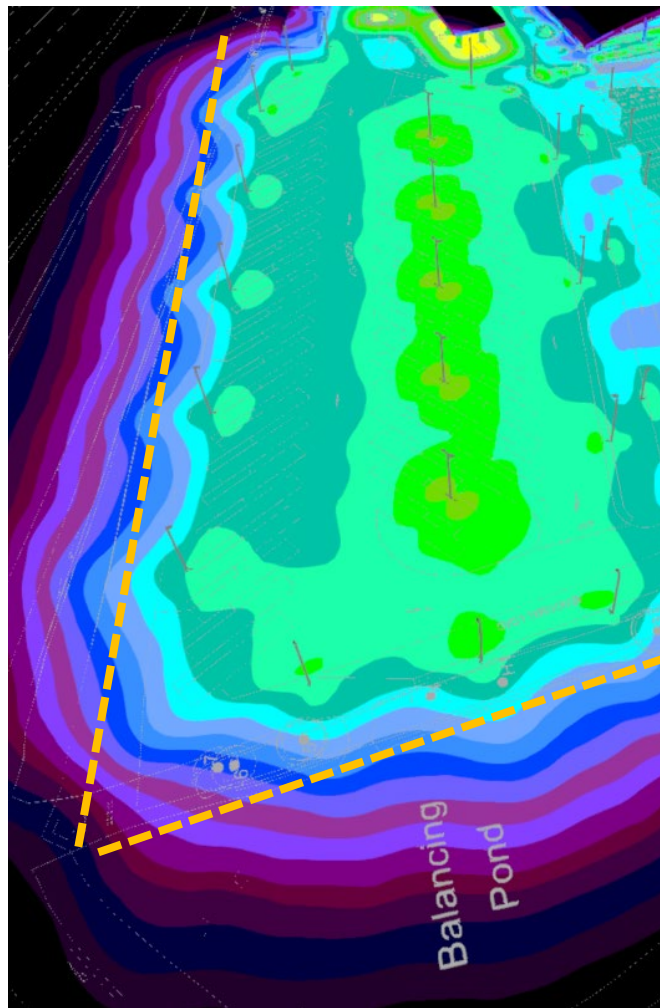
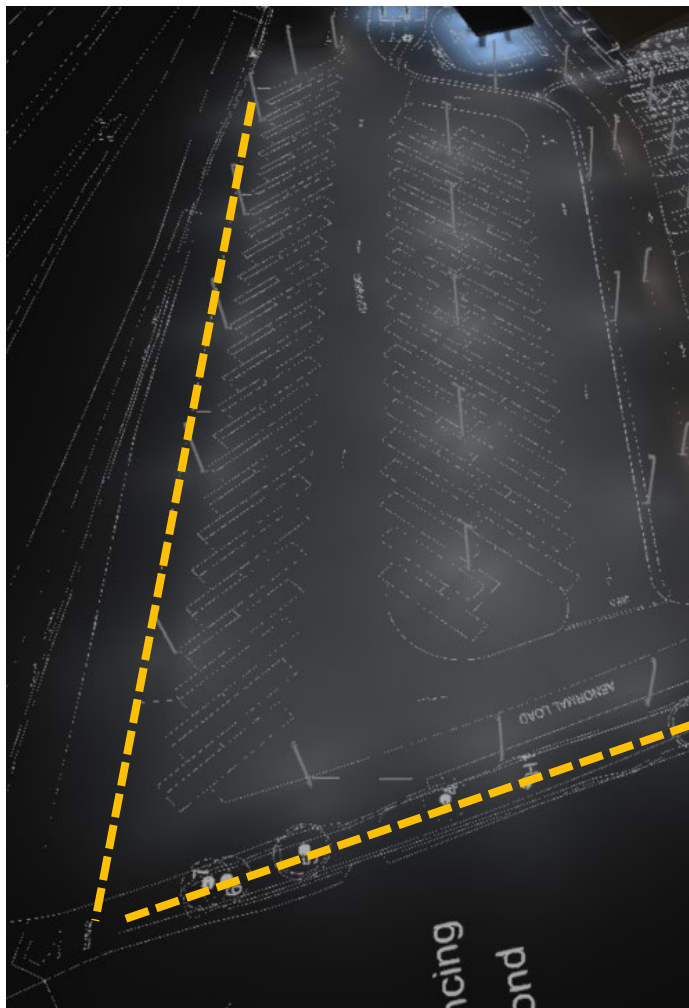
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Perimeter spill light control.

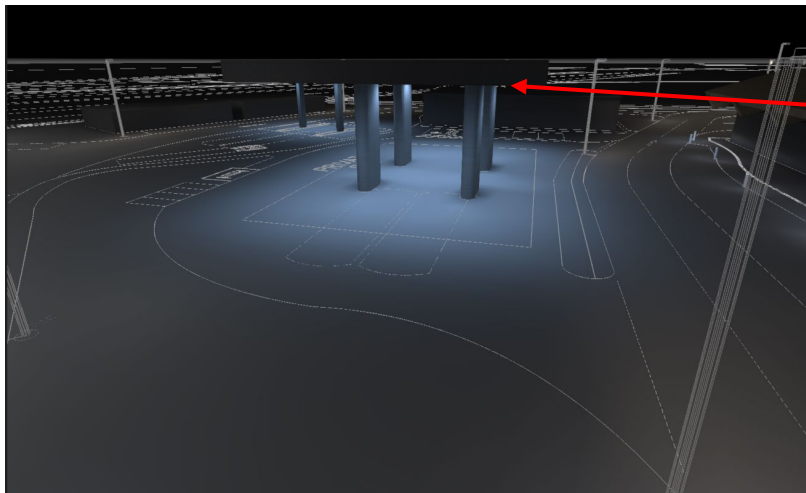
Luminaires on the north & west of the HGV Parking will be fitted with light blocking baffles to limit spill into undergrowth and hedgerows and onto M4 slip road which is already illuminated to a high level..

Lighting Control

Daylight sensing,
dusk to dawn.

Lux Level False Colour Chart





EX8

Ceiling recessed high-output downlight.
2700k warm white.

Light Level Designed Criteria

BS EN 12464-2 Light and Lighting – Outdoor Workplaces

Eav MIN = 300.00 LUX

Emin/Eav MIN = 0.4 (40%)

Vertical illumination on pumps = 100.00 LUX (MIN)

Lighting Control

To be controlled via a lighting control system which reduces power consumption and light spill during quieter hours of use. See Luminaire specification page EX8 for more information.

Proposed Exterior Lighting design & calculation

EX8

Petrol Station

Design 3.11

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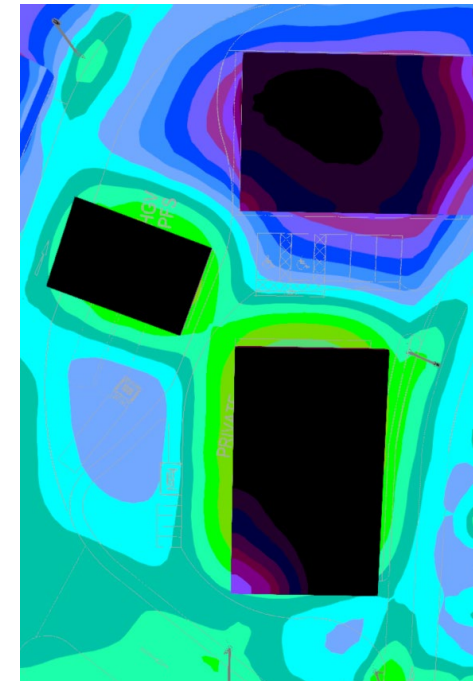
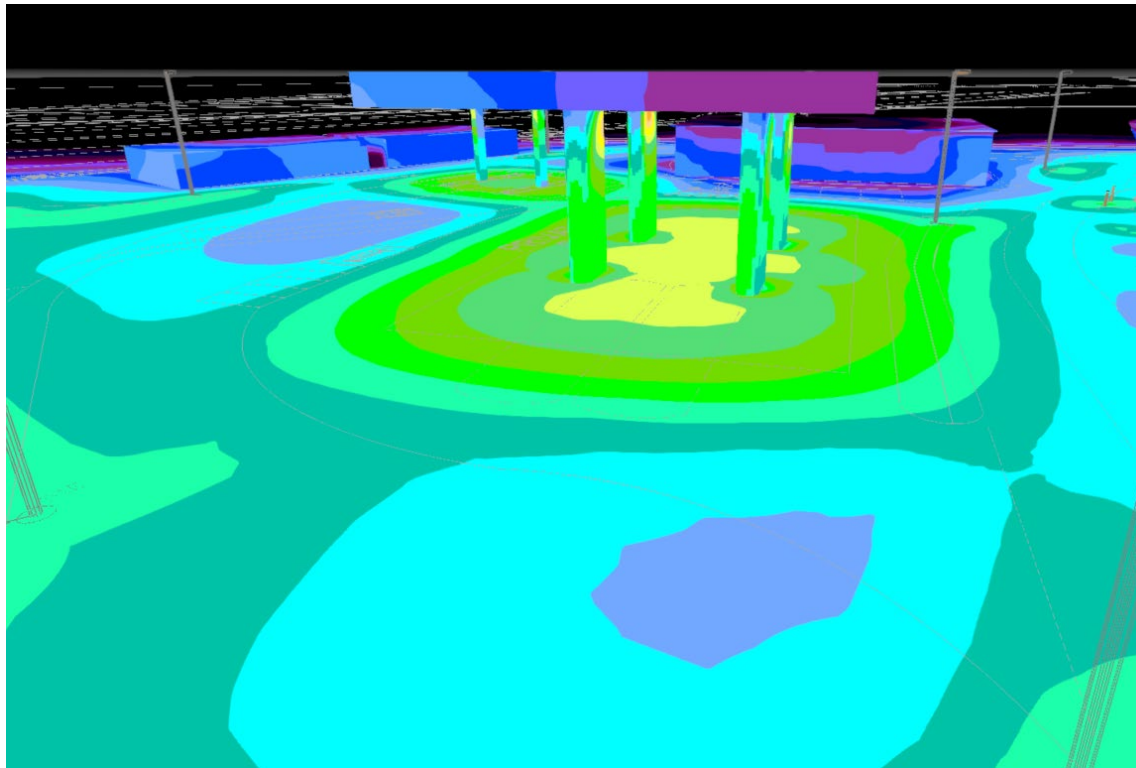
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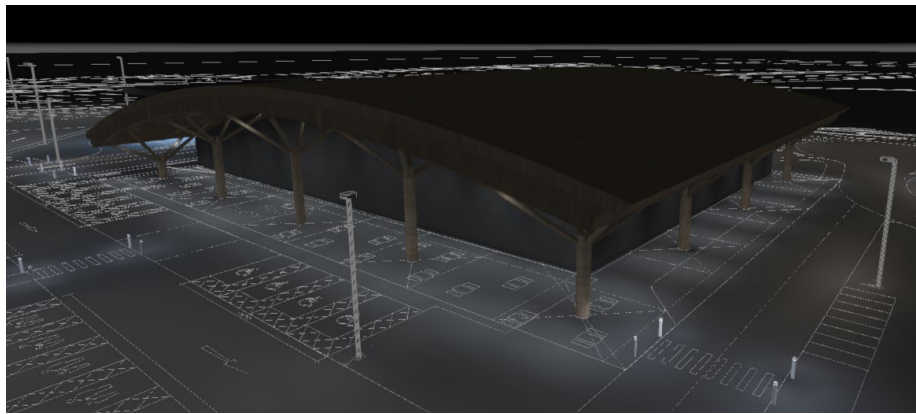
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Lux Level False Colour Chart





EX9

Surface mounted downlight.
2700k warm white
Perimeter covered areas to be
ave. 50.0 LUX
Entrance threshold = 70.0 LUX

Lighting Control

Dali-dimming control.
Dusk to 21.00 = 100%
21.00 to 23.00 = 80%
23.00 to Dawn = 60%

Proposed Exterior Lighting design & calculation

EX9

Amenity Building

Design 3.12

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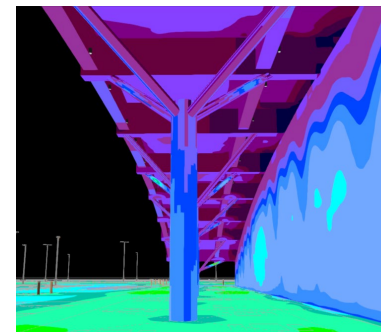
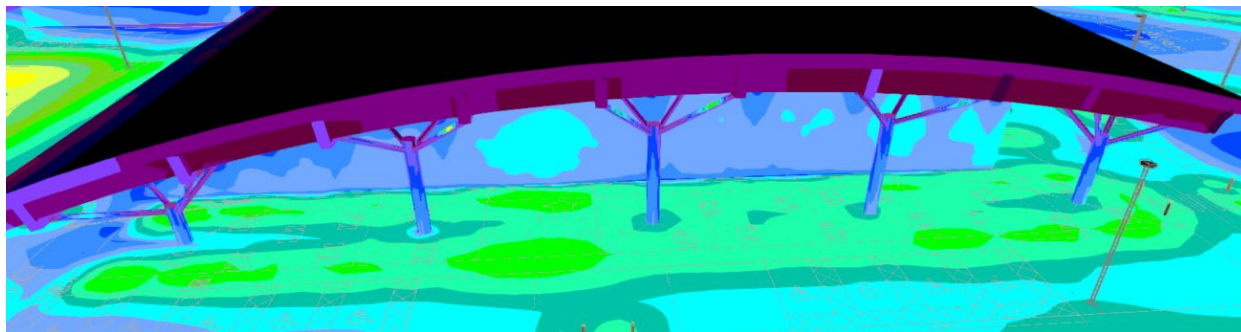
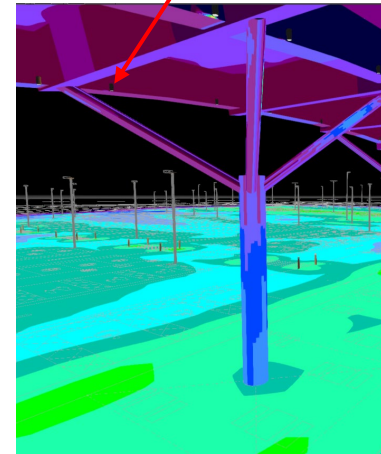
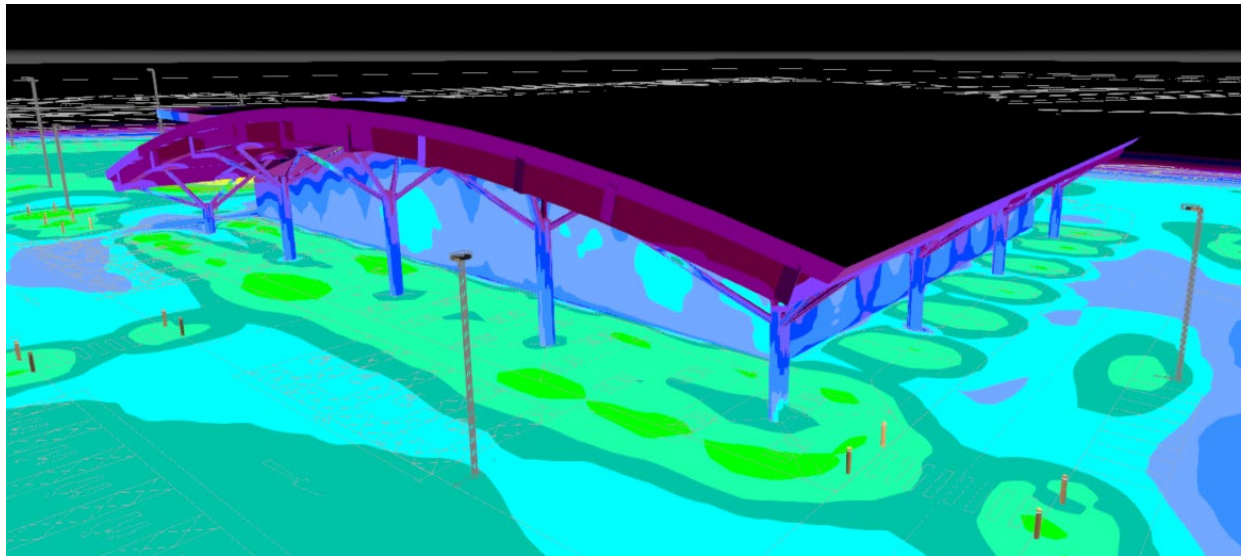
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EX9

Luminaires
mounted up
within structure



Lux Level False Colour Chart



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Proposed Exterior Lighting
design & calculation
EX10
Pathways

**Design
3.13**

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Project No. 182

EX10

1M high bollard. 2700K warm white.
Bollards for pathways only and to assist with visitor safety
and guidance.

Lighting Control

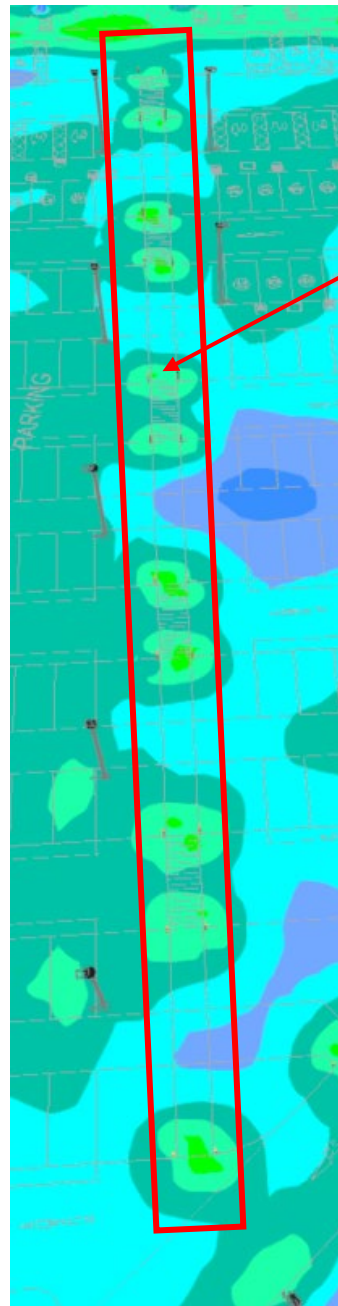
Daylight sensing, dusk to dawn.

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Lux Level False Colour Chart



Specifications 4.0

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Project No. 182

Lighting Specifications and guidelines

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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.
- c) Dimmable.
- d) Integration with PIR and or DAYLIGHT sensors where possible.
- e) 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 be approved by the project architect and lighting designer.

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EX1a

Specification 4.2

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T: +44(0)1869 337653 and
E: info@skrlight.com Web:
www.skrlight.com

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

SKR
Lighting Design

Manufacturer / Supplier
Luminaire Name:
Luminaire Catalogue No:

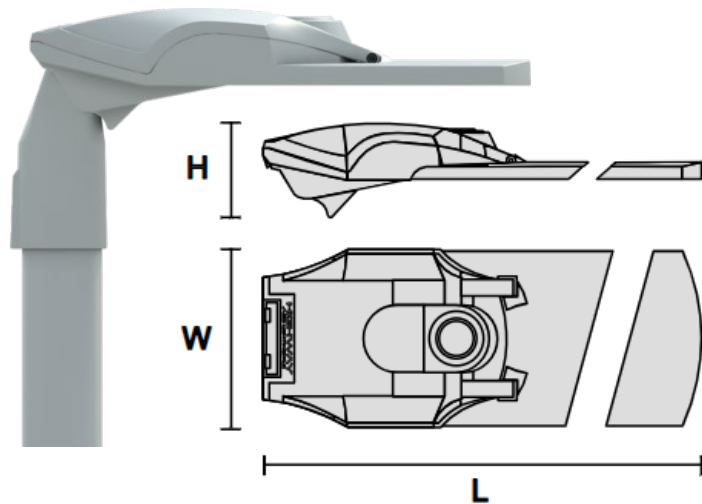
ASD
Mini Highway Diamond Elite
HWD4-#22K40 800-M1-CLO
Gen 7
TBC
IP66
IK10
91W
9748
107.1lm/W
230v
2200K
CRI>72
100,000 F10/B10
5 Years
Die-cast aluminium
Passive
5Kg
DALI-Dim
M1 Optic
8M High Road Column

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:

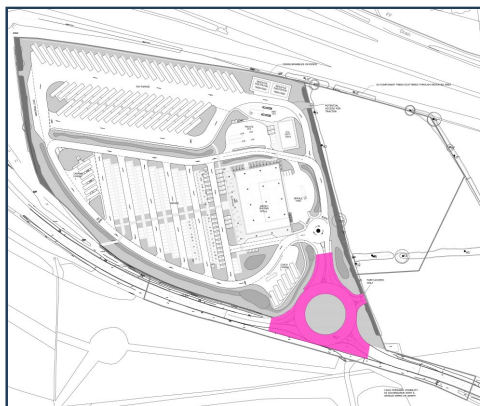
Accessories:

Rear light spill baffle

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.



Dimension	Size
Length	476mm
Width	233mm
Height	116mm



EX1b

Specification 4.3

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

NOTE for SUPPLIER and CONTRACTOR TENDER:
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Company Number:
8255099

SKR
Lighting Design

Manufacturer / Supplier
Luminaire Name:
Luminaire Catalogue No:

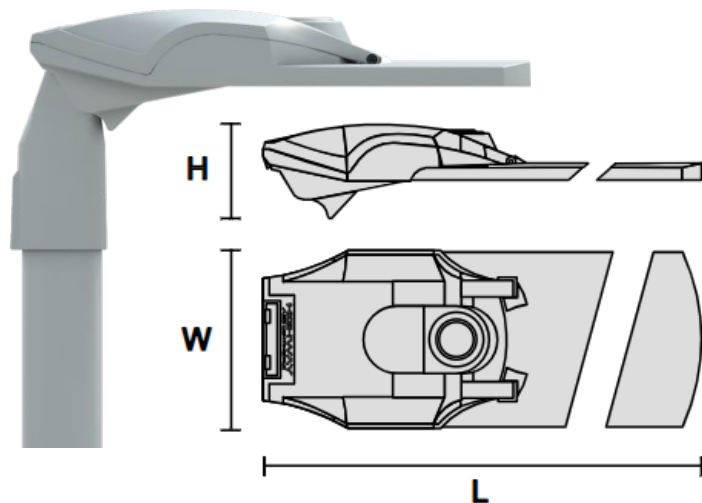
Colour / Finish:
IP Rating:
IK Rating:
Max Power Watt:
LED Luminaire lumen output:
Efficacy:
Voltage to driver:
Light source colour:
CRI (Colour rendering Index):
Lamp life (Hrs & L):
Warranty (See manufacturer):
Construction / Materials:
Cooling Management:
Weight:
Control method:
Beam angle / light distribution:
Description and Use:

ASD
Mini Highway Diamond Elite
HWD4-#22K40 800-M1-CLO
Gen 7
TBC
IP66
IK10
91W
9748
107.1lm/W
230v
2200K
CRI>72
100,000hrs F10/B10
5Years
Die-cast aluminium
Passive
5Kg
DALI-Dim
M1 Optic
8M High DOUBLE
Roundabout Column

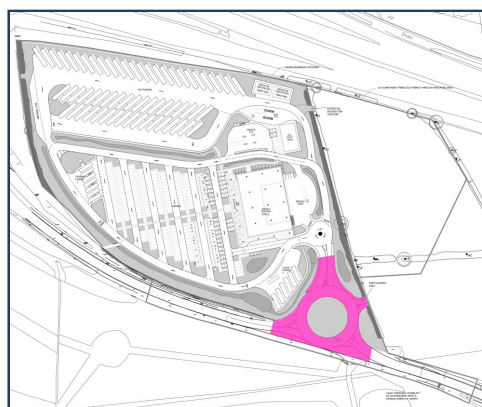
Accessories:

Rear light spill baffle

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.



Dimension	Size
Length	476mm
Width	233mm
Height	116mm



EX2

Specification 4.4

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

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Company Number:
8255099

SKR
Lighting Design

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:

ASD

Mini Highway Diamond Elite

HWD4-#36 600-F0-CLO Gen 7

TBC

IP66

IK20

61W

7236Lm

117.8m/W

230v

2200K

CRI>72

100,000hrs

5 Years

Die-cast aluminium

Passive

5Kg

DALI-Dim

F0 Optic

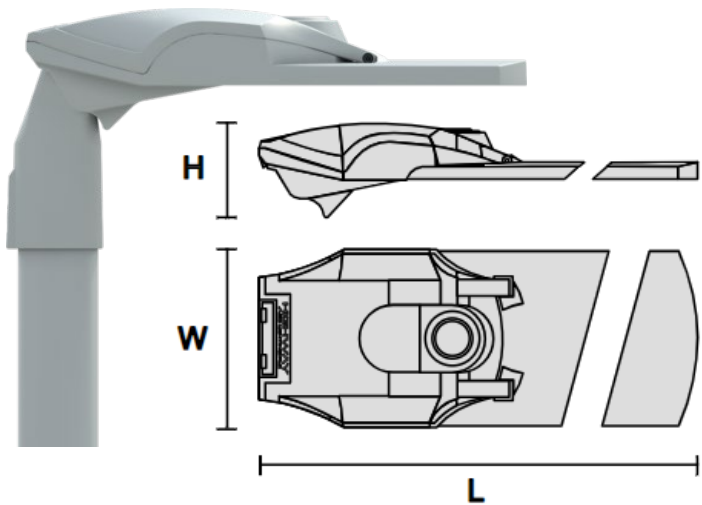
8M High Mini-roundabout
Column

Accessories:

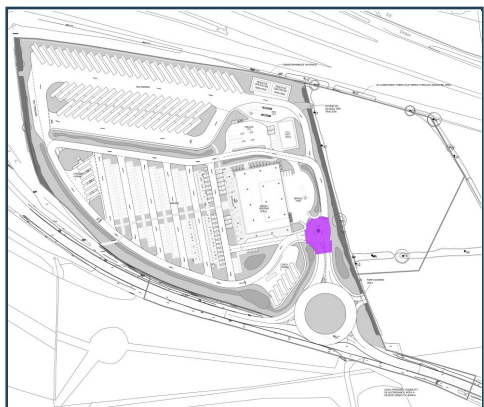
Rear light spill baffle

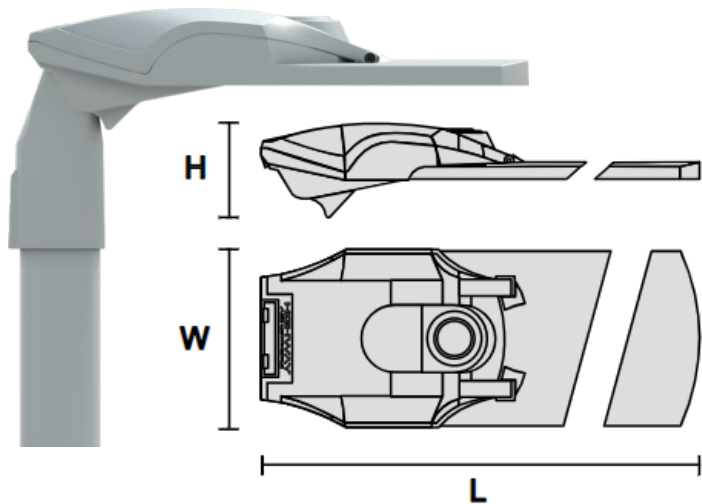
NOTE:

This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

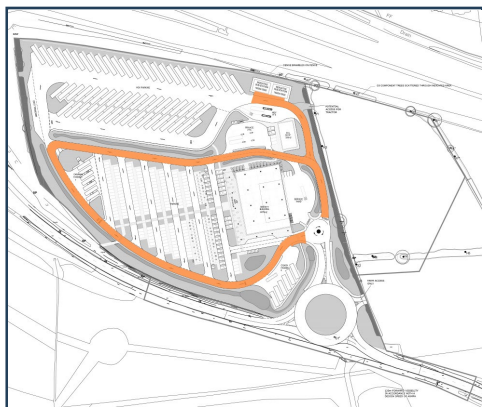


Dimension	Size
Length	476mm
Width	233mm
Height	116mm





Dimension	Size
Length	476mm
Width	233mm
Height	116mm



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:

Accessories:

ASD
Mini Highway Diamond Elite
HWD4-#27K40 800-M1-CLO
Gen 7
TBC
IP66
IK10
91W
9748
107.1lm/W
230v
2700K
CRI>72
100,000hrs F10/B10
5Years
Die-cast aluminium
Passive
5Kg
DALI-Dim
M1 Optic
8M High Road Column

Rear light spill baffle

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

EX3

Specification 4.5

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

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SKR
Lighting Design

EX4

Specification 4.6

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

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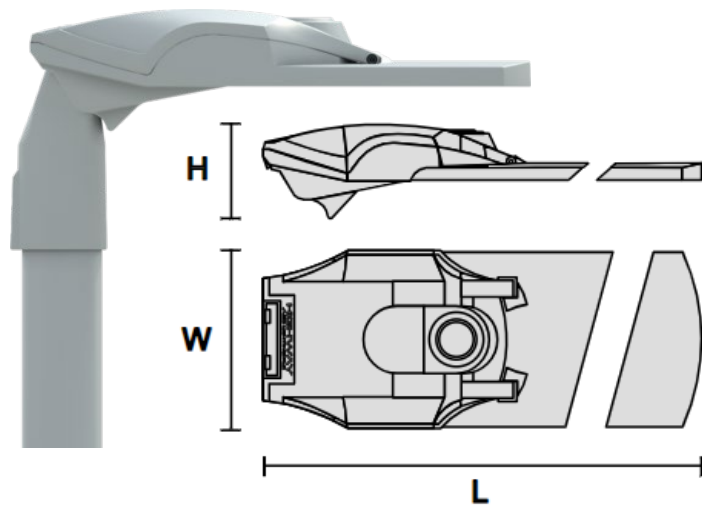
SKR
Lighting Design

Manufacturer / Supplier
Luminaire Name:
Luminaire Catalogue No:

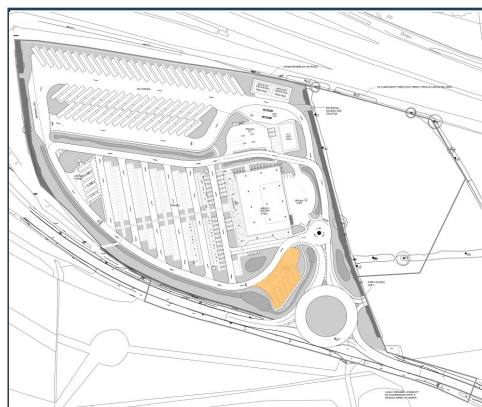
Colour / Finish:
IP Rating:
IK Rating:
Max Power Watt:
LED Luminaire lumen output:
Efficacy:
Voltage to driver:
Light source colour:
CRI (Colour rendering Index):
Lamp life (Hrs & L):
Warranty (See manufacturer):
Construction / Materials:
Cooling Management:
Weight:
Control method:
Beam angle / light distribution:
Description and Use:

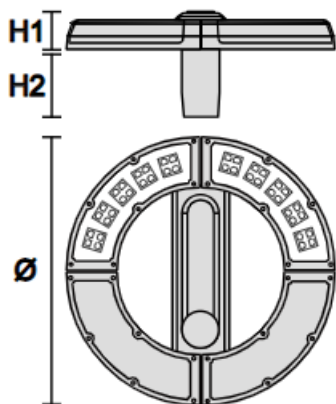
ASD
Mini Highway Diamond Elite
HWD4-#27K44 700-F0-CLO
Gen 7
TBC
IP66
IK10
87.3W
9793Lm
112.2lm/W
230v
2700K
CRI>72
100,000hrs F10/B10
5 Years
Die-cast aluminium
Passive
5Kg
DALI-Dim
F0 Optic
8M High Coach Parking
Column

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

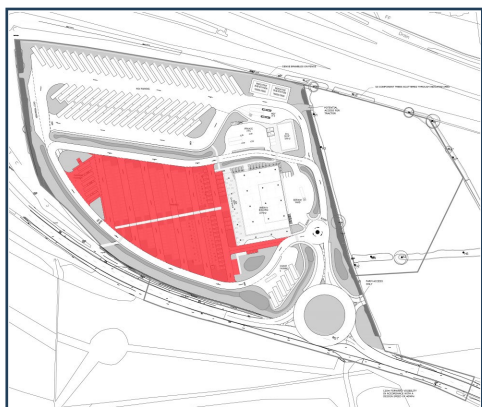


Dimension	Size
Length	476mm
Width	233mm
Height	116mm





Dimension	Size
Height 1	96mm
Height 2	170mm
Diameter	670mm



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:

ASD
 Enso
 ENPC4Q-B3K8050-AF0

IP66
 IK10
 125.4W
 13221lm
 105.4lm/W
 230v
 2700K
 CRI>72
 100,000hrs F10/B10
 5 Years
 LM6 Aluminium
 Passive

DALI-Dim
 Asymmetric F0 Optic
 8M High Car Parking
 Column

NOTE:
 This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

EX5

Specification 4.7

Swindon Services
 Swindon, Wiltshire

Exterior Lighting Survey
 and Calculation Report

17.10.2023

Project No. 182

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 Company Number:
 8255099

SKR
 Lighting Design

EX6A

Specification 4.8

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

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Lighting Design

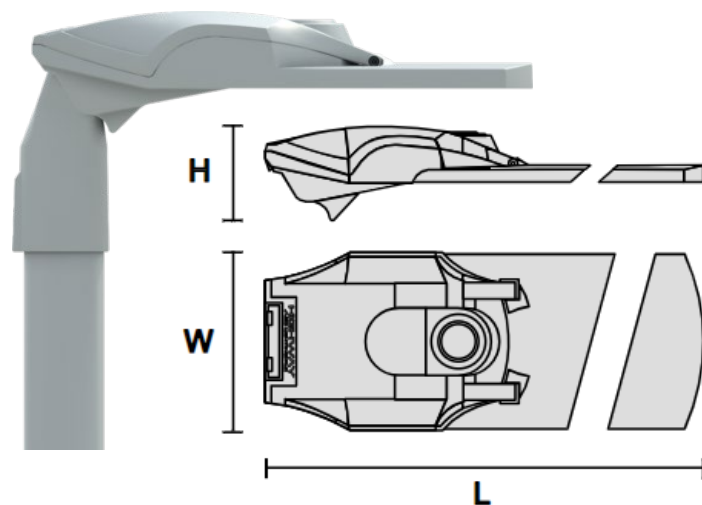
Manufacturer / Supplier
Luminaire Name:
Luminaire Catalogue No:

ASD
Mini Highway Diamond Elite
HWD4-#27K44 800-F0-CLO
Gen 7

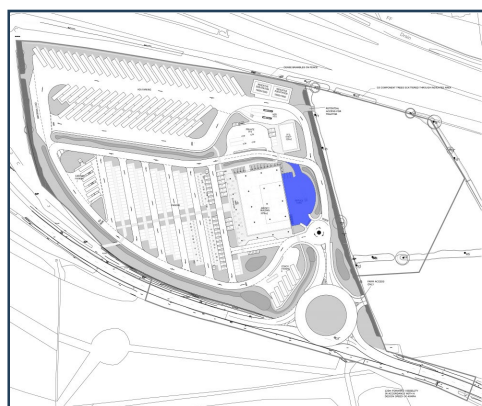
Colour / Finish:
IP Rating:
IK Rating:
Max Power Watt:
LED Luminaire lumen output:
Efficacy:
Voltage to driver:
Light source colour:
CRI (Colour rendering Index):
Lamp life (Hrs & L):
Warranty (See manufacturer):
Construction / Materials:
Cooling Management:
Weight:
Control method:
Beam angle / light distribution:
Description and Use:

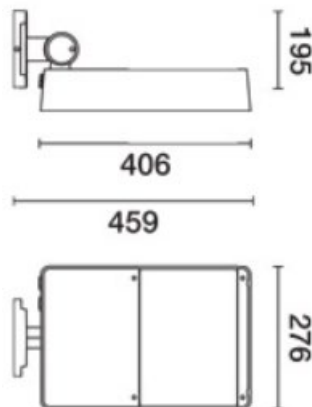
IP66
IK10
99.4W
10841lm
109.1lm/W
230v
2700K
CRI>72
100,000hrs F10/B10
5 Years
Die-cast aluminium
Passive
5Kg
F0 Optic
DALI-Dim
8M High Service Yard
Column

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.



Dimension	Size
Length	476mm
Width	233mm
Height	116mm





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:

iGuzzini
 Platea Pro
 P823.2700K

 IP66
 IK08
 82.7W
 7156lm
 86lm/W

 2700K
 80CRI
 50,000hrs
 5 Years
 Die-cast aluminium
 Passive
 8.55Kg
 DALI-Dim
 46°
 Service Yard surface
 mounted floodlight

EX6B

Specification 4.9

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

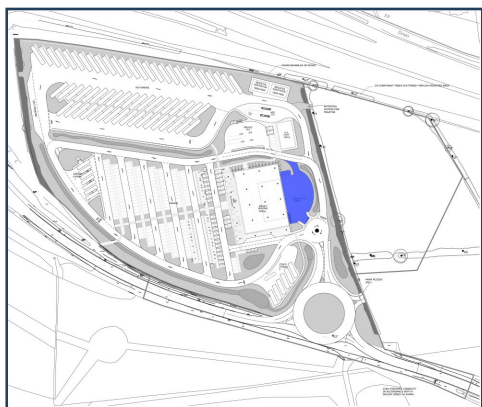
NOTE for SUPPLIER and CONTRACTOR TENDER:
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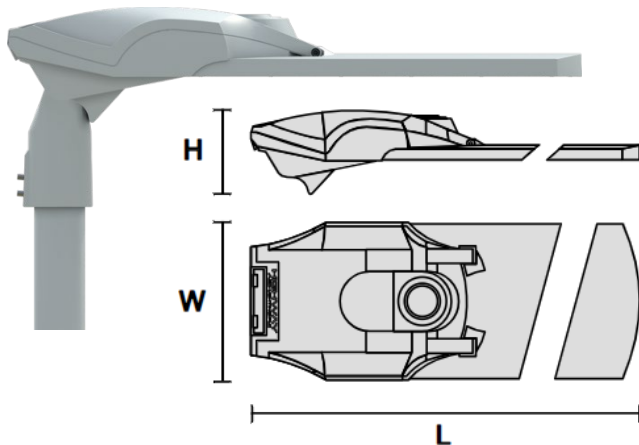
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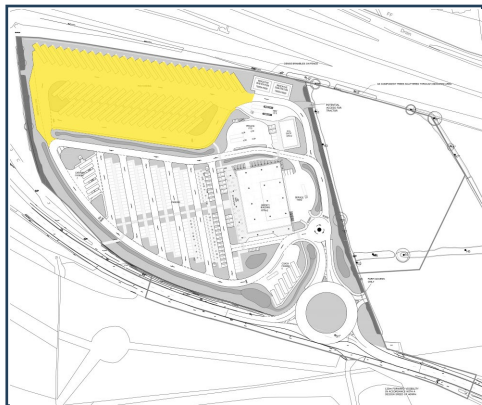
SKR
Lighting Design

NOTE:
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 has been used for the
 purposes of lighting
 calculation and proposed
 performance criteria,
 based on data available at
 the time of design and
 issue of this report.
 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
 out below.





Dimension	Size
Length	858mm
Width	329mm
Height	173mm



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:

Accessories:

ASD
Maxi Highway Diamond Elite
HWD8-#3K 160 700-F0-CLO
Gen 5

IP66
IK10
315W
40434lm
128.4lm/W
230v
2700K
CRI>72
100,000hrs F10/B10
5 Years
Die-cast aluminium
Passive
15.5Kg
DALI-Dim
F0 Optic
12M High Lorry Park Column

Rear light spill baffle

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

EX7A

Specification 4.10

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

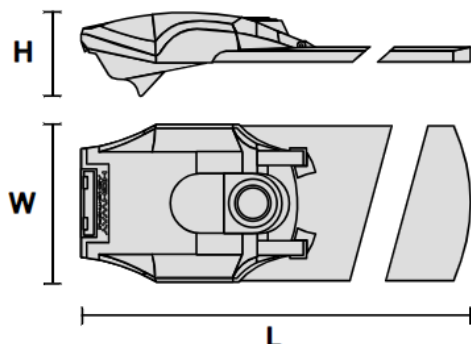
Project No. 182

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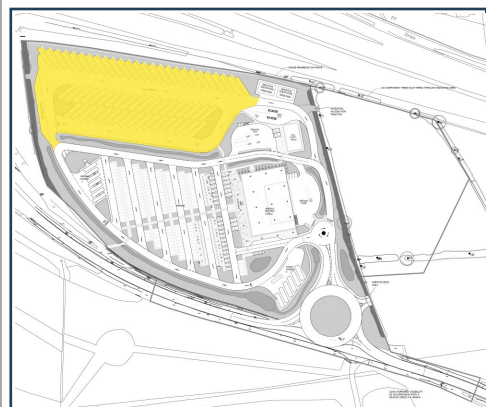
SKR LIGHTING DESIGN
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Company Number:
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SKR
Lighting Design



Dimension	Size
Length	858mm
Width	329mm
Height	173mm



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:

ASD
Mini Highway Diamond Elite
HWD8-#3K 160 700-F0-CLO
Gen 5

IP66
IK10
315W
40434lm
128.4lm/W
230v
2700K
CRI>72
100,000hrs F10/B10
5 Years
Die-cast aluminium
Passive
31Kg
DALI-Dim
F0 Optic
12M High DOUBLE Lorry Park
Column

NOTE:
This specific luminaire has been used for the purposes of lighting calculation and proposed performance criteria, based on data available at the time of design and issue of this report. 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 out below.

EX7B

Specification 4.11

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

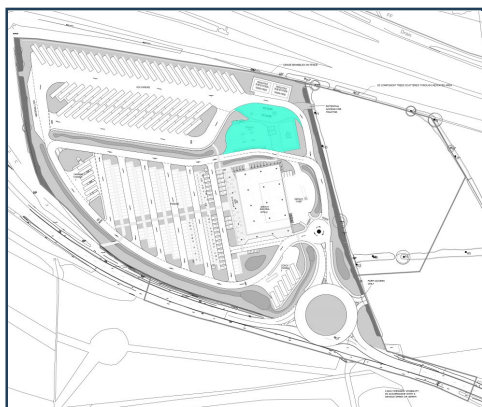
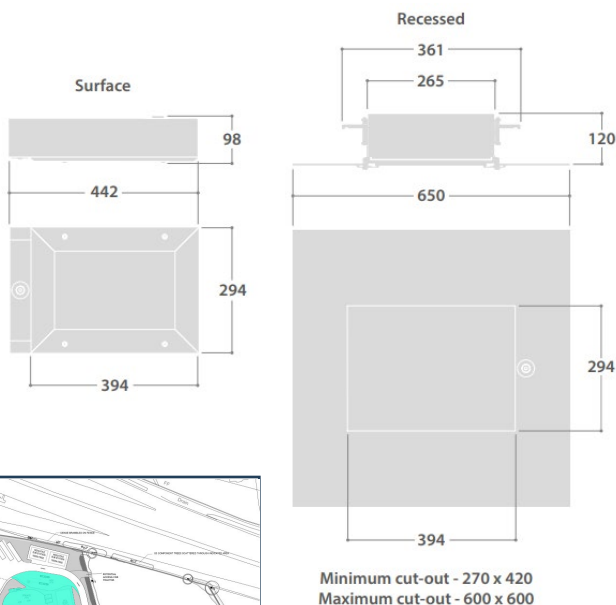
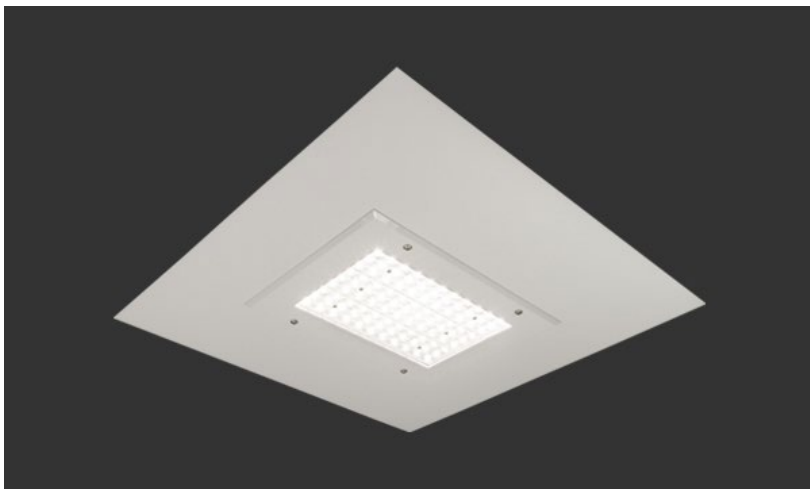
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Company Number:
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SKR
Lighting Design



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:

Thorlux
PSL65
PSL20313.2700k
White
IP65

60W
8785lm
140lm/W

2700K (Special specification
for this project. Future
photometric data to be
verified)
80+ CRI

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:

5 Years

Passive
7.9Kg
DALI-Dim
Flood
Petrol Station

NOTE:
This specific luminaire
has been used for the
purposes of lighting
calculation and proposed
performance criteria,
based on data available at
the time of design and
issue of this report.
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
out below.

EX8

Specification 4.12

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

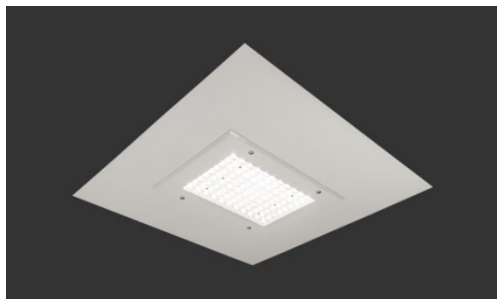
Project No. 182

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E: info@skrlight.com Web:
www.skrlight.com

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Company Number:
8255099

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Manufacturer / Supplier
Luminaire Name:

Thorlux
PSL65

EX8

**Specification
4.13**

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

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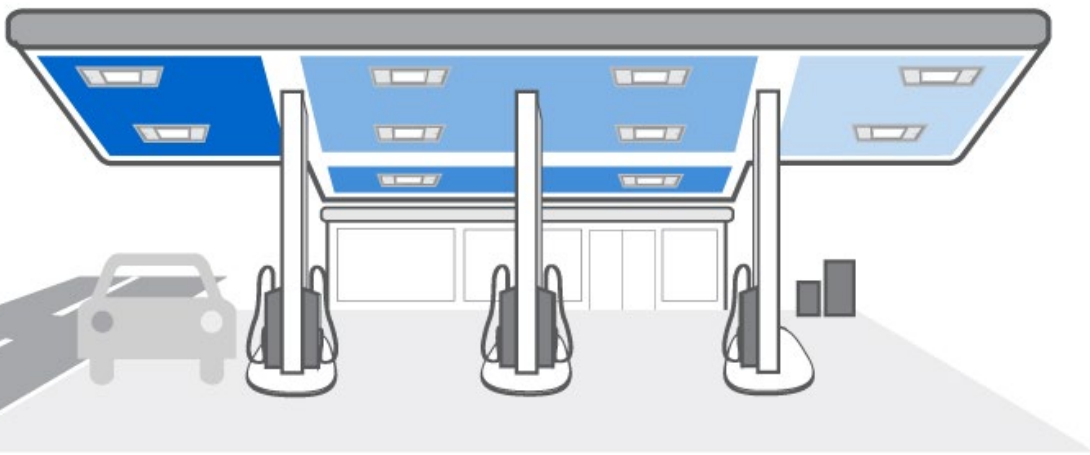
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Programmability Scenarios

- Zone 1
- Zone 2
- Zone 3
- Zone 4



Lighting Zone	A - Best Appearance	B - Maximum energy saving
ZONE 1 Main entrance and exit	On at 30% output.	Switched off when daylight, on all night at 30% output.
ZONE 2 Shop entrance and exit	Switched off when sufficient daylight, on all night at full output.	Switched off when sufficient daylight, dims down to 30% 5 minutes after last detected movement.
ZONE 3 Main re-fueling area	Switched off when sufficient daylight, at night dims to 30% 5 minutes after last detected movement. Stays at 30% until dawn, or next detected movement.	Switched off when sufficient daylight, dims down to 30% after 5 minutes, then switches off 10 minutes later if no further movement is detected.
ZONE 4 Air/water pumps	Switched off when sufficient daylight, at night dims to 30% 5 minutes after last detected movement. Stays at 30% until dawn, or next detected movement.	Switched off when sufficient daylight, dims down to 30% after 5 minutes, then switches off 10 minutes later if no further movement is detected.

Programmable features:

One of the key benefits of the Smart External system is the ability to program every luminaire differently. Each luminaire can be tailored to suit its own very specific local requirements.

The main programmable features are:

Lights on setting - Completely variable. Factory setting approximately 200 lux.

Security level (see also Security delay) - Can be set anywhere between minimum and maximum. Factory setting 30%.

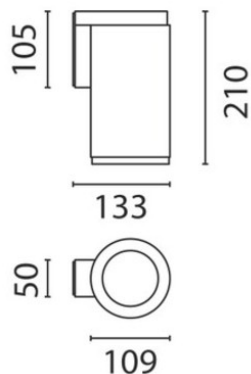
PIR sensitivity - May be adjusted to suit conditions.

No presence delay - After a variable delay (30 seconds to 10 hours) the luminaires turn off or go to the Security Level. Factory setting - 5 minutes → 30% → continuous security level.

Min lamp - The minimum dim level of the lamps can be set. Factory setting 10%.

Max lamp - The maximum lamp level can be set to tune the levels to local conditions. Factory setting 100%.

Security delay - This allows an interim delay (30 seconds to 10 hours, or continuous) at Security level. For example, all luminaires around the forecourt may be set to switch off except for entrance/exit areas which will reduce to 50%, for a further 3 hours (assuming no presence detected) or whilst the forecourt is open. Alternatively as a security feature, perhaps 1 in 5 lights may be kept on continuously at any chosen level and only increase to full brilliance when a person or car enters the forecourt or space.



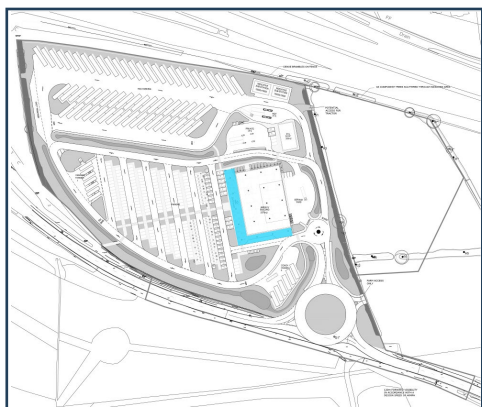
Manufacturer / Supplier
 Luminaire Name:
 Luminaire Catalogue No:
 Colour / Finish:
 IP Rating:
 IK Rating:
 Max Power Watt:
 LED Luminaire lumen output:
 Efficacy:
 Voltage to driver:
 Light source colour:
 CRI (Colour rendering Index):
 Lamp life (Hrs & L):
 Warranty (See manufacturer):
 Construction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

iGuzzini
 iRoll 65
 BI24 2700K

 IP65
 IK07
 16.8W
 1304lm
 77lm/W

 2700K
 80+CRI
 50,000hrs
 5 Years
 Die-cast aluminium
 Passive
 1.74Kg
 DALI-Dim
 40°
 Amenity Building
 Threshold Downlight

NOTE:
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EX9

Specification 4.14

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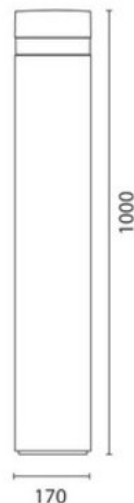
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Manufacturer / Supplier
 Luminaire Name:
 Luminaire Catalogue No:
 Colour / Finish:
 IP Rating:
 IK Rating:
 Max Power Watt:
 LED Luminaire lumen output:
 Efficacy:
 Voltage to driver:
 Light source colour:
 CRI (Colour rendering Index):
 Lamp life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

iGuzzini
 iWay Round
 BW79 2700K

 IP66
 IK10
 12.4W
 1180lm
 95.2lm/W

 2700K
 80+CRI
 50,000hrs
 5 Years
 Extruded aluminium
 Passive
 9.86Kg
 DALI-Dim
 360° Downwards
 Pathways

EX10

Specification 4.15

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
and Calculation Report

17.10.2023

Project No. 182

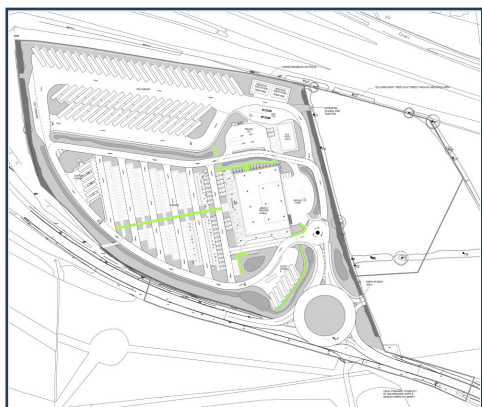
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Signage 5.0

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Project No. 182

Illuminated Signage

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Illuminated Signage Criteria

Criteria summary and guidance

Signage 5.1

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Swindon, Wiltshire

Exterior Lighting Survey
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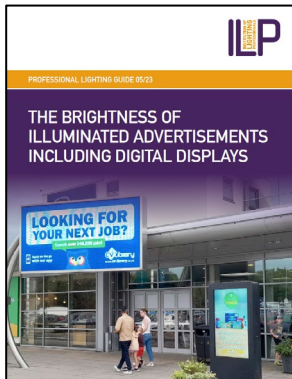
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This section of the lighting design report is to set out the project guidelines for illuminated signage, both static and digital media.

This criteria is suggested as a guide for the future project and the retailers who might use illuminated signage on the site, buildings and structures.

The ILP (Institute of Lighting Professionals) guidance document 05/23 'The Brightness of Illuminated Advertisements including Digital Displays' should be followed by the retailers on the site.

Some key factors to follow are:

- Environmental Zone. In this case E3, but E2 is to be followed as the area borders a darker sky area.
- Size of signage.
- Photometric brightness of signage during day and night hours.
- Light spill and perceived obtrusive light.
- Colour of light used.
- Controls, timing and dimming of intensity of signage.
- Digital screen media content.
- Locations to avoid distraction to traffic.
- Signage designs to be produced by the retailer and their appointed signage manufacturer. Technical criteria to meet the guidance and the location must be verified by the signage manufacturer.

Conclusions 6.0

Swindon Services
Swindon, Wiltshire

Exterior Lighting Survey
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17.10.2023

Project No. 182

Project Conclusions

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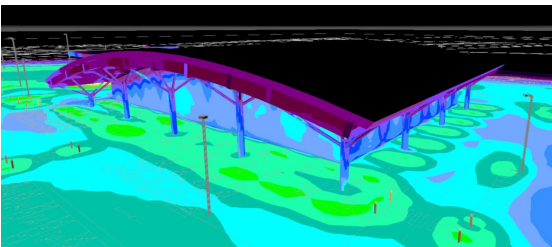
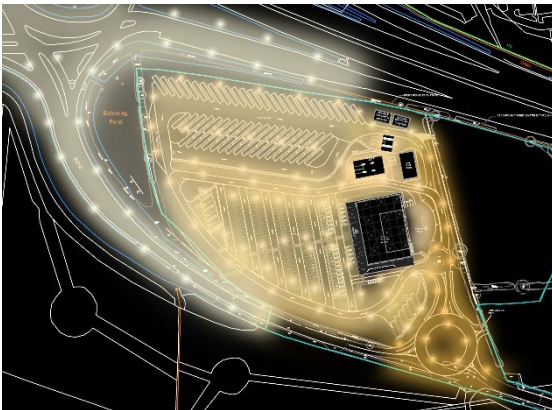
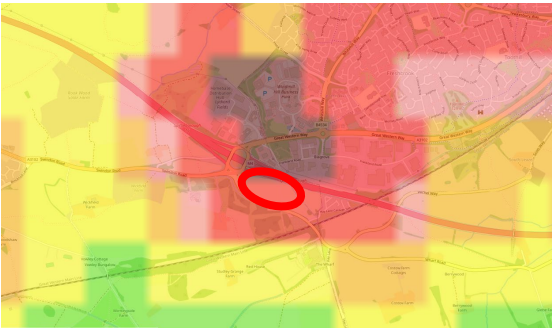
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The lighting design approach for this motorway rest area, considers and achieves the following important issues:

- Lighting for a working service station, while still embracing a rural and dark-sky sensitive approach. As the site lies between the city to the north and rural areas to the south this was a primary objective.
- Consideration for the woodlands to the south and the hedgerows to the east. The scheme follows the ILP criteria guidance for bats and wildlife.
- Only LED light sources would be used.
- A warm, safe and welcoming atmosphere for all visitors, both public and HGV.
- Scheme visibility from the M4, but without being dominant.
- Zero up-light to help dark sky issues.
- A transition of light, from the cool white light environment of junction 18, to a warmer, and more subtle warm white atmosphere.
- All exterior lighting would be controllable with dusk to dawn switching.
- Lighting equipment used is predominantly from the UK using manufacturers with excellent sustainability and recycling policies, backed up by robust minimum 5-year warranties.
- The petrol station would use dimmable and controllable 2700k warm white LED, and not cool white as is most used in UK petrol stations.
- The scheme would satisfy the BREEAM requirements set by the client design team.
- Areas of road lighting would be easily adoptable by the local authority streetlighting departments.
- Criteria and guidance for future illuminated signage.