

# Barnsley Hooper Homes

External Lighting  
Impact Assessment  
Report

Ref: P2539-NOV-RPT-E-001 Rev P2

**NOVO**

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# AMENDMENT HISTORY



REVISION	DESCRIPTION	DATE	AUTHOR	CHECKED
P1	First Issue	12.09.25	M. Morgan	M. Houlding
P2	Second Issue	22.09.25	M. Morgan	M. Houlding



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<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>DESIGN STANDARDS.....</b>	<b>4</b>
<b>3</b>	<b>ASSESSMENT OF LIGHT IMPACT ON THE SURROUNDING AREAS .....</b>	<b>6</b>
<b>4</b>	<b>GLARE AND STRAY LIGHT CONTROL MEASURES.....</b>	<b>6</b>
<b>5</b>	<b>LIGHTING CONTROL AND OPERATION .....</b>	<b>7</b>
<b>6</b>	<b>Lighting Proposal.....</b>	<b>7</b>
<b>7</b>	<b>CALCUALTIONS.....</b>	<b>7</b>

Appendix A Proposed Luminaire data sheet  
Appendix B External Lighting Calculation  
Appendix C External Lighting Contour Plan

**1 INTRODUCTION**

This report has been prepared as requested to support in providing the necessary information and documents as required by the local Council, as part of the planning conditions C.19 associated with the external lighting proposals for the site as follows:

*“Notwithstanding the submitted details, prior to first occupation of the site, details of external/internal lighting shall be submitted to and approved in writing by the Local Planning Authority. The details shall be reviewed and produced by a suitably qualified ecologist and clearly demonstrate that lighting will not adversely impact wildlife using key corridors, foraging and commuting features and roosting sites. The details shall include, but are not limited to, the following:*

- *Identification of areas/features on site that are particularly sensitive e.g. breeding, resting, foraging and commuting sites;*
- *A drawing showing dark corridors and buffer areas;*
- *A report and drawings showing how and where external lighting will be installed so that it can be clearly demonstrated that areas to be lit will not disturb or prevent species using their territory or having access to breeding sites/resting places, this should include;*
- *Technical descriptions, design or specification of external lighting to be installed including shields, cowls or blinds where appropriate;*
- *A description of the luminosity of lights and their light colour;*
- *A drawing(s) showing the location and where appropriate the elevation and height of the light fixings;*
- *Methods to control lighting control (e.g. timer operation, Passive Infrared Sensors (PIR)); and*
- *Lighting contour plans, both horizontal and vertical where appropriate, taking into account hard and soft landscaping.*

*All external/internal lighting shall be installed in accordance with the specifications and locations set out in the approved details. They shall be maintained thereafter in accordance with these details.”*

**2 DESIGN STANDARDS**

The external lighting levels are to be designed in accordance with the following standards, guidance, and recommendations:

**British Standards**

BS 5489-1:2020 Code of practice for the design of road lighting – Part 1 Lighting of roads and public amenity areas:

**BS 5489-1:2020 – Table A.5**

**Table A.5** — *Lighting classes for subsidiary roads*

Traffic flow	Lighting class		
	E1 to E4 <sup>A)</sup>	E1 to E2 <sup>A)</sup>	E3 to E4 <sup>A)</sup>
	Pedestrian and cyclists		Speed limit $v \leq 30$ mph
	only		
Busy <sup>B)</sup>	P5	P4	P3
Normal <sup>C)</sup>	P5	P5	P4
Quiet <sup>D)</sup>	P6	P5	P4

**Note**

Table A.5 utilised for selection of lighting class for the subsidiary road.

BS EN 13201-1:2014 Road lighting. Part 1: Guidelines on lighting classes

BS EN 13201-2:2015 Road lighting. Part 2: Performance requirements.

**BS EN 13201-2:2015-Table 3**

**Table 3 — P lighting classes**

Class	Horizontal illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}^a$ [minimum maintained] lx	$E_{min}$ [maintained] lx	$E_{v,min}$ [maintained] lx	$E_{sc,min}$ [maintained] lx
P1	15,0	3,00	5,0	5,0
P2	10,0	2,00	3,0	2,0
P3	7,50	1,50	2,5	1,5
P4	5,00	1,00	1,5	1,0
P5	3,00	0,60	1,0	0,6
P6	2,00	0,40	0,6	0,2
P7	performance not determined	performance not determined		

<sup>a</sup> To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1,5 times the minimum  $\bar{E}$  value indicated for the class.

**Note**

Table 3 utilised for the road class for the subsidiary roads

Class P5 selected because of the speed limits and quiet traffic flow that will utilise the area.

BS EN 13201-3:2015 Road lighting. Part 3: Calculation of performance.

BS EN 13201-4:2015 Road lighting. Part 4: Methods of measuring lighting performance.

BS EN 12464-2:2014 Lighting of workplaces. Outdoor workplaces.

**Table 5.1 — General requirements for areas and for cleaning at outdoor work places**

Ref. no.	Type of area, task or activity	$\bar{E}_m$ lx	$U_o$ -	$R_{GL}$ -	$R_a$ -	Specific requirements
5.1.1	Walkways exclusively for pedestrians	5	0,25	50	20	
5.1.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0,40	50	20	
5.1.3	Regular vehicle traffic (max. 40 km/h)	20	0,40	45	20	At shipyards and in docks, $R_{GL}$ may be 50
5.1.4	Pedestrian passages, vehicle turning, loading and unloading points	50	0,40	50	20	
5.1.5	Cleaning and servicing	50	0,25	50	20	All relevant surfaces

**Note**

Table 5.1 utilised for general spaces.

PD CEN TR 13201-1:2014 Road lighting. Guidelines on selection of lighting classes.

## ILP publications

ILP Guidance Note 01 for the reduction of obtrusive light 2021.

## SLL/CIBSE Publications

LG0:2017 Introduction to light and lighting – Section 9.4 Light pollution

LG6:2016 The exterior environment.

LG21:2021 Protecting the night-time environment.

For this scheme, the following maintained illuminances are proposed for the design:

Subsidiary Road Illuminance	3 Lux - Class P
External Walkway Illuminance	5 Lux at 0.25 uniformity
Slow Moving Traffic / Parking Illuminance	10 Lux at 0.4 uniformity
Service Area / Bin Store Illuminance	20 Lux at 0.25 uniformity

Most importantly the design of the external lighting scheme is to provide a safe and secure environment for people, for access/egress including general circulation around and within the confines of the area.

## **3 ASSESSMENT OF LIGHT IMPACT ON THE SURROUNDING AREAS**

The surrounding areas of the site shall be assessed prior to carrying out the detailed lighting scheme.

We have been in contact with the client appointed Ecologist who has confirmed there are no areas within the site boundary that are particularly sensitive to breeding, resting, foraging, and commuting. The Ecologist has confirmed that the lighting design proposal illuminates the required road/paving areas in line with the local authority standards & BS12464-2 requirements without impinging unwanted light spill onto adjacent habitats.

By careful design, luminaire selection, locations, and distances to nearby residents' properties any proposed lighting scheme from the new buildings are to not cause any negative visual impact to the surrounding neighbourhoods.

The proposed external lighting scheme design shall consist of luminaire types to accentuate and complement the overall building and site areas and to provide a modern / safe feel.

## **4 GLARE AND STRAY LIGHT CONTROL MEASURES**

The following measures shall be included in the design of the external lighting to control the potential for glare, obtrusive and stray light.

- a. Select column top mounted luminaires, provided with control optics, and angled at 0° for downward lighting, to avoid glare and upward light distribution as recommended by GN01:2021.

- b. The light source intensities shall be limited to reduce the brightness perceived by observers as recommended by GN01:2021.
- c. Light sources shall be fitted with Rear Louvres to shield against unwanted stray light
- d. Light from the Blue end of the Spectrum could have adverse effects on fauna and Flora. GN01:2021. Following this guidance light colour should be 3000K or less.

## 5 LIGHTING CONTROL AND OPERATION

The external lighting shall be controlled via individual PECU's, to avoid operation of the lighting when not required in daylight hours.

## 6 Lighting Proposal

The proposal put forward it to illuminate roads an foot paths with 25.8W Luminaires Pole Mounted at 6m.

Please Refer to appendix 1 for Luminaire Specifications

10No. Urbis Axia 3.1 16 WW 727 5295 25.8W c/w Rear louvres

## 7 CALCUALTIONS

External lighting calculations have been carried out on industry approved lighting software called Relux. To support the section above, within the appendices of this report are calculations and drawings to show the location of external lighting and the lux plots to show that the external lighting meets the light spill requirement of this report and consideration for planning conditions.



**Appendix A**

Proposed Luminaire Data Sheet

# AXIA 3



## Engineered for performance, designed for the customer experience

With customer feedback playing a critical part in our innovative design process, we developed AXIA 3. More than a luminaire, it is a platform delivering sustainability, cost-effectiveness and customer experience all while supporting smart city frameworks. Based on experience from the hundreds of thousands AXIA luminaires installed worldwide, this third generation luminaire pushes the boundaries with photometric innovation, ease and speed of installation and FutureProof connectivity.

Available in three sizes, AXIA 3 enables towns and cities to maximise efficiency when lighting numerous environments, from bike paths, squares and car parks to residential streets, carriageways, urban roads and large boulevards. This lightweight and compact luminaire combines quality of light with a minimal carbon footprint. It excels in easy installation and carefree maintenance, reducing operating costs.

IP 66	IK 10	
		PLUS EN 60598 02
CE	RoHS	





## ProFlex™

The ProFlex photometric engine integrates the lenses into a polycarbonate protector. This integration increases the output and reduces the reflection inside the optical unit. The polycarbonate used for the ProFlex photometric engine offers essential characteristics such as high optical clarity for a superior light transmission, better impact resistance compared to glass and a long life span with UV-stabilisation treatment. The ProFlex concept enables a compact design with a thin optical compartment. It provides extensive light distributions so that the spacing between the luminaires can be increased.





### Custom dimming profile

Intelligent luminaire drivers can be programmed with complex dimming profiles. Up to five combinations of time intervals and light levels are possible. This feature does not require any extra wiring.

The period between switching on and switching off is used to activate the preset dimming profile. The customised dimming system generates maximum energy savings while respecting the required lighting levels and uniformity throughout the night.

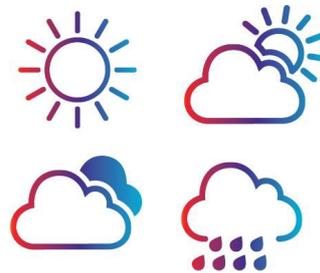


A. Dimming level | B. Time



### Daylight sensor / photocell

Photocell or daylight sensors switch the luminaire on as soon natural light falls to a certain level. It can be programmed to switch on during a storm, on a cloudy day (in critical areas) or only at nightfall so as to provide safety and comfort in public spaces.



### PIR sensor: motion detection

In places with little nocturnal activity, lighting can be dimmed to a minimum most of the time. By using passive infrared (PIR) sensors, the level of light can be raised as soon as a pedestrian or a slow vehicle is detected in the area.

Each luminaire level can be configured individually with several parameters such as minimum and maximum light output, delay period and ON/OFF duration time. PIR sensors can be used in an autonomous or interoperable network.



Schröder EXEDRA is the most advanced lighting management system on the market for controlling, monitoring and analysing streetlights in a user-friendly way.



## Standardisation for interoperable ecosystems

Schröder plays a key role in driving standardisation with alliances and partners such as uCIFI, TALQ or Zhaga. Our joint commitment is to provide solutions designed for vertical and horizontal IoT integration. From the body (hardware) to the language (data model) and the intelligence (algorithms), the complete Schröder EXEDRA system relies on shared and open technologies. Schröder EXEDRA also relies on Microsoft Azure for cloud services, provided with the highest levels of trust, transparency, standards conformance and regulatory compliance.

## Breaking the silos

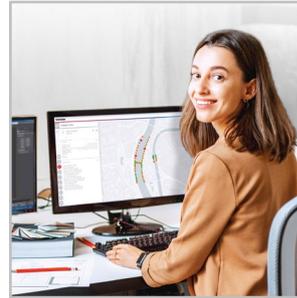
With EXEDRA, Schröder has taken a technology-agnostic approach: we rely on open standards and protocols to design an architecture able to interact seamlessly with third-party software and hardware solutions. Schröder EXEDRA is designed to unlock complete interoperability, as it offers the ability to:

- control devices (luminaires) from other brands
- manage controllers and to integrate sensors from other brands
- connect with third-party devices and platforms

## A plug-and-play solution

As a gateway-less system using the cellular network, an intelligent automated commissioning process recognises, verifies and retrieves luminaire data into the user interface. The self-healing mesh between luminaire controllers enables real-time adaptive lighting to be configured directly via the user interface. OWLET IV luminaire controllers, optimised for Schröder EXEDRA, operate Schröder's luminaires and luminaires from third parties. They use both cellular and mesh radio networks, optimising geographical coverage and redundancy for continuous operation.

## Tailored experience



Schröder EXEDRA includes all advanced features needed for smart device management, real-time and scheduled control, dynamic and automated lighting scenarios, maintenance and field operation planning, energy consumption management and third-party connected hardware integration. It is fully configurable and includes tools for user management and multi-tenant policy that enables contractors, utilities or big cities to segregate projects.

## A powerful tool for efficiency, rationalisation and decision making

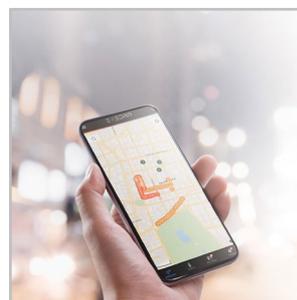
Data is gold. Schröder EXEDRA brings it with all the clarity managers need to drive decisions. The platform collects massive amounts of data from end devices and, aggregates, analyses and intuitively displays them to help end-users take the right actions.

## Protected on every side



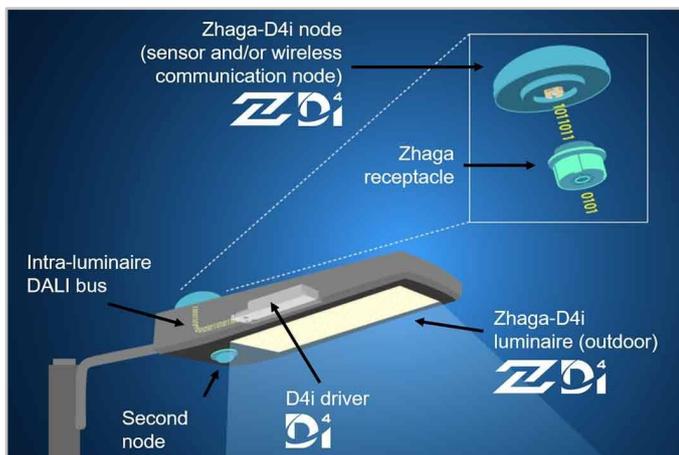
Schröder EXEDRA provides state-of-the-art data security with encryption, hashing, tokenisation, and key management practices that protect data across the whole system and its associated services. The whole platform is ISO 27001 certified. It demonstrates that Schröder EXEDRA meets the requirements for establishing, implementing, maintaining and continually improving security management.

## Mobile App: any time, any place, connect to your street lighting



The Schröder EXEDRA mobile application offers the essential functionalities of the desktop platform, to accompany all types of operator on site in their daily effort to maximise the potential of connected lighting. It enables real-time control and settings, and contributes to effective maintenance.

The Zhaga consortium joined forces with the DiiA and produced a single Zhaga-D4i certification that combines the Zhaga Book 18 version 2 outdoor connectivity specifications with the DiiA's D4i specifications for intra-luminaire DALI.



## Standardisation for interoperable ecosystems



As a founding member of the Zhaga consortium, Schröder has participated in the creation of, and therefore supports, the Zhaga-D4i certification program and the initiative of this group to standardise an interoperable ecosystem. The D4i specifications take the best of the standard DALI2 protocol and adapt it to an intra-luminaire environment but it has certain limitations. Only luminaire mounted control devices can be combined with a Zhaga-D4i luminaire.

According to the specification, control devices are limited respectively to 2W and 1W average power consumption.

## Certification program

The Zhaga-D4i certification covers all the critical features including mechanical fit, digital communication, data reporting and power requirements within a single luminaire, ensuring plug-and-play interoperability of luminaires (drivers) and peripherals such as connectivity nodes.

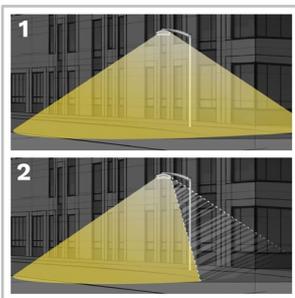
## Cost-effective solution

A Zhaga-D4i certified luminaire includes drivers offering features that had previously been in the control node, like energy metering, which has in turn simplified the control device therefore reducing the price of the control system.

With the PureNight concept, Schröder offers the ultimate solution for restoring the night sky without switching off cities, while maintaining safety and well-being for people and preserving wildlife. The PureNight concept guarantees that your Schröder lighting solution satisfies environmental laws and requirements. Well-designed LED lighting has the potential to improve the environment in all respects.



### Direct the light only where it is wanted and needed



1. Without backlight  
2. With backlight

Schröder is renowned for its expertise in photometry. Our optics direct light only where it is wanted and needed. However, light trespass behind the luminaire might be a key concern when it comes to protecting a sensitive wildlife habitat or avoiding intrusive lighting towards buildings. Our fully integrated backlight solutions easily address this potential risk.

### Offer maximum visual comfort to people



Because of the lower installation height compared to road lighting, visual comfort is an essential aspect of urban lighting. Schröder designs lenses and accessories to minimise any type of glare (distracting, discomforting, disabling glare and blinding glare). Our design offices harness a range of possibilities to find the best solutions for each project and ensure that we provide a gentle light that delivers the best night-time experience.

### Protect wildlife



If not well designed, artificial lighting can badly affect wildlife. Blue light and excessive intensity can have a damaging effect on all types of life. Blue light radiation has the ability to suppress the production of melatonin, the hormone that contributes to the regulation of the circadian rhythm. It can also alter the behavioural patterns of animals including bats and moths, as it can change their movements towards or away from light sources. Schröder favours warm white LEDs with minimal blue light, combined with advanced control systems including sensors. This enables permanent adaptation of the lighting to the real needs of the moment, minimising disturbance to the fauna and flora.

If not well designed, artificial lighting can badly affect wildlife. Blue light and excessive intensity can have a damaging effect on all types of life. Blue light radiation has the ability to suppress the production of melatonin, the hormone that contributes to the regulation of the circadian rhythm. It can also alter the behavioural patterns of animals including bats and moths, as it can change their movements towards or away from light sources. Schröder

### Choose a Dark Sky certified luminaire



The International Dark-Sky Association (IDA) is the recognised authority on light pollution. It provides leadership, tools and resources to industries and companies willing to reduce light pollution. The IDA's Fixture Seal of Approval programme certifies outdoor lighting fixtures as being Dark Sky Friendly. All products approved by this programme must comply with the following criteria:

- The light sources shall have a maximum correlated colour temperature of 3000K;
- Uplight allowance limited to 0.5% of total output, or 50 lumens, with no more than 10 lumens in the 90-100 degree UL zone;
- The luminaires must have a dimming capability to 10% of full rating;
- The luminaires must be equipped with a fixed mounting option;
- The luminaires must have Safety Certification by an independent laboratory.

This approved Schröder range of luminaires complies with these requirements.

## GENERAL INFORMATION

Recommended installation height	4m to 12m   13' to 39'
Driver included	Yes
CE mark	Yes
ENEC certified	Yes
ENEC+ certified	Yes
ROHS compliant	Yes
Dark Sky friendly lighting (IDA certification)	Yes
Zhaga-D4i certified	Yes
Testing standard	LM 79-08 (all measurements in ISO17025 accredited laboratory)

## HOUSING AND FINISH

Housing	Aluminium Composite materials
Optic	Polycarbonate
Protector	Polycarbonate (with integrated lenses)
Housing finish	Polyester powder coating
Standard colour(s)	RAL 7040 window grey RAL 9005 Jet black
Tightness level	IP 66
Impact resistance	IK 10
Vibration test	Compliant with modified IEC 68-2-6 (0.5G)

## OPERATING CONDITIONS

Operating temperature range (Ta)	-30°C up to +45°C / -22°F up to 113°F
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· Depending on the luminaire configuration. For more details, please contact us.

## ELECTRICAL INFORMATION

Electrical class	Class I EU, Class II EU
Nominal voltage	220-240V – 50-60Hz
Power factor (at full load)	0.9
Surge protection options (kV)	10
Electromagnetic compatibility (EMC)	EN 55015 / EN 61000-3-2 / EN 61000-4-5 / EN 61547
Control protocol(s)	1-10V, DALI
Control options	Bi-power, Custom dimming profile, Photocell, Remote management
Socket	Zhaga (optional) NEMA 3-pin (optional) NEMA 6-pin (optional) NEMA 7-pin (optional)
Associated control system(s)	Schröder EXEDRA
Sensor	PIR (optional)

## OPTICAL INFORMATION

LED colour temperature	2700K (Warm White WW 727) 3000K (Warm White WW 730) 4000K (Neutral White NW 740)
Colour rendering index (CRI)	>70 (Warm White WW 727) >70 (Warm White WW 730) >70 (Neutral White NW 740)
ULOR	0%
ULR	0%

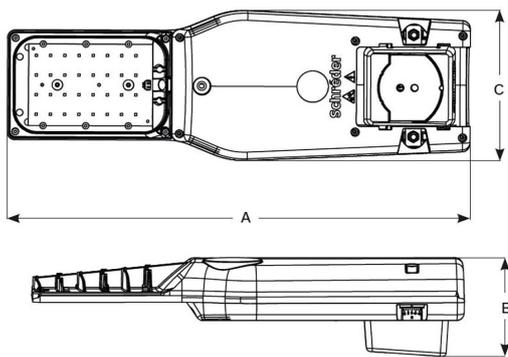
- Meets IDA Dark Sky requirements when fitted with LEDs of 3000K or less.
- ULOR may be different according to the configuration. Please consult us.
- ULR may be different according to the configuration. Please consult us.

## LIFETIME OF THE LEDS @ TQ 25°C

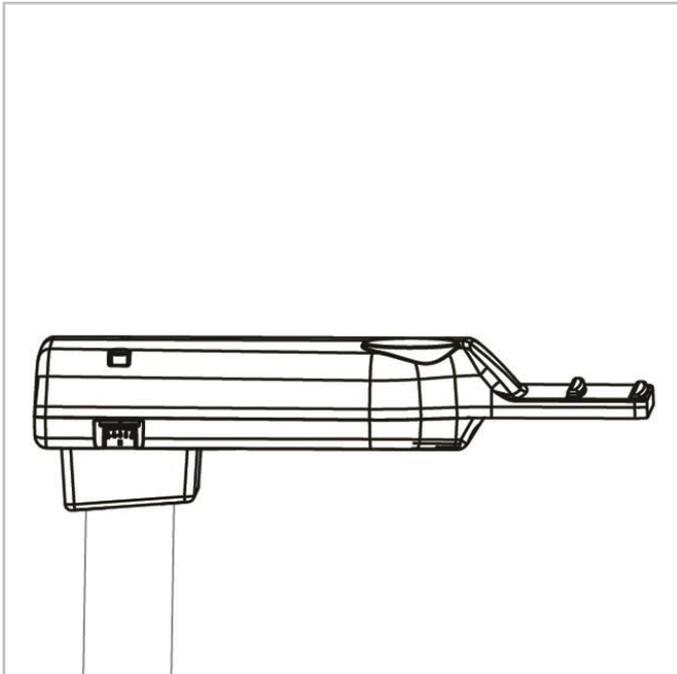
All configurations	100,000h - L90
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## DIMENSIONS AND MOUNTING

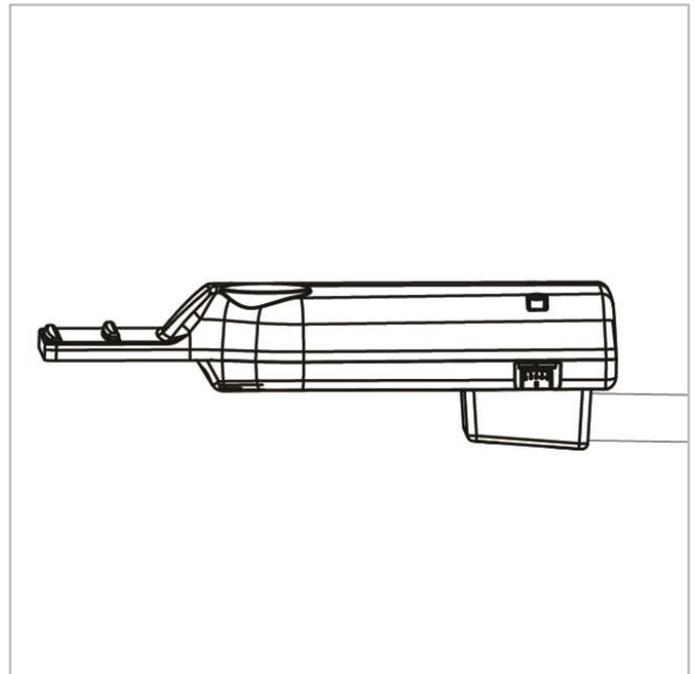
AxBxC (mm   inch)	AXIA 3.1 : 513x130x191   20.2x5.1x7.5 AXIA 3.2 : 585x130x191   23.0x5.1x7.5 AXIA 3.3 : 550x130x277   21.7x5.1x10.9
Weight (kg   lbs)	AXIA 3.1 : 3.6   7.9 AXIA 3.2 : 4.8   10.6 AXIA 3.3 : 6.0   13.2
Aerodynamic resistance (CxS)	AXIA 3.1 : 0.03 AXIA 3.2 : 0.03 AXIA 3.3 : 0.04
Mounting possibilities	Side-entry slip-over – Ø32mm Side-entry slip-over – Ø42mm Side-entry slip-over – Ø48mm Side-entry slip-over – Ø60mm Post-top slip-over – Ø60mm Post-top slip-over – Ø76mm

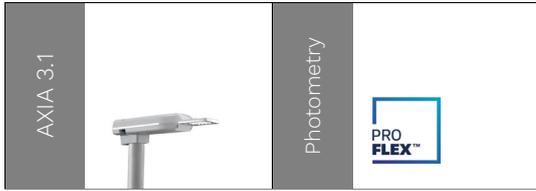


AXIA 3 | Post-top - Slip-over mounting for  
Ø60 or Ø76mm spigot - 2xM10 screws



AXIA 3 | Side-entry - Slip-over mounting for  
Ø32 (with accessory) or Ø42-60mm spigot -  
2xM10 screws





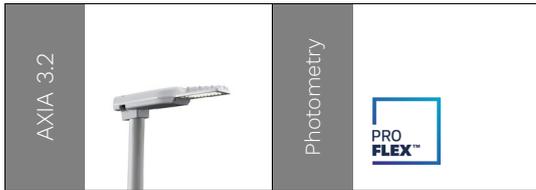
Number of LEDs	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White WW 727		Warm White WW 730		Neutral White NW 740		Min	Max	Up to
	Min	Max	Min	Max	Min	Max			
8	600	2500	700	2600	800	3000	8	23	152
16	900	5100	900	5400	1100	6100	11	44	159

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



Number of LEDs	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White WW 727		Warm White WW 730		Neutral White NW 740		Min	Max	Up to
	Min	Max	Min	Max	Min	Max			
24	2000	8400	2100	8800	2400	9900	16	76	161
32	2700	9500	2800	9900	3200	11300	20	78	166

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



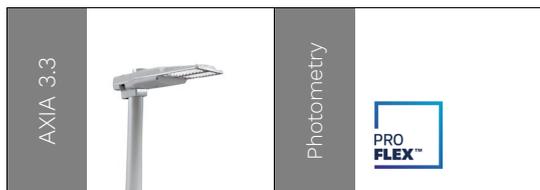
Number of LEDs	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White WW 727		Warm White WW 730		Neutral White NW 740		Min	Max	
	Min	Max	Min	Max	Min	Max			Up to
24	2000	8400	2100	8800	2400	9900	16	76	161
32	2700	9500	2800	9900	3200	11300	20	78	166

Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %



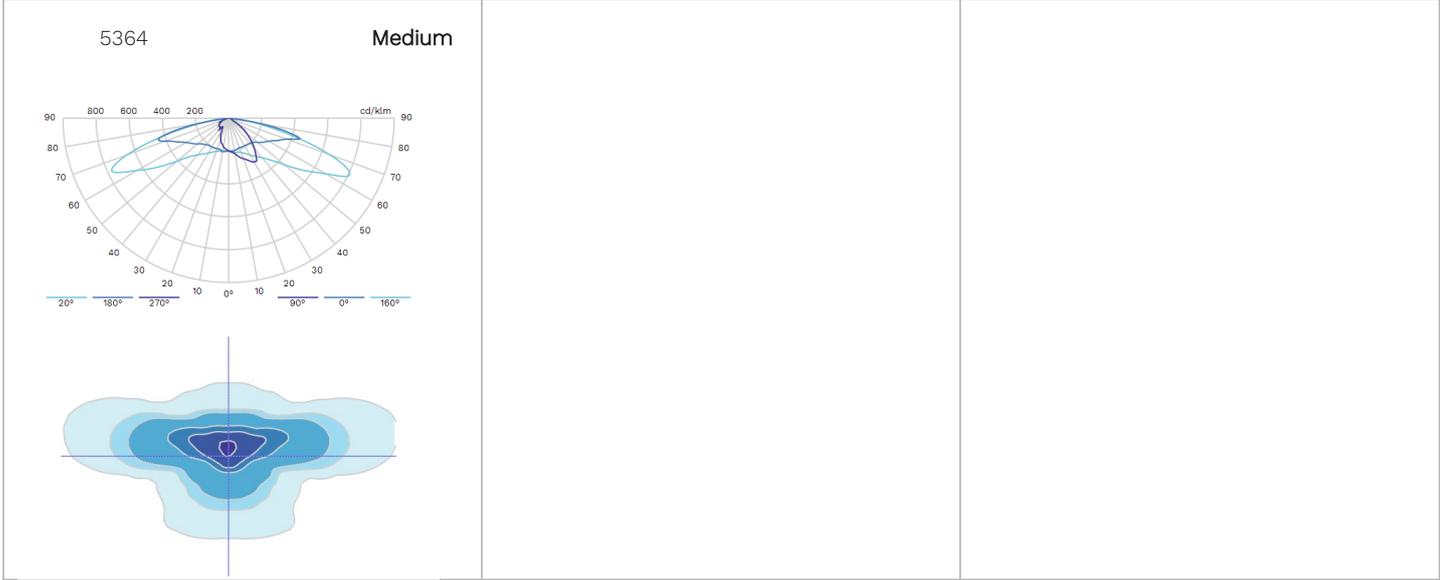
Number of LEDs	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White WW 727		Warm White WW 730		Neutral White NW 740		Min	Max	
	Min	Max	Min	Max	Min	Max			Up to
48	4000	14800	4200	15600	4800	17700	30	133	167
64	5300	19800	5600	20800	6400	23600	40	172	170

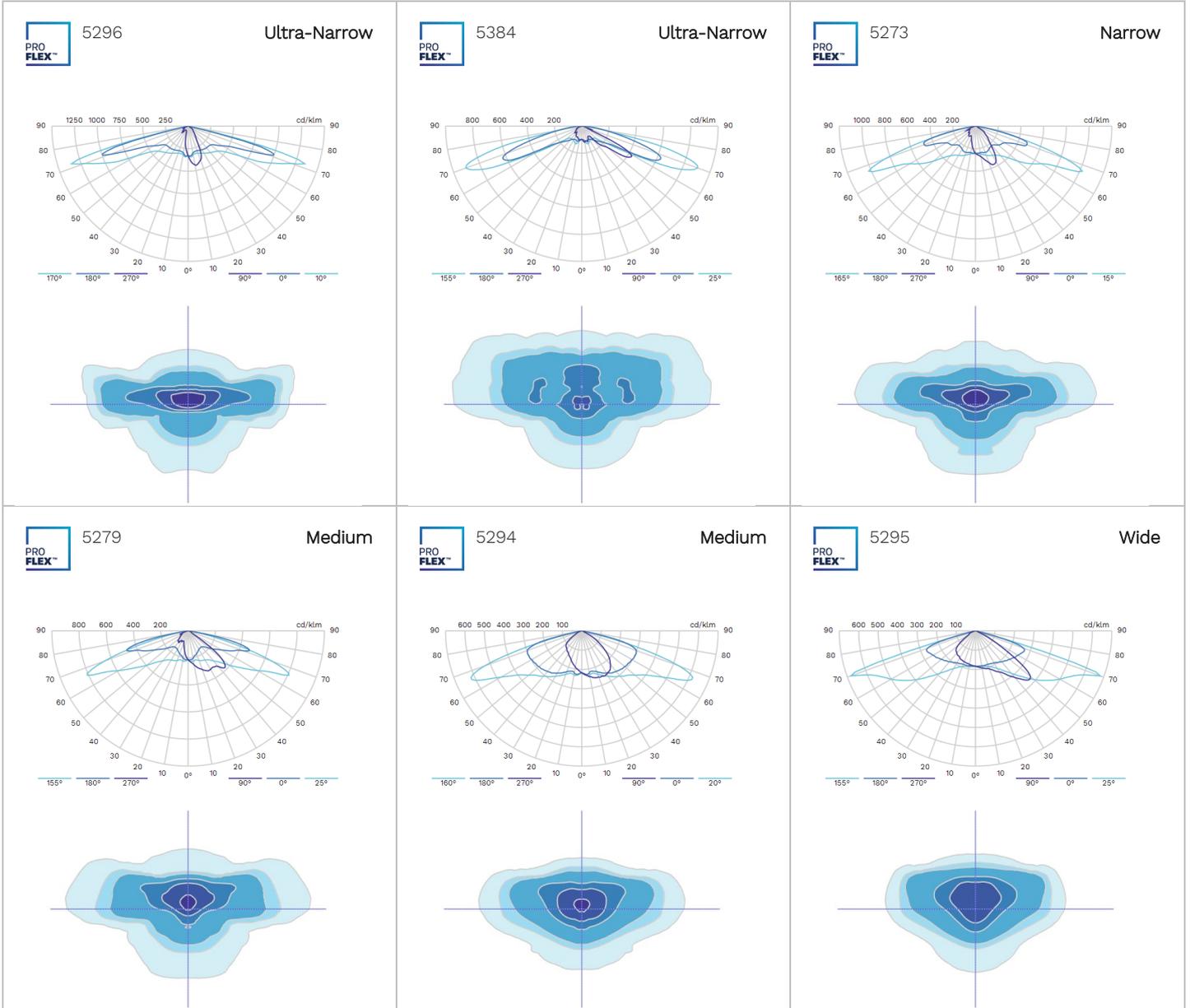
Tolerance on LED flux is ± 7% and on total luminaire power ± 5 %

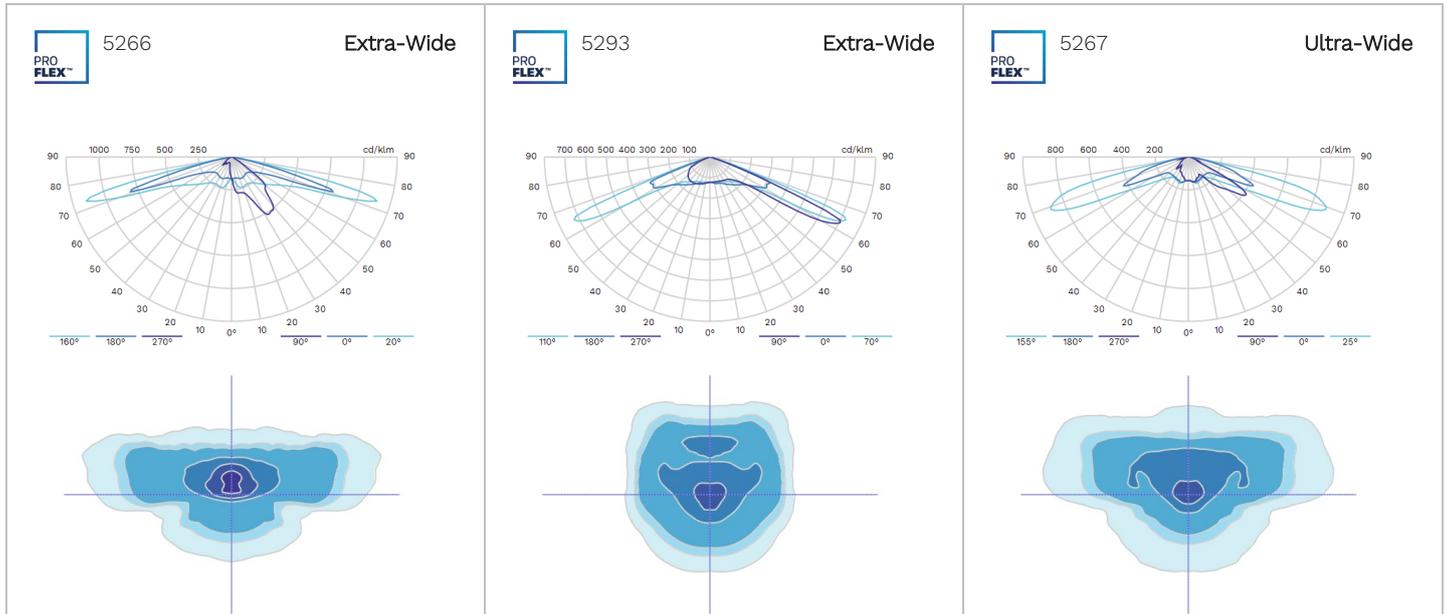


Number of LEDs	Luminaire output flux (lm)						Power consumption (W)		Luminaire efficacy (lm/W)
	Warm White WW 727		Warm White WW 730		Neutral White NW 740				
	Min	Max	Min	Max	Min	Max	Min	Max	Up to
48	4000	14800	4200	15600	4800	17700	30	133	167
64	5300	19800	5600	20800	6400	23600	40	172	170

Tolerance on LED flux is  $\pm 7\%$  and on total luminaire power  $\pm 5\%$







**Appendix B**

External Lighting Calculation

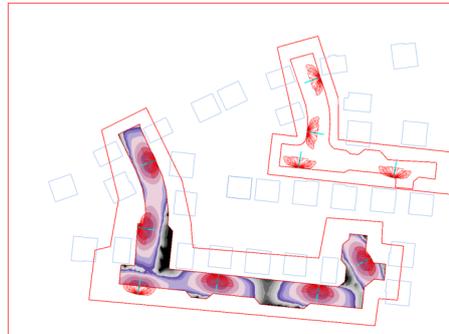
Object : External Lighting  
 Installation : Barnsley Hooper Homes  
 Project number : P2539  
 Date : 02.09.2025



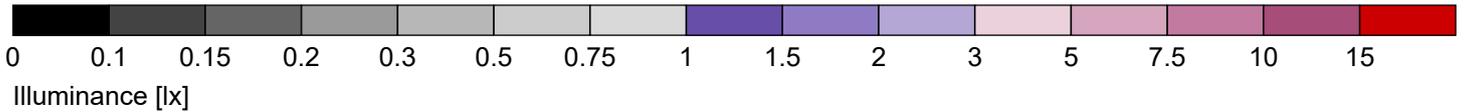
## 2 Exterior 1

### 2.1 Summary, Exterior 1

#### 2.1.1 Result overview, Street 1



898 938 978 1018 1058 1098 x [m]



#### General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.93 m
Maintenance factor	0.80

Total luminous flux	35760 lm
Total power	257 W
Total power per area (26554.50 m <sup>2</sup> )	0.01 W/m <sup>2</sup>

#### Illuminance

Average illuminance	$\bar{E}_m$	4.6 lx
Minimum illuminance	$E_{min}$	0 lx
Maximum illuminance	$E_{max}$	15 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	1:658 (0)
Diversity $U_d$	$E_{min}/E_{max}$	1:2150 (0)

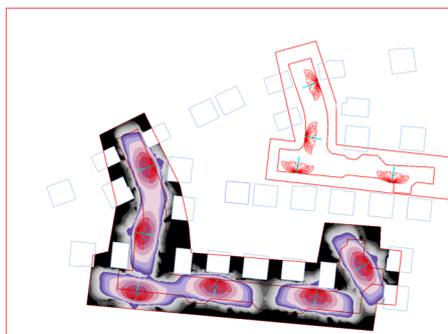
#### Type No.\Make

6	10 x	<b>SCHREDER</b>
	Order No.	: 457592
	Luminaire name	: AXIA 3.1 5295 Integrated lenses Rear louvers 16 OSLO SQUARE GI ANT@500mA WW 727 230V 01-11-814 457592
	Equipment	: 1 x 16 OSLO SQUARE GIANT@500mA WW 727 230V 01-11-814 25.7 W / 3576 lm

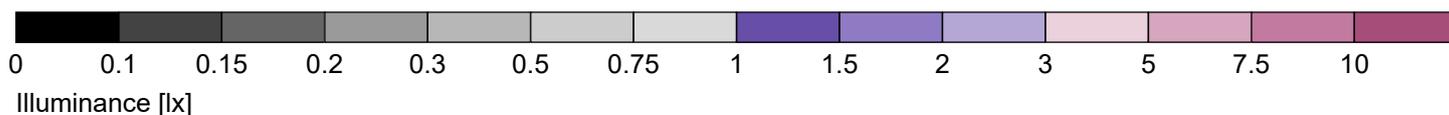
Object : External Lighting  
 Installation : Barnsley Hooper Homes  
 Project number : P2539  
 Date : 02.09.2025

## 2.1 Summary, Exterior 1

### 2.1.2 Result overview, Stree 1 Light Spill



898 938 978 1018 1058 1098 x [m]



#### General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.93 m
Maintenance factor	0.80

Total luminous flux	35760 lm
Total power	257 W
Total power per area (26554.50 m <sup>2</sup> )	0.01 W/m <sup>2</sup>

#### Illuminance

Average illuminance	$\bar{E}_m$	2.5 lx
Minimum illuminance	$E_{min}$	0 lx
Maximum illuminance	$E_{max}$	15 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	1:--- (---)
Diversity $U_d$	$E_{min}/E_{max}$	1:--- (---)

#### Type No.\Make

6	10 x	<b>SCHREDER</b>
	Order No.	: 457592
	Luminaire name	: AXIA 3.1 5295 Integrated lenses Rear louvers 16 OSLO SQUARE GI
		: ANT@500mA WW 727 230V 01-11-814 457592
	Equipment	: 1 x 16 OSLO SQUARE GIANT@500mA WW 727 230V 01-11-814 25.7 W / 3576 lm

Object : External Lighting  
 Installation : Barnsley Hooper Homes  
 Project number : P2539  
 Date : 02.09.2025



## 2.1 Summary, Exterior 1

### 2.1.3 Result overview, Street 2



898 938 978 1018 1058 1098 x [m]



#### General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.93 m
Maintenance factor	0.80

Total luminous flux	35760 lm
Total power	257 W
Total power per area (26554.50 m <sup>2</sup> )	0.01 W/m <sup>2</sup>

#### Illuminance

Average illuminance	$\bar{E}_m$	6.4 lx
Minimum illuminance	$E_{min}$	0 lx
Maximum illuminance	$E_{max}$	15.6 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	1:259 (0)
Diversity $U_d$	$E_{min}/E_{max}$	1:628 (0)

#### Type No.\Make

6	10 x	<b>SCHREDER</b>
	Order No.	: 457592
	Luminaire name	: AXIA 3.1 5295 Integrated lenses Rear louvers 16 OSLO SQUARE GI ANT@500mA WW 727 230V 01-11-814 457592
	Equipment	: 1 x 16 OSLO SQUARE GIANT@500mA WW 727 230V 01-11-814 25.7 W / 3576 lm

Object : External Lighting  
 Installation : Barnsley Hooper Homes  
 Project number : P2539  
 Date : 02.09.2025

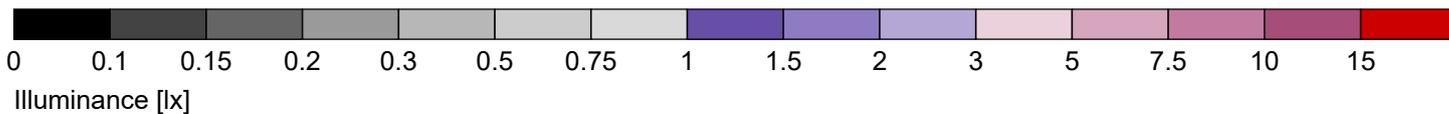


## 2.1 Summary, Exterior 1

### 2.1.4 Result overview, Street 2 Light Spill



898 938 978 1018 1058 1098 x [m]



#### General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.93 m
Maintenance factor	0.80

Total luminous flux	35760 lm
Total power	257 W
Total power per area (26554.50 m <sup>2</sup> )	0.01 W/m <sup>2</sup>

#### Illuminance

Average illuminance	$\bar{E}_m$	3.6 lx
Minimum illuminance	$E_{min}$	0 lx
Maximum illuminance	$E_{max}$	15.4 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	1:--- (---)
Diversity $U_d$	$E_{min}/E_{max}$	1:--- (---)

#### Type No.\Make

6	10 x	<b>SCHREDER</b>
	Order No.	: 457592
	Luminaire name	: AXIA 3.1 5295 Integrated lenses Rear louvers 16 OSLO SQUARE GI ANT@500mA WW 727 230V 01-11-814 457592
	Equipment	: 1 x 16 OSLO SQUARE GIANT@500mA WW 727 230V 01-11-814 25.7 W / 3576 lm



**Appendix C**

Lighting Contour Plan



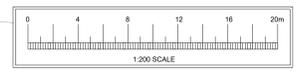
P01	PRELIMINARY ISSUE	MM	MH	24.09.25	
P01	PRELIMINARY ISSUE	MM	MH	12.09.25	
STA	REV	DESCRIPTION	DES	CHD	DATE

PURPOSE OF ISSUE  
**PRELIMINARY**

**NOVO** Integration Ltd  
 7 Feast Field, Horforth, Leeds,  
 West Yorkshire LS18 4TJ  
 t: +44(0)113 2577300 e: novocal@novocal.co.uk

CLIENT	
PROJECT	HOOPER HOMES, BARNSLLEY
TITLE	EXTERNAL SERVICES LIGHTING CONTOUR PLAN

SCALE	1:200	ORIGINAL SIZE	A0	DATE	AUG '25
DRAWN	MMo	DESIGNED	AO	CHECKED	RG
PROJECT ORIGINATOR   ZONE   LEVEL   TYPE   ROLE   CLASS   NUMBER	P2539-NOV-XX-XX-DR-E-9601				
REVISION	P02				



LIGHTING CONTOUR PLAN