

## Kenavon Drive, Reading

### External Lighting Strategy Addendum April 2019



Berkeley Homes (Western) Ltd  
Kenavon Drive, Reading

# External Lighting Addendum Report For Kenavon Drive, Reading



**MLM.**  
Group

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## Document History

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# 1 Luminaire Types and Location

## 1.1 Footpaths

The footpaths, private estate roads and car parks have been designed to comply with BS5489 (2013).

### Luminaire

Selux – Olivio Medio – 3.5m column luminaire for podiums and street between east and middle blocks.

Luminaire head has adjustable head joints to ensure precise direction of luminaire head, wide pivoting range from 20° to 195°, can be rotated +/- 180°, shielding is made of safety glass.

### Optical System

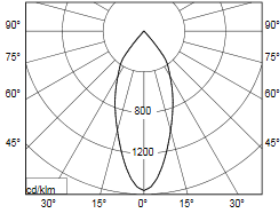
Medium reflector, easy maintenance access via lock bar mechanism.

### Luminaire Characteristics

- Class II
- Power 41W
- Intensity 2925lm
- Breaking Strength IK 10
- Protection Rating IP66
- Percentage of Light Output (upwards) 0
- Power Supply Electronic
- Electrical Connection 220-240V 50/60Hz



**Technics**



Photometric data: 8480

**Lamp**  
LED - 2925lm - Light colour: 3000 K - CRI > 80.

**Optic**  
medium reflector - medium beam

**Electrics**  
with electronic converter, Total power: 41W, 10m feed cable

control options:  
dynamic, DALI, fix value, individual power reduction in 300 lumen steps ex work

**Luminous flux characteristics / Operating time**

|                   |       |       |       |       |       |
|-------------------|-------|-------|-------|-------|-------|
| Operating time    | 18000 | 36000 | 54000 | 72000 | 88000 |
| Lumen maintenance | 95%   | 86%   | 80%   | 75%   | 70%   |
| LLMF*             | 0.95  | 0.86  | 0.8   | 0.75  | 0.7   |

\* = Lamp lumen maintenance factor

## Control Options

DALI and individual power reduction in 300 lumen steps ex work.

## 1.2 Street Lighting and Car Parking Areas

External communal parking areas will be lit to BS5489 (2013) and BSEN 13201 (2003) all Street lighting for adopted highways.

### Luminaire

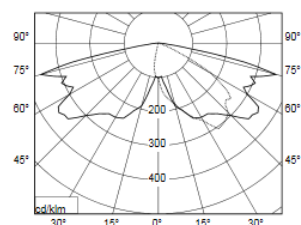
Selux – Avanza 450 - 8m column mounted luminaire for street between middle and west blocks and at 6m at the river front of blocks West and East. Colour of column to be defined by Architects.

### Luminaire Characteristics

- Class III
- Power 36 and 53W
- Intensity 4200lm
- Breaking Strength IK 10
- Protection Rating IP66
- Percentage of Light Output (upwards) 0
- Power Supply Electronic
- Electrical Connection 220-240V 50/60Hz
- Superb light control ensures light pollution is eliminated.
- Compliance with 'Dark Sky' criteria combines with energy efficiency
- IP66 to ensure fully weather sealed rating



#### Technics



Photometric data: 8417

#### Lamp

LED - 3000lm - Light colour: 3000 K -  
CRI > 80.

#### Optic

freeform reflector - asymm. street

#### Electrics

with electronic converter, Total power:  
36W, 7m feed cable

control options:

dynamic, DALI, CLT, HNS, individual  
power reduction in 300 lumen steps ex  
work

#### Luminous flux characteristics / Operating time

| Operating time    | 50000 | 60000 | 70000 | 80000 |
|-------------------|-------|-------|-------|-------|
| Lumen maintenance | 93%   | 91%   | 89%   | 86%   |
| LLMF*             | 0.93  | 0.91  | 0.89  | 0.86  |

\* = Lamp lumen maintenance factor

## Control Options

DALI and individual power reduction in 300 lumen steps ex work.

Luminaires can be switched and dimmed via different interfaces. Intelligent controls allow for an adequate, individual and precise light composition. The user-orientated control sustainably reduces power consumption and optimizes the CO<sub>2</sub> footprint.

## River Front

River front will be lit to comply with BS5489:2013 and BSEN 13201 (2003).

## Luminaire

Selux – Olivio Grande 8m column luminaire for front of Restaurant (Middle Block) and 6m in front of river between east and middle blocks. Column colour to be defined by Architects.

Luminaire head has adjustable head joints to ensure precise direction of luminaire head, wide pivoting range from 20° to 195°, can be rotated +/- 180°, shielding made of safety glass.

Optical system: medium reflector, easy maintenance access via lock bar mechanism.

## Luminaire Characteristics

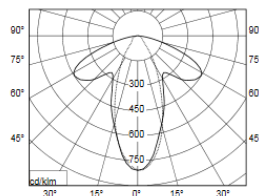
- Class II
- Power 53W
- Intensity 3600lm
- Breaking Strength IK 10
- Protection Rating IP66
  - Limited upward light with flat glass option 'night time friendly'.



### Olivio Medio

SX 961 13-9

#### Technics



Photometric data: 8491

#### Lamp

LED - 2300lm - Light colour: 3000 K - CRI > 80.

#### Optic

prismatic disc - asymm.

#### Electrics

with electronic converter, Total power: 41W, 10m feed cable

#### control options:

dynamic, DALI, fix value, individual power reduction in 300 lumen steps ex work

#### Luminous flux characteristics / Operating time

| Operating time    | 18000 | 36000 | 54000 | 72000 | 88000 |
|-------------------|-------|-------|-------|-------|-------|
| Lumen maintenance | 95%   | 86%   | 80%   | 75%   | 70%   |
| LLMF*             | 0.95  | 0.86  | 0.8   | 0.75  | 0.7   |

\* = Lamp lumen maintenance factor

## Control Options

DALI and individual power reduction in 300 lumen steps ex work. Proposed luminaires provide a function to enable gradual dimming.

## Luminaire Types and Location

### East Block Court Yard Decking Area



## Luminaire

Selux – Olivio Medio – 3m Wall mounted fittings

Luminaire head has adjustable head joints to ensure precise direction of luminaire head, wide pivoting range from 20° to 195°, can be rotated +/- 180°, shielding is made of safety glass.

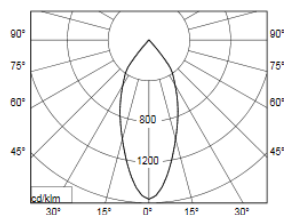
## Optical System

Medium reflector, easy maintenance access via lock bar mechanism.

## Luminaire Characteristics

- Class II
- Power 41W
- Intensity 2925lm
- Breaking Strength IK 10
- Protection Rating IP66
- Percentage of Light Output (upwards) 0
- Power Supply Electronic
- Electrical Connection 220-240V 50/60Hz

#### Technics



Photometric data: 8480

#### Lamp

LED · 2925lm · Light colour: 3000 K ·  
CRI > 80.

#### Optic

medium reflector · medium beam

#### Electrics

with electronic converter, Total power:  
41W, 10m feed cable

control options:

dynamic, DALI, fix value, individual  
power reduction in 300 lumen steps ex  
work

#### Luminous flux characteristics / Operating time

| Operating time    | 18000 | 36000 | 54000 | 72000 | 88000 |
|-------------------|-------|-------|-------|-------|-------|
| Lumen maintenance | 95%   | 86%   | 80%   | 75%   | 70%   |
| LLMF*             | 0.95  | 0.86  | 0.8   | 0.75  | 0.7   |

\* = Lamp lumen maintenance factor

## Control Options

DALI and individual power reduction in 300 lumen steps ex work.

## Street Lighting and Car Parking Areas

External communal parking areas will be lit to BS5489 (2013) and BSEN 13201 (2003) all Street lighting for adopted highways.

## Luminaire

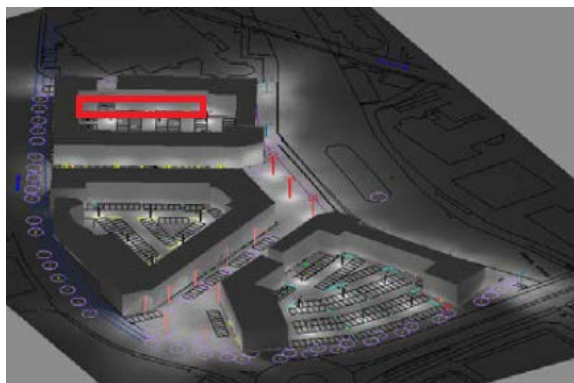
Selux – Avanza 450 - 8m column mounted luminaire for street between middle and west blocks and at 6m at the river front of blocks West and East. Colour of column to be defined by Architects.

## Luminaire Characteristics

- Class III
- Power 36 and 53W
- Intensity 4200lm
- Breaking Strength IK 10
- Protection Rating IP66
- Percentage of Light Output (upwards) 0
- Power Supply Electronic
- Electrical Connection 220-240V 50/60Hz
- Superb light control ensures light pollution is eliminated.
- Compliance with 'Dark Sky' criteria combines with energy efficiency
- IP66 to ensure fully weather sealed rating
- Limited upward light with flat glass option 'night time friendly'

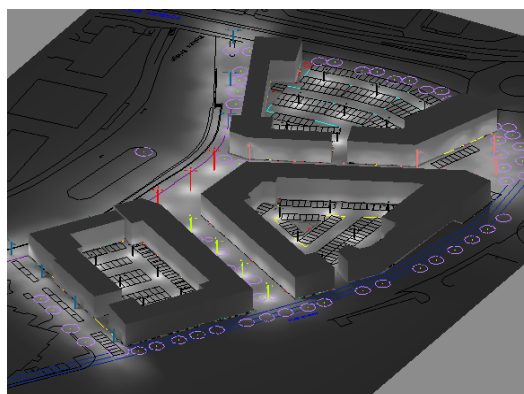
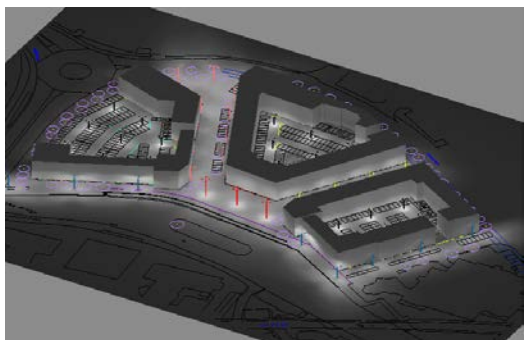
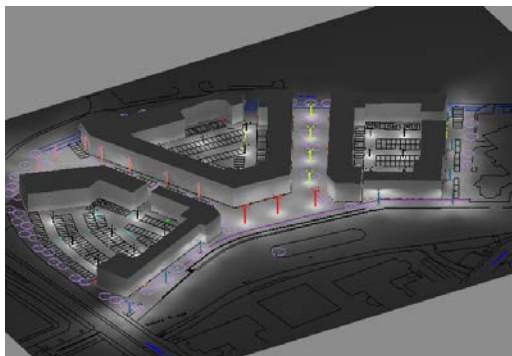
## 2 Lux Plan

Refer to Drawing 714698-MLM-W1-GF-DR-E-2100.



The area highlighted in red the lux levels are as follows:





### 3 Uniformity and Colour Rendering

Overall uniformity of street lighting and its colour rendering qualities achieve at least the minimum levels required.

The colour rendering achieved comply with BS5489 of:

- Ra70 footpaths
- Ra75 private estate roads

#### Light Pollution

Upward lighting ratio.

Environmental Zones.

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

| Obtrusive light Limitations for Exterior Lighting Installations |                      |                                          |             |                        |             |                               |
|-----------------------------------------------------------------|----------------------|------------------------------------------|-------------|------------------------|-------------|-------------------------------|
| Environmental Zone                                              | Sky Glow ULR (Max %) | Lighting Trepass (into windows) Ev (lux) |             | Source Intensity (kcd) |             | Building Luminance Pre-Curfew |
|                                                                 |                      | Pre-Curfew                               | Post-Curfew | Pre-Curfew             | Post-Curfew | Average L                     |
| E1                                                              | 0.0                  | 2.0                                      | 1.0         | 2.5                    | 0.0         | 0                             |
| E2                                                              | 2.5                  | 5.0                                      | 1.0         | 7.5                    | 0.5         | 5                             |
| E3                                                              | 5.0                  | 10.0                                     | 2.0         | 10.0                   | 1.0         | 10                            |
| E4                                                              | 15.0                 | 25.0                                     | 5.0         | 25.0                   | 2.5         | 25                            |

ULR = Upward light ratio of the installation is the maximum permitted percentage of luminaire flux of the total installation that goes directly into the sky.

Ev = Vertical illuminance in lux and is measured flat on the glazing at the centre of the window.

I = Light intensity in Cd

L = Luminance in Cd/m<sup>2</sup>

Curfew = The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of the lighting applied by the local planning authority.

Proposed luminaires provide dimming – power reduction – lighting will dim down to set/approved lux levels in gradual stages and luminaires proposed are directional and do not require cowls or hoods.

|    |                                  |                                                           |
|----|----------------------------------|-----------------------------------------------------------|
| E1 | Intrinsically dark landscapes    | National Parks, areas of outstanding natural beauty       |
| E2 | Low district brightness areas    | Rural, small village or relatively dark urban locations   |
| E3 | Medium district brightness areas | Small town centres or urban locations                     |
| E4 | High district brightness areas   | Town/city centres with high levels of night time activity |

The lighting has been design to comply with the above criteria.

The development lighting complies to the minimum of 80lm/W for colour rendering light sources  $Ra < 60$  and with 70lm/W for light sources with  $Ra > 60$ .

The external lighting scheme is sufficient to support CCTV and does not conflict with the landscape design.

Areas covered by external CCTV shall be illuminated in accordance with the CCTV strategy and the lighting circuits shall be wired on the same phase as the CCTV installation.

The external lighting scheme has been designed to inco-operated the CCTV design and does not conflict with the landscape design.

Lighting calculations and luminaire choices have been carried out to prevent any impact of light spillage to nearby dwellings or roads/river.

Light fittings should be protected where vulnerable to vandalism.

All light fittings will be vandal proof and temper proof.



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