

**Lighting Report
For
Monarch Quay
MSCP**

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1.0 **General**

Sure Consulting were commissioned to carry out lighting calculations to ascertain the level of light spillage from the MSCP roof top lighting onto bat boxes positioned on the front façade of the adjacent building No 1.

Please refer to Sure Consulting drawing no. 4764/E1 for the general layout of both buildings and the location of the 8 No. bat boxes.

The calculations were based on the use of 5 or 6m lighting columns position as indicated on the Architects drawings although the type and manufacture of the required flood light has not been stipulated.

For the purpose of the report we have assumed a required overall illumination of 25 lux based on the use of an 84W LED flood light as PR Lighting KAL range complete with an asymmetric optic. We have also assumed that the proposed kinetic façade will form an opaque upstand to the perimeter of the upper level of the car park.

2.0 **Calculations**

Referring to the 6m lighting calculations and pages 6 & 7 respectively we have shown the expected illumination levels on the left and the right hand side of building by creating a sample area of 4.5 x 6m which covers each group of 4 boxes.

From the tables it can be seen that there is no light spillage onto the group of 4 bat boxes on the right hand side of the building but there will be some spillage onto the left hand side. However, looking at the table it can be seen that only the top left hand side corner box is affected with an average illumination level over the sample area of 0.03 lux with a maximum illuminance of 0.37Lux. To put this figure into perspective this represents the expected lighting level of a full moon.

The light spillage has been caused by the break in the kinetic façade between grid lines 5 and 6 which is allowing light from the column on grade level 7 to project onto the top left hand side of building No. 1 and the associated bat box. If this gap was blanked off at roof level there would be no light spillage.

As can be seen from the second set of calculations (see pages 8 & 9) dropping the mounting height of the fitting down to 5m makes no difference as we still get an element of light spillage onto the top left hand bat box with an increased maximum illuminance figure of 0.5 lux.

At the lower mounting level and in order to achieve the required illumination level on the upper car parking deck the LED flood light needs to be angled at 5° to the horizontal plane which in turn causes the light spillage onto the bat box.

3.0 Summary

From a practical point of view the best way to light the upper decks of the car park area is through the use of LED flood lights mounted on 6m columns as indicated on the Architects drawings with all flood lights mounted at 0° to the horizontal plane. However, this will still generate a small level of light spillage onto the top left hand side bat box equivalent in magnitude to the illuminance level from a full moon. If this is not acceptable then the only way to avoid the light spillage is to provide a complete opaque upstand to the perimeter with no gaps.

KAL RANGE

IP67 AREA / STREET LIGHT



KAL360/SMA

The KAL range has been designed as a versatile sealed IP67 area light.

The body is die cast aluminium, powder coated black with either a flat or prismatic glass lens. There are also 2 lens options - area and aisle - and up to 5 different mounting options - a 2 piece swivel bracket, a yoke, a mounting arm for fixing to square poles, a pole mounting arm to fit a 60mm diameter pole and a wall mounting bracket (KAL380 only). This selection of options make this a very versatile fitting.

The fittings are wired as standard with a single driver that can be run as either fixed output or 1-10v dimming. Both sizes of fitting can be supplied with an integral photocell making them more versatile and energy efficient.

LUMINAIRE CAT NO	NOMINAL SIZE MM	POWER (tcW)	LUMEN OUTPUT*	WEIGHT KG	DIM OPT	EM OPT
KAL380	380 X 340	87	10,773	8	●	●
KAL380(HO)	380 X 340	120	13,573	8	●	●
KAL560	560 X 400	177	16,709	11	●	●
KAL560(HO)	560 X 400	281	22,765	11	●	●

*The lumen output of the luminaire - based on 5,000k colour LEDs with Area optics and clear glass.

ADDITIONAL ORDERING INFORMATION

• Emergency version	- add /EM
• Area optics	- add /AR
• Aisle optics	- add /AO
• Clear glass lens	- add /CG
• Prismatic glass lens (AR only)	- add /PG
• 2 piece swivel bracket	- add /SB
• Yoke bracket	- add /YB
• Square mounting adapter	- add /SMA
• Pole mounting adapter	- add /PMA
• Wall bracket (KAL380 only)	- add /WVB
• Photocell	- add /PC

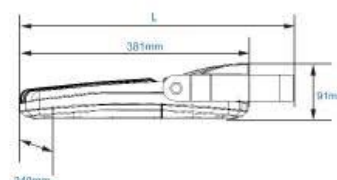
LED colours:
• Very Cool white (5,000K)

Body colours:
• Black as standard

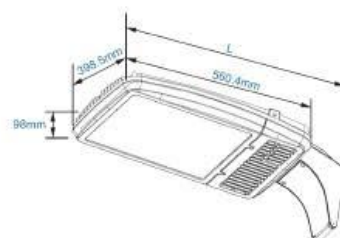
FEATURES

- IP67 rated
- Black housing and frame as standard
- 2 optic options
- Choice of 2 glass lens
- Up to 5 different mounting options
- Integral Photocell option available
- Fixed output / 1-10v dimming as standard.
- Up to 123.8 Llm/tcW

DIMENSIONS



KAL380/YB



KAL560/SMA

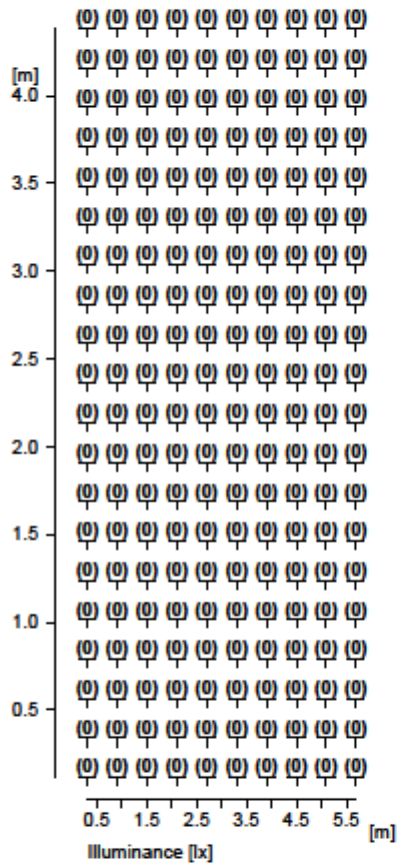
4.0 APPENDIX

Object : Monarch Quay Car Park
Installation : 6.0m mounted KAL380
Project number : 25781
Date : 10.10.2017

1 Exterior 1

1.1 Calculation results, Exterior 1

1.1.2 Table, Right Bat Box (E)



Average illuminance	Eav	: 0 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

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Top right hand bat box has been positioned on grid lines 5.0 (x-axis) and 4.0 (y-axis)

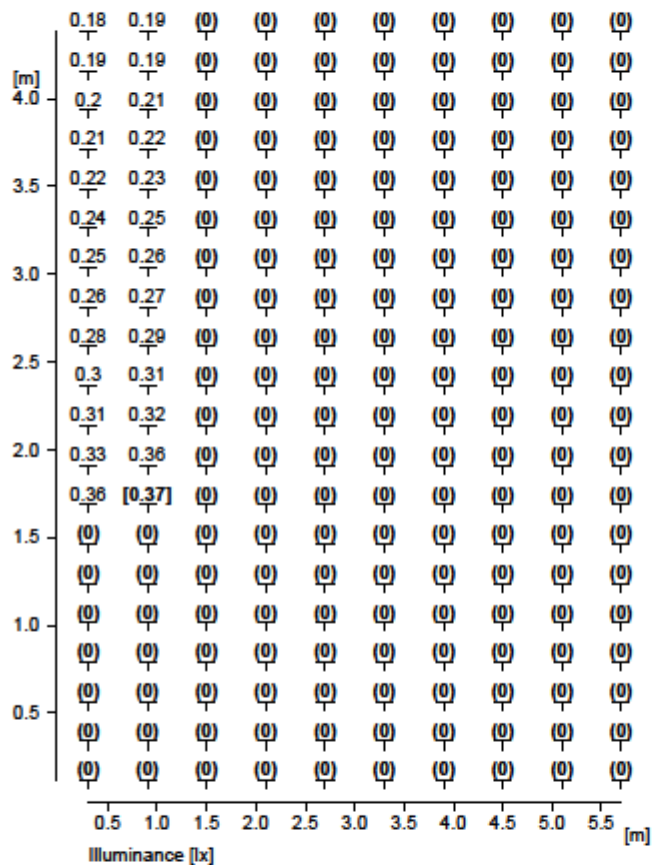
4.0 APPENDIX

Object : Monarch Quay Car Park
Installation : 6.0m mounted KAL380
Project number : 25781
Date : 10.10.2017

1 Exterior 1

1.1 Calculation results, Exterior 1

1.1.1 Table, Left bat Box (E)



Average illuminance	Eav	: 0.03 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0.37 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

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Top left hand bat box has been positioned on grid lines 0.5 (x-axis) and 4.0 (y-axis)

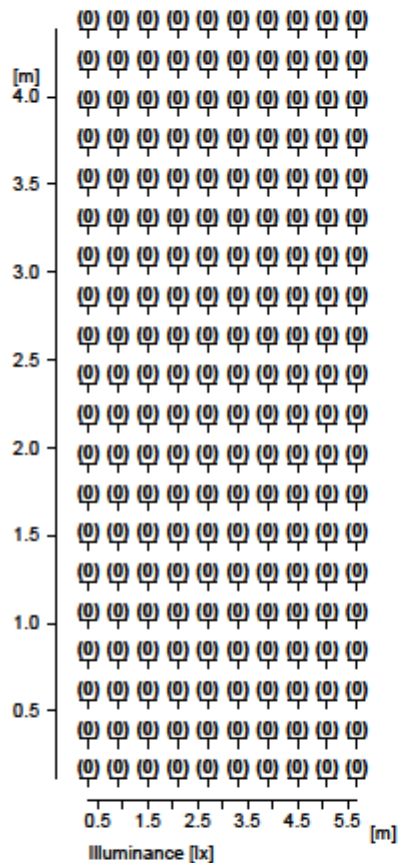
4.0 APPENDIX

Object : Monarch Quay Car Park
Installation : 5.0m mounted KAL380
Project number : 25781
Date : 10.10.2017

1 Exterior 1

1.1 Calculation results, Exterior 1

1.1.2 Table, Right Bat Box (E)



Average illuminance	Eav	: 0 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

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Top right hand bat box has been positioned on grid lines 5.0 (x-axis) and 4.0 (y-axis)

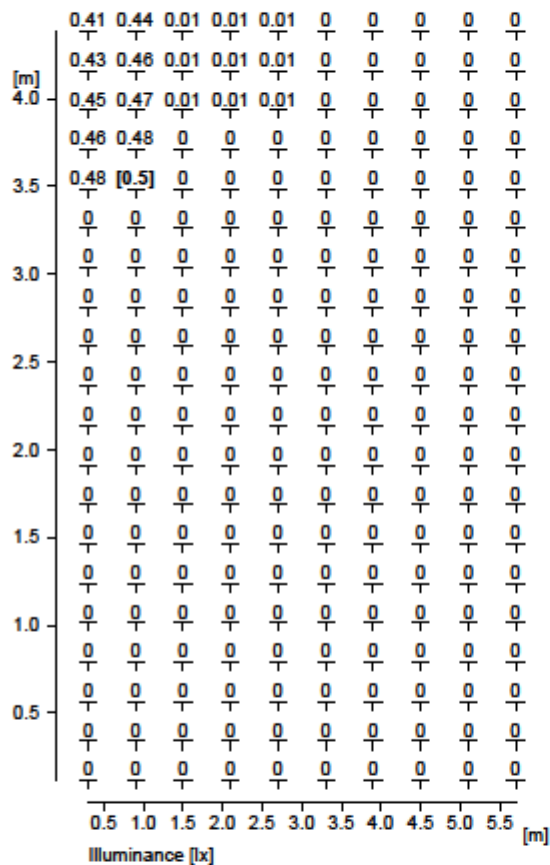
4.0 APPENDIX

Object : Monarch Quay Car Park
Installation : 5.0m mounted KAL380
Project number : 25781
Date : 10.10.2017

1 Exterior 1

1.1 Calculation results, Exterior 1

1.1.2 Table, Left bat Box (E)



Average illuminance	Eav	: 0.02 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0.5 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

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Top left hand bat box has been positioned on grid lines 0.5 (x-axis) and 4.0 (y-axis)