

**External LED Lighting
Assessment Report
Ref: Z54352**

at

**Whitehouse Club,
Middleton Road**

for

Branley Homes



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Document Status – Final

Ref: Z54352			Date
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Executive Summary

The lighting solution for Whitehouse apartments has been carefully designed to ensure the immediate environment has been protected including the adjoining property areas that border the development site. The objective of this report is to satisfy planning condition 18 which states:

18) The development hereby approved shall include a building and site lighting scheme and a scheme for the illumination of external areas during the period between dusk and dawn. Full details of such a scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority before the first occupation of a phase of the development hereby approved. The approved details shall be implemented in full prior to the first occupation of each building of the development and shall remain in operation for so long as the development is occupied.

The illumination that would normally be free flowing from site boundaries has been restricted and has been further designed to mitigate any potential impact within any residential and ecology areas.

Careful consideration has also been taken to ensure no loss of amenity due to glare through shielding of the lamps, choice of luminaires, luminaire control and efficient mounting heights.

The main access roads around the site will use local authority adopted street lighting and are therefore excluded from this assessment.

1. Introduction

This assessment report provides a detailed overview of the proposed new external lighting installation for the 3 storey apartment development at the Whitehouse Club, Middleton. The development consists of an Apartment block with an external bin & bike store with a carpark for the residents.

The total lighting scheme covers all the external areas incorporating the unit, including all external areas to the level loading doors, vehicle parking, cycle storage, circulation, landscaping, access road, access points off the access road, and other ancillary development.

The scheme covering the bin & bike stores and parking area is based on the use of LED luminaires fixed to columns and the building façades as detailed on the accompanied drawing, D53342.

2. Lighting Solution Covering the Development

The lighting solution has been prepared in accordance with the current Design Standard for Exterior Lighting in conjunction with BS5489 and CIBSE LG6, The Outdoor Environment.

Care has been taken when selecting the luminaires that ensures the appropriate products will greatly reduce spill light and glare to and around site boundaries and prevent sky glow.

Full cut-off luminaires, horizontal, “flat” floodlights and LED lamps that are housed in the luminaires canopy have been selected.

Best lighting practice design guidelines have been followed in order to achieve the criteria outlined in The Institution of Lighting Professionals: Guidance Notes for the Reduction of Obtrusive Light, 2011, covering Environmental Zones E0 to E4.

With the proposed luminaires not having an upward light ratio (ULR) of more than 0% and strategically placed the proposed design solution meets the criteria of environmental zone E2, Lighting Environment classification of Low District Brightness, please see extracts below.

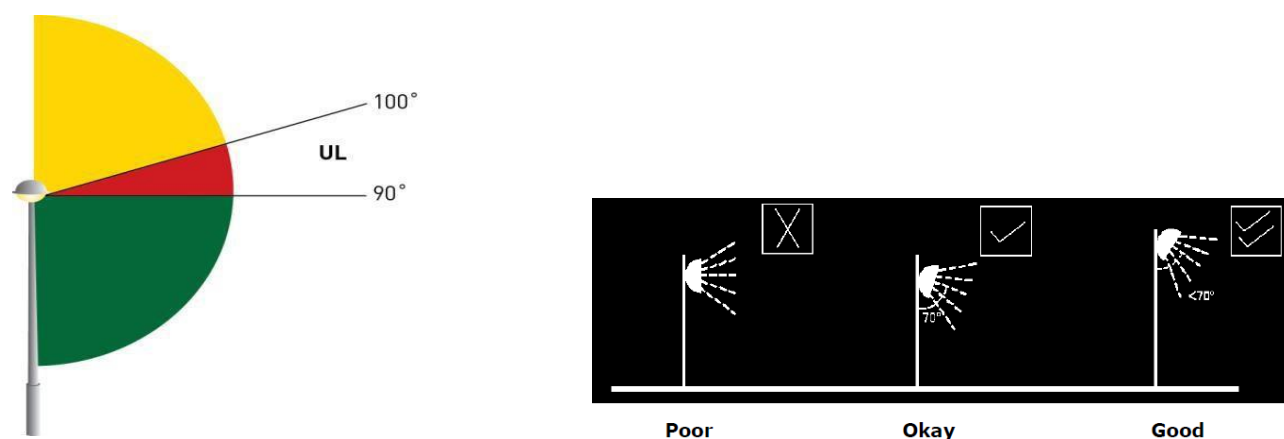
Table 1 - Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of nighttime activity

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

Environmental Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Intrusion (into Windows) E_v [lux] ⁽²⁾		Luminaire Intensity I [candelas] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2500	0	0
E2	2.5	5	1	7500	500	5
E3	5	10	2	10000	1000	10
E4	15	25	5	25000	2500	25

The proposed luminaires all have a ULR of 0% and drastically reduce the upward spread of light near to and above the horizontal. The most sensitive/critical zones for minimising sky glow are those between 90 and 100 degrees as shown below and referred to as the lower, upward lighting zone (UL).

**Figure 1 – Upward Lighting Ratio**

At the designed mounting heights, the chosen luminaires ensure that greater spacing between luminaires is achieved thus reducing the number of lighting points overall.

Glare has been kept to a minimum by ensuring that the main beam angle of all the luminaires directed towards any potential observer is not more than 70 degrees.

BREEAM is not required on this scheme however we have designed the external light fitting in accordance to with the BREEAM Criteria Ene 03 External Lighting as good practice.

In accordance with BREEAM Criteria Ene 03 External Lighting, the design shall include for external light fittings within the construction zone that have an average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt, automatic control to prevent operation during daylight hour and presence detection in areas of intermittent pedestrian traffic.

In accordance with BREEAM Criteria Pol 04 Reduction Of Night Time Light Pollution, the external lighting strategy is to be designed in compliance with Table 2 (and its accompanying notes) of the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 2011.

All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.

Where safety and/or security lighting is provided and will be used between 23:00 and 07:00, the design for this lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes.

Any illuminated advertisements are designed in compliance with ILP PLG05 The Brightness of Illuminated Advertisements.

3. Design Statistics

The following table details the design statistics achieved within the various areas of the development and should be read in conjunction with the external lighting drawing provided.

Table 3 – Design statistics table covering the development

Description	Avg (lux)	Min (lux)	Max (lux)	Uniformity (Min/Avg)	Diversity (Min/Max)
Bike Store	13.00	8	16	0.62	0.50
Bin Store	11.75	5	23	0.43	0.22
Building Perimeter	10.31	5	24	0.48	0.21
Car Park	13.31	5	33	0.38	0.15
ObtrusiveLight_1_Cd_Seg1	21.52	0	109	0.00	0.00
ObtrusiveLight_1_Cd_Seg2	18.99	0	74	0.00	0.00
ObtrusiveLight_1_Cd_Seg3	43.28	5	110	0.12	0.05
ObtrusiveLight_1_Cd_Seg4	26.89	1	105	0.04	0.01
ObtrusiveLight_1_Cd_Seg5	5.82	0	29	0.00	0.00
ObtrusiveLight_1_Cd_Seg6	16.55	0	60	0.00	0.00
ObtrusiveLight_1_Cd_Seg7	10.37	2	31	0.19	0.06
ObtrusiveLight_1_III_Seg1	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg2	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg3	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg4	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg5	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg6	0	0	0	N/A	N/A
ObtrusiveLight_1_III_Seg7	0	0	0	N/A	N/A
ObtrusiveLight_2_III_Seg1	41.98	0	139	0.00	0.00
ObtrusiveLight_2_III_Seg2	0	0	0	N/A	N/A
Ramp	21.5	14	31	0.65	0.45

The results obtained fall in line with the respective guidelines Environmental Zones E2 to E3 inclusive as detailed elsewhere in this report.

As further detailed on the drawing any potential light spill over the boundaries into adjoining areas including residential and ecological sensitive zones has been kept to the minimum which is detailed on the drawing as a contour line which clearly details the expected spill zone.



Figure 2 – Predicted Lighting Contour map

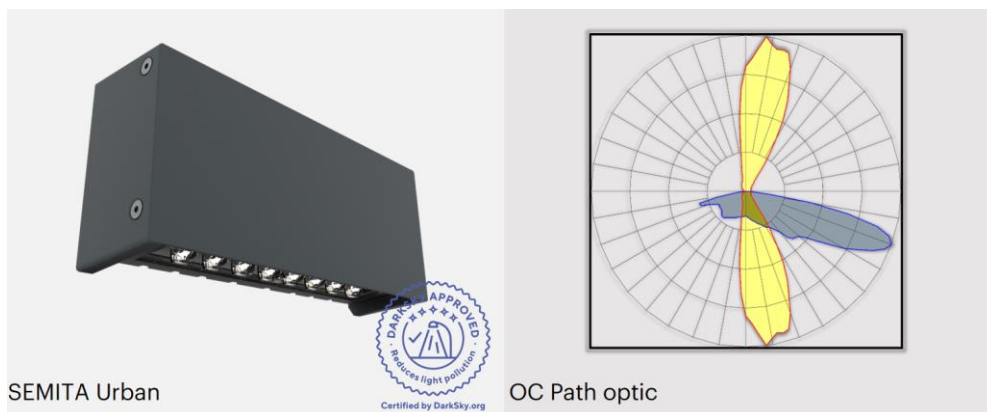
4. Luminaire Details

VIVA-CITY Pro FW70.



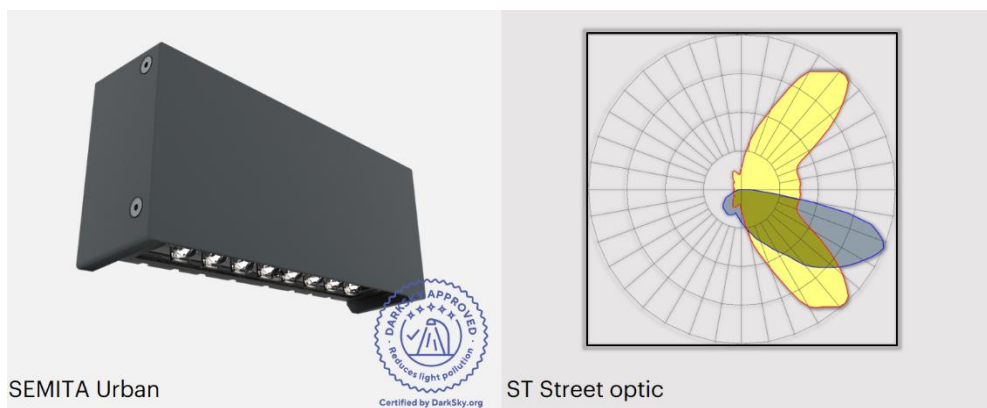
EX1 - 40W LED 4000K VIVA-CITY Pro 1050mA with FW70 forward throw optic column mounted at 5m.

SEMITA Urban OC



EX2 11W LED 4000K 410mA SEMITA Urban with ST street optic building mounted at 4m.

SEMITA Urban OC



EX3 - 6W LED 4000K 205mA SEMITA Urban with OC path optic building mounted at 4m.

Kingfisher Quote D53342/1 WHITEHOUSE APARTMENTS M8 4JZ:

Qty	Product Code	Description
2	53342/545430/1	EX1 - Comprising The Following Items:-
1		VIVA-CITY Pro, 625mm length, 5,532lum.lm, 40W, 1050mA, 138lm/W, 4000K, Asym. Forward Throw Optic 70°, DALI Driver, Class 1, RAL7016 Anthracite Grey Marine Grade, Post Top 60/76mm, Side Entry 60/76mm, IP66, IK08, 6kg, Dimmable.
1		5m Tubular Steel Rooted Column 76mm diameter Shaft, Hot Dip Galvanised Finish.
1		Fused Cut Out Unit comprising Cut Out with 6 Amp Fuse & Termination for Loop in Loop Out Cables. *to accept up to 25mm ² 2 core circ/10mm ² 3 core*. Double pole, single LST fuse, single phase fuse.
5	53342/545430/2	EX2 - Comprising The Following Items:-
1		SEMITA Urban Wallpack, 1,496lum.lm, 11W, 410mA, 136lm/W, 4000K, Street Optic ST, Basic DALI Driver, Class 1, RAL7016 Anthracite Grey Marine Finish, Wall Mount, IP66, IK10, 2.4kg, Dimmable.
8	53342/545430/3	EX3 - Comprising The Following Items:-
1		SEMITA Urban Wallpack, 802lum.lm, 6W, 205mA, 134lm/W, 4000K, Path Optic OC, Basic DALI Driver, Class 1, RAL7016 Anthracite Grey Marine Finish, Wall Mount, IP66, IK10, 2.4kg, Dimmable.

5. Conclusion

The external lighting solution has been carefully generated to ensure the immediate environment has been protected including the adjoining property areas that border the development site.

The illumination that would normally be free flowing from site boundaries has been restricted and has been further designed to mitigate any potential impact within any residential and ecology areas.

Careful consideration has also been taken to ensure no loss of amenity due to glare through shielding of the lamps, choice of luminaires, luminaire control and efficient mounting heights.

The building and site lighting scheme proposal adheres to planning condition 18 in full. This report and the drawing below provide full details of the proposals.

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