



BUILDING SERVICES DESIGN

HAMPTON QUAY EXTERNAL LIGHTING STATEMENT REPORT

**REVISION 1
JULY 2020**

**SVM Building Services Design
The Building Society
55 Whitfield Street, Bloomsbury
London
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Project Name

HAMPTON QUAY

External Lighting Statement Report

Revision 1

Date of issue July 2020

Issue	Details	Date	Author	Approved
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Issue	Details	Date	Author	Checked	Approved
1		29/07/2020	Rodney Barrett	Elliott Sheaf	Rodney Barrett

1. Introduction

This report outlines the external lighting design criteria required to comply with planning policy design requirements for Hampton Quay.

The proposed development consists of five separate residential blocks with lower ground car parking facilities together with external children play areas and pedestrian walkways. The site also includes pontoons along the full length of the development which connect into the pedestrian walkways

To comply with planning requirement for Sky Glow (Upward Light Ratio) not to exceed 5.0%, all external luminaires will have tight optical control and emit light in the downwards direction only thereby reducing the upward lighting component.

In general, only high colour rendering lamps are proposed to aid the visual tasks required such as parking and pedestrian walkways using LED luminaires which exhibit a white light colour of 4000°K

The lighting design will be sensitive and compliant with the principles set out within the ILP (Institute of Lighting Professionals) '*Guidance Notes for the Reduction of Obtrusive Light GN01:2011*', BS EN 12464-2 and other institutional guides for exterior lighting.

It is assumed that there is no current requirement for the design of the external lighting to comply with Secure-By-Design policy requirements.

2. Planning Policy Requirements

Details of the proposed lighting scheme for the development shall be provided and approved by the Local Planning Authority before installation. Due to the relative proximity of existing residential premises there is the potential for the development to cause a loss of amenity as a result of light glare / creep / bleed. Light intrusion into residential windows shall not exceed 10 Lux between 07.00 and 21.00 hours and 5 Lux between 21.00 and 07.00 hours, measured as Vertical Illuminance (EV) normal to glazing.

The Sky Glow (Upward Light Ratio) shall not exceed 5.0%. Prior to the commencement of the development, details of the external lighting of the site shall be submitted to and approved in writing by the Local Planning Authority. These details shall include the predictions of both horizontal illuminance across the site and vertical illuminance affecting immediately adjacent receptors.

The lighting installation shall comply with the recommendations of the Institute of Lighting Professionals (ILP) ‘Guidance Notes for the Reduction of Obtrusive Light’ (GN01:2011). Prior to occupation, the predicted illuminance levels shall be tested by an independent, suitably qualified and competent person to ensure that the illuminance levels agreed in the scheme are achieved. Where these levels have not been met, a report shall demonstrate what measures have been taken to reduce the levels to those agreed within the application scheme. The approved installation shall be maintained and operated in accordance with the approved details unless the Local Planning Authority gives its written consent to a variation.

Reason: To protect the amenity of local residents in accordance with Policy QE DM2 of the Adopted Arun Local Plan 2011 – 2031

ARUN District Council Local Validation Requirements
Section 10 Lighting Assessment

Information Item	Types of Application that require this information	Information is required	Further assistance
Lighting Assessment	All types of applications for or including lighting outside of the built up area as indicated in the Local Plan. All types of applications for or including lighting units at a height of 2m or above in the built up area as indicated in the Local Plan.	Details of the number, type, location, height, cowl and intensity of the installation including hours of illumination. A lighting impact study showing the extent and amount of illumination on the ground and an analysis of light spillage outside the site and/or into the sky.	Lighting in the Countryside (DCLG 1997)

3. Lighting Brief

The overall concept is to design a lighting strategy which will provide the necessary security for future residents while also accentuating the landscaping and architecture. The lighting should be low-level and subtle taking into consideration the existing and proposed ecological habitats within The site boundary. The proposal will also aim to provide sustainable, climate adaptive buildings, therefore the lighting strategy should also correspond with this, reducing the demand on the environment.

ECOLOGICAL IMPACT ASSESSMENT - Lighting

Artificial Lighting and Wildlife
Bright external lighting can have a detrimental impact upon foraging and commuting bat flight paths, but more importantly can also cause bats to remain in their roosts for longer. Artificial lighting can also cause significant impacts on other nocturnal species, most notably moths and other nocturnal insects. It can also result in disruption of the circadian rhythms of birds, reducing their fitness. Guidelines issued by the Bat Conservation Trust²⁵ should be considered while designing the lighting scheme. A simple process which should be followed where the impact on bats is being considered as part of a proposed lighting scheme. It contains techniques which can be used on all sites, whether a small domestic project or larger mixed-use, commercial or infrastructure development.
This includes the following measures:

Avoid lighting on key habitats and features altogether
There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety, such as some industrial sites with 24-hour operation. However, in the public realm, while lighting can increase the perception of safety and security, measurable benefits can be subjective. Consequently, lighting design should be flexible and be able to fully consider the presence of protected species

Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations
Where bat habitats and features are considered to be of lower importance or sensitivity to illumination, the need to provide lighting may outweigh the needs of bats. Consequently, a balance between a reduced lighting level appropriate to the ecological importance of each feature and species, and the lighting objectives for that area will need to be achieved.

The following are techniques which have been successfully used on projects and are often used in combination for best results;

- Dark buffers, illuminance limits and zonation
- Sensitive site configuration, whereby the location, orientation and height of newly built structures and hard standing can have a considerable impact on light spill
- Consider the design of the light and fittings, whereby the spread of light is minimised ensuring that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Consider the height of lighting columns. It should be noted that a lower mounting height is not always better. A lower mounting height can create more light-spill or require more columns. Column height should be carefully considered to balance task and mitigation measures. Consider no lighting solutions where possible such as white lining, good signage, and LED cats' eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times.
- Screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding
- Glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features
- Creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development.
- Dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

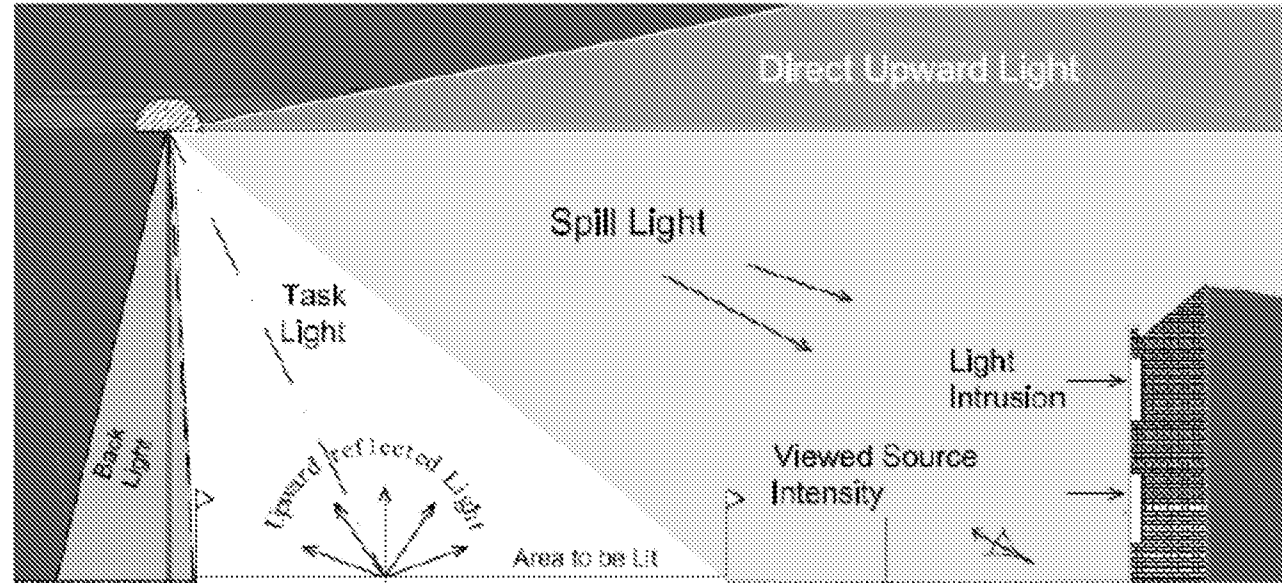
Demonstrate compliance with illuminance limits and buffers

- Design and pre-planning phase; It may be necessary to demonstrate that the proposed lighting will comply with any agreed light-limitation or screening measures set as a result of your ecologist's recommendations and evaluation. This is especially likely to be requested if planning permission is required.
- Baseline and post-completion light monitoring surveys; baseline, pre-development lighting surveys may be useful where existing on or off-site lighting is suspected to be acting on key habitats and features and so may prevent the agreed or modelled illuminance limits being achieved.

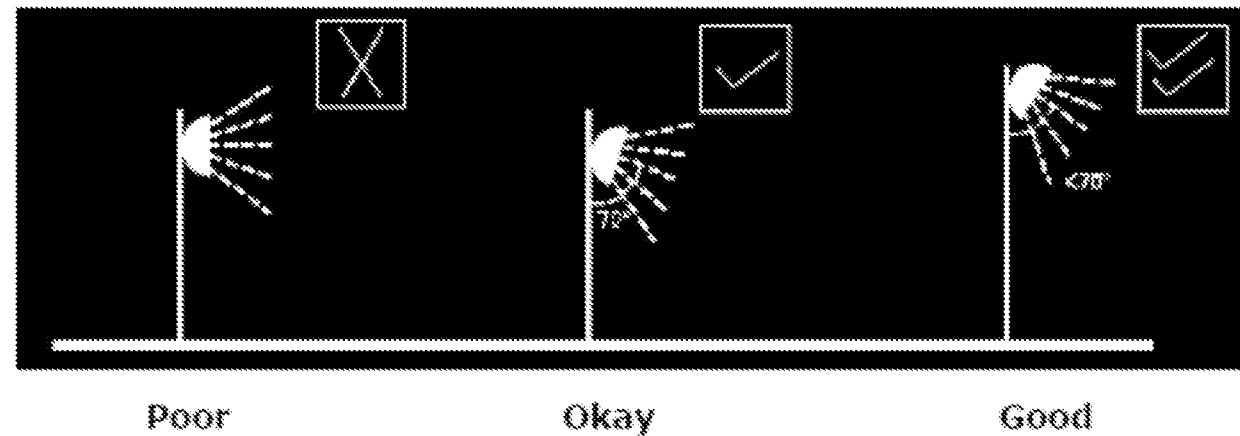
4. ILP Guidance Notes for the Reduction of Obtrusive Light 2011

In accordance with the Institute of Lighting Professionals (ILP) 'Guidance Notes for the Reduction of Obtrusive Light, 2011' the design of the external lighting will need to meet with the following requirements as shown below

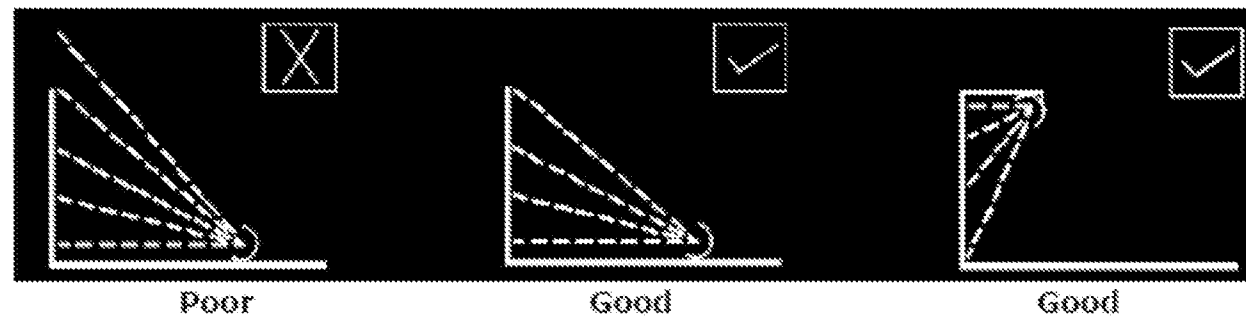
ILP – Types of Obtrusive Lights



ILP – Luminaire Aiming Angles



ILP – Façade Illumination



Planning policy requirements outlined in section 2 states the "Sky Glow (Upward Light Ratio) shall not exceed 5.0%"

To comply with this requirement, within ILP Table 2 shows the external lighting would be defined with an Environmental Zone E3.

ILP Table 1 also defines E3 as Suburban Surrounding with Medium District Brightness for Small towns or Suburban locations

ILP Table 1 – Environmental Zones

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 Towns Centres or Suburban Locations
E4	Urban	High District Brightness	Town/City Centres with High Levels of Night Activity

ILP Table 2 – Obtrusive Light Limitations for External Lighting Installations

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers						
Environmental Zone	Sky Glow ULR [Max %]	Light Intrusion (Into Windows) Ev [Lux]		Luminaire Intensity I [Candelas]		Building Luminance Pre-Curfew
		Pre-Curfew	Post-Curfew	Pre-Curfew	Post-Curfew	Average L[cd/m²]
E0	0	0	0	0	0	0
E1	0	2	0	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	

Therefore in accordance with ILE tables 1 and 2, Hampton Quay development has been classed with having an environmental zone of E3.

5. Lighting Design Criteria

The primary objectives of the external lighting scheme will be:

- To enable persons to safely travel around the development using the footpaths provided.
- To enable safe circulation of vehicles and pedestrians around the development using the roadways provided.

To achieve the above, the design of the external lighting for the proposed development will be developed in accordance with the following CIBSE guidelines and British Standards including:

- Chartered Institute of Building Services Engineers (CIBSE), Lighting Guide 6, The External Environment (LG6)
- BS EN 12464-1:2014 Lighting of work places – Indoor work places
- BS EN 12464-2:2014 Lighting of work places – Outdoor work places
- BS 5489-1:2013 Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas.
- BS EN 13201-2:2015 Road Lighting, Part 2 Performance Requirements.
- ILP Guidance Notes on the Reduction of Obtrusive Light 2011.

CIBSE LG6 and BS EN 12464 Pts 1 & 2 Design Requirements

Area	Maintained Illuminance (Lux)	Uniformity (Uo)
Walkways exclusively for pedestrians	5 Lux	0.25
Public Car Parks (In Doors)	75 Lux	0.4

Children's Play Area Lighting Design Requirements

There are no definitively CIBSE guidelines for defining the recommended light level for children's play area.

On previous projects with external children's play areas CIBSE have advised:

For outdoor training, general play and non-competitive football, LG4 recommends 75 lux. In my opinion, this is most probably the lowest acceptable illumination level

BS 5489-1:2013 Code of Practice for Road Lighting Design Requirements

The general design principles will include the following:-

- Lighting directed downwards wherever possible
- Designed to minimise the spread of light near to or above the horizontal
- Designed to the correct standard for the task
- Main beam angle of all lights kept below 70 degrees
- Directed to minimise and preferably avoid light spillage onto neighbouring properties
- To be most efficient taking into account cost, energy use and purpose.
- Compliant with British Standards and other guidance (listed above)

The lighting design concept for the development is to both provide amenity lighting for the safe movement of vehicle traversing the site and also to provide safe and sufficiently illuminated passage for pedestrians to move around the site.

BS 5489 - Design Process

Table A5 – Lighting Classes for Subsidiary Roads with a typical Speed of Main User $v \leq 30$ mph

Traffic Flow	Lighting Class			
	Ambient Luminance Very Low (E1)	Ambient Luminance Low (E2)	Ambient Luminance Moderate (E3)	Ambient Luminance High (E4)
Busy	S3 or P3	S3 or P3	S2 or P2	S2 or P2
Normal	S4 or P4	S4 or P4	S3 or P3	S3 or P3
Quiet	S5 or P5	S5 or P5	S4 or P4	S4 or P4

Note BS 5489 defines Quiet Traffic Flow as:

Quiet traffic flow refers to areas where the traffic usage is to a level equivalent to a residential road mainly associated with the adjacent properties on other equivalent roads accessed from this road

Table A7 – Variation of maintained lighting level with S/P ratio of Light Source

Values in Lux		
Lighting Class	S/P ratio = 2 and $R_a \geq 60$ (e.g. Some types of cool white compact fluorescent or LED)	
	E ave	E min
S4 or P4	3.4 Lux	0.7 Lux

Note

Typical LED street lighting lanterns on the market with a colour temperature of 4000K have an SP ratio of 1.6.

BS 5489-1 Design Requirements

Type of Area and Usage	Maintained Illuminance (Lux)	Uniformity (U_o)
Light Traffic e.g. Parking areas of shops, terraced and apartment houses; cycle parks	5 Lux	0.25
Road Lighting	3.4 Lux	0.2

6. Lighting Strategy

In general all external light fittings will be controlled by a combination of photocell and time clock control with the facility for override where needed.

To comply with Planning requirement “*Light intrusion into residential windows shall not exceed 10 Lux between 07.00 and 21.00 hours and 5 Lux between 21.00 and 07.00 hours, measured as Vertical Illuminance (EV) normal to glazing.*” will be achieved by photocell control to allow luminaires to be held off during sufficient levels of natural sunlight and time clock control to allow specific areas such as the children’s play areas to have increased lighting between 07.00 and 21.00 hours and reduced lighting between 21.00 and 07.00 hours.

Below ground car parks will have reduced light levels when unoccupied and increased lighting sensed by presence detection when cars are accessed.

In general lighting will be in use throughout all hours of darkness for safe circulation and security.

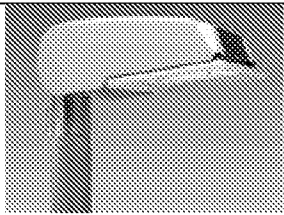
Any additional lighting such as aesthetic or feature lighting to development and communal areas will be further controlled by time-clock whereby it would be deactivated during periods of lower activity, e.g. 21.00-0700

There is no current requirement for the design of the external lighting to comply with Secure-By-Design policy requirements

7. Proposed Lighting Fittings

Entrance Road Way and External Car Park Lighting Areas

Proposed lighting to the entrance road and to the residential external car parking areas will consist of column mounted LED light fittings. Light fittings will be IP65 rated with die cast aluminium body and powered coated to protect against the environmental conditions. Quantities of light fittings required to achieve the design light level will be determined at detailed design stage.

Entrance Road Ways and External Car Park Areas		
Proposed Light Fitting	Details	Image
Reference	Type A	
Manufacturer	THORN	
Name	CiviTEQ	
Lamp Type	LED	
Mounting Arrangement	Column Mounted	
Control	Integral Photocell	

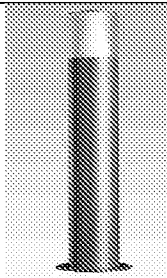
Covered Car Parking Areas

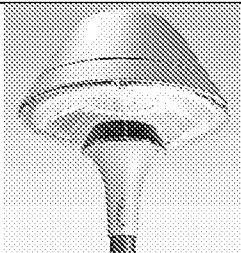
Proposed lighting to covered car parking areas will consist of surface mounted, vandal resistant, IP65, impact and moisture resistant, high performance LED type luminaires. Quantities of light fittings required to achieve the design light level will be determined at detailed design stage.

Covered Car Parking Areas		
Proposed Light Fitting	Details	Image
Reference	Type B	
Manufacturer	THORN	
Name	Aquaforce Pro	
Lamp Type	LED	
Mounting Arrangement	Surface Mounted	
Control	Integral Microwave Sensor	

Pedestrian Walkway Areas

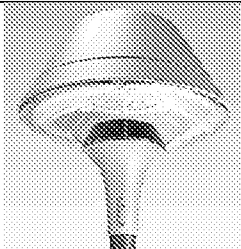
Proposed lighting to pedestrian walkway areas will consist of a combination of vandal resistant, IP65, high performance LED bollard type luminaires and column mounted luminaires. Quantities of light fittings required to achieve the design light level will be determined at detailed design stage.

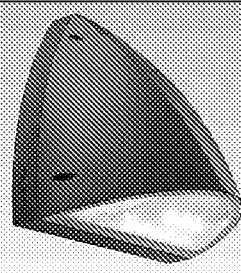
Pedestrian Walkway Areas		
Proposed Light Fitting	Details	Image
Reference	Type C	
Manufacturer	THORN	
Name	D_CO	
Lamp Type	LED	
Mounting Arrangement	Bollard	
Control	Photocell and Time Clock Controlled	

Pedestrian Walkway Areas		
Proposed Light Fitting	Details	Image
Reference	Type D	
Manufacturer	THORN	
Name	Plurio	
Lamp Type	LED	
Mounting Arrangement	Column Mounted	
Control	Integral Photocell	

Children's Play Areas(s)

Proposed lighting to children's play areas will consist of a combination of vandal resistant, IP65, high performance LED column mounted luminaires and wall mounted luminaires. Quantities of light fittings required to achieve the design light level will be determined at detailed design stage.

Children's Play Area(s)		
Proposed Light Fitting	Details	Image
Reference	Type E	
Manufacturer	THORN	
Name	Plurio	
Lamp Type	LED	
Mounting Arrangement	Column Mounted	
Control	Time Clock Controlled	

Children's Play Area(s)		
Proposed Light Fitting	Details	Image
Reference	Type F	
Manufacturer	THORN	
Name	Piazza II	
Lamp Type	LED	
Mounting Arrangement	Surface Wall Mounted	
Control	Photocell and Time Clock Controlled	

8. Summary

This report outlines the external lighting design requirements to meet with local planning policy requirements.

In general the external lighting detailed design will need to achieve the following design light levels

Area	Lux Level	Uniformity
Pedestrian Walkways	5 Lux	0.25
Children's Play Areas (0700 – 2100)	75 Lux	0.4
Below Ground Car Parking	75 Lux	0.4
Road Lighting (Quiet Roadway)	3.4 Lux	0.2
External Car Parking	5 Lux	0.25

In accordance with Planning Policy requirements, the external lighting design statement has been developed within the parameters of environmental zone E3.

At detailed design stage, the lighting designer will select external luminaires which have tight optical control and emit light in the downwards direction only thereby reducing the upward lighting component.

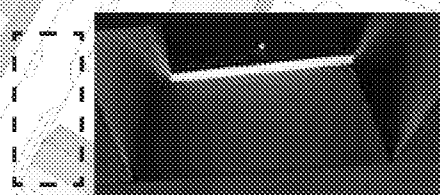
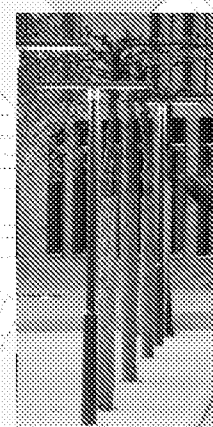
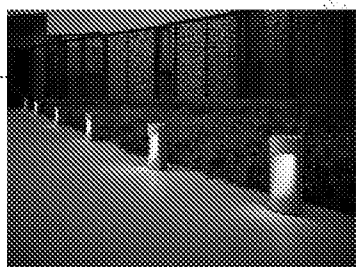
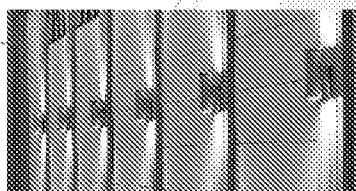
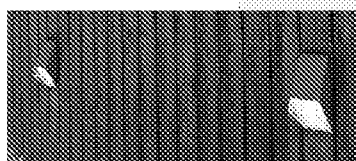
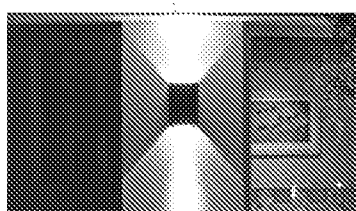
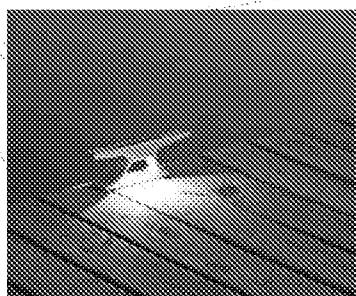
Consideration will also need to be given to selecting light fittings which have low light pollution, low energy usage, low maintenance requirements and have excellent lighting control optics for increased efficiency and minimal carbon footprint.

The lighting designer will also need to consider points outlined within the ECOLOGICAL IMPACT ASSESSMENT for lighting design to the development

On completion of the detailed external lighting design, the scheme will be submitted together with horizontal and vertical illuminance calculations to the local planning authority for approval.

Appendix A – Concept Drawings

Drawing Produced By	Title	Drawing Number
STOLON STUDIO	Proposed Site Plan with Lighting Brief	030-S2-SK017
SVM Building Services Design	Electrical Services - External Lighting	191185-E3001



Character Area:
The Saltings

~~Character Area:~~ Riverside

Character Area:
Bridge Reach

KEY

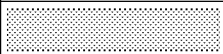
- 5m high stanchions
- Soft lighting to lower level car parking
- Footprint of buildings lighting around perimeter taking into account impact of bat boxes.
- Entrance lighting to buildings
- Low level bollards and accent up-lighting
- Low level soft lighting along main pathways
- Motion lighting for moorings and houseboats
- Wall-lighting

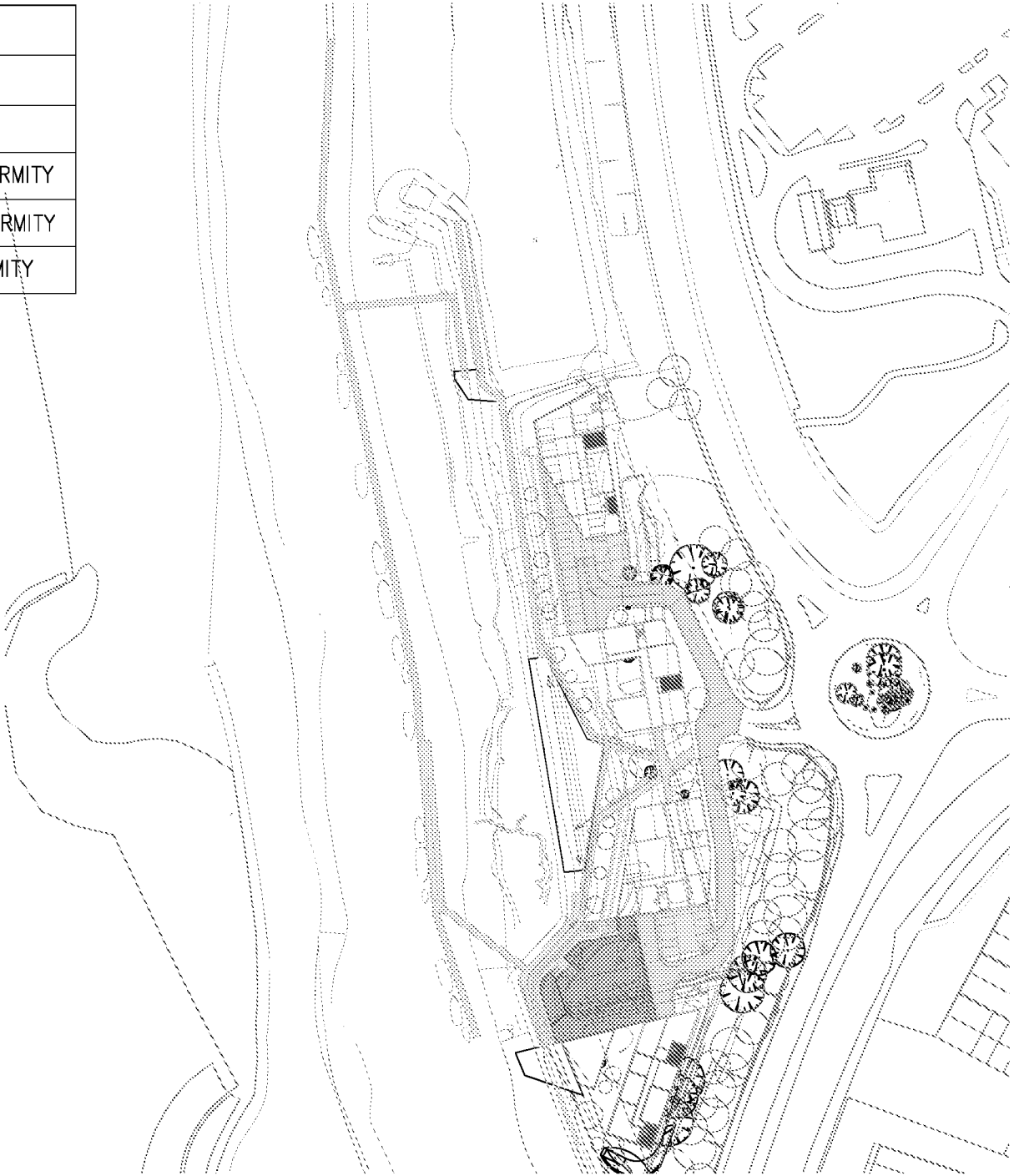
Scale 1:1000 at A1
0m 10m 20m 30m 40m 50m

1. No divergences to be noted by the connector before work is completed.
2. All dimensions to be verified by the connector before work is completed.
3. All related to be notified immediately if any discrepancies are shown.
4. All the drawing is to be approved by Architect/Engineer, Inc. *Completed*
5. All details to be in accordance with relevant British Standards and British Standards Institution Publications and specifications.
6. True and correct is the property of Shauhin Studio Ltd., copyright reserved. This drawing is to be used, reproduced, retained or disposed of by any unauthorised person or other, without or without written permission, is a breach of contract and/or criminal offence.

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Do Not Scale. Work to Figured Dimensions Only

LEGEND	
SYMBOL	DESCRIPTION
	ROAD WAY – 3.4 LUX, 0.2 UNIFORMITY
	PEDESTRIAN WALK WAY – 5 LUX, 0.25 UNIFORMITY
	CHILDREN'S PLAY AREA – 75 LUX, 0.4 UNIFORMITY
	EXTERNAL CAR PARK – 5 LUX, 0.25 UNIFORMITY



NOTES

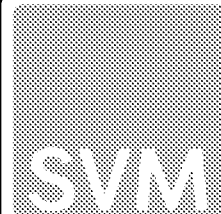
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL & STRUCTURAL DRAWINGS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT BUILDING SERVICES DRAWINGS & THE RELEVANT SECTIONS OF THE SPECIFICATIONS & SCHEDULES.
3. THIS DRAWING IS NOT TO BE SCALED.
4. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	BY	CK
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Scale at A3:	Date:	Designed:	Drawn:	Design:	GE
1:2000	DEC 19	GE	ES	CAD CK:	ES

Drawing No:	Rev:
191185-E3001	-

INFORMATION



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STOLON STUDIO

Project:

HAMPTON QUAY

Title:

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EXTERNAL LIGHTING**