

**Chapel Gate  
Basildon**

**March 2021**

**On behalf of  
Sempra Homes Limited**

**External Artificial Lighting Assessment**

By Calfordseaden LLP

K200432

**REV: 02**

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## Project Revision Sheet

### External Artificial Lighting Assessment

<b>Rev.</b>	<b>Date</b>	<b>Summary of changes</b>	<b>Author(s)</b>	<b>Approved</b>
00	08.03.21	DRAFT VERSION	Afzaal Arshad	
01	24.03.2021	REVISED VERSION – ECOLOGY COMMENTS	Afzaal Arshad	
02	31.03.2021	REVISED VERSION – ARCHITECTS COMMENTS	Afzaal Arshad	

## 1.0 INTRODUCTION

This External Lighting statement is to be submitted in support of the full planning application for Chapel Gate, Basildon.

This report demonstrates the effect of the proposed artificial lighting technologies for the roads, footpaths and parking spaces on the project on behalf of Sempra Homes Limited. The design seeks to limit the impact of artificial lighting by ensuring a well thought out scheme in compliance with relevant lighting guides and codes of practice.

## 2.0 SITE SPECIFICS

### Site description

The proposed development, based on the current information as provided by BPTW Architecture, shall comprise the construction of new residential accommodation spread across 5 No flatted buildings and 16 No houses inclusive of area within the buildings' footprint/internal envelope:

- 217 No. residential flats
- 16 No. of houses
- Plant space and Landlords areas
- External landscape areas

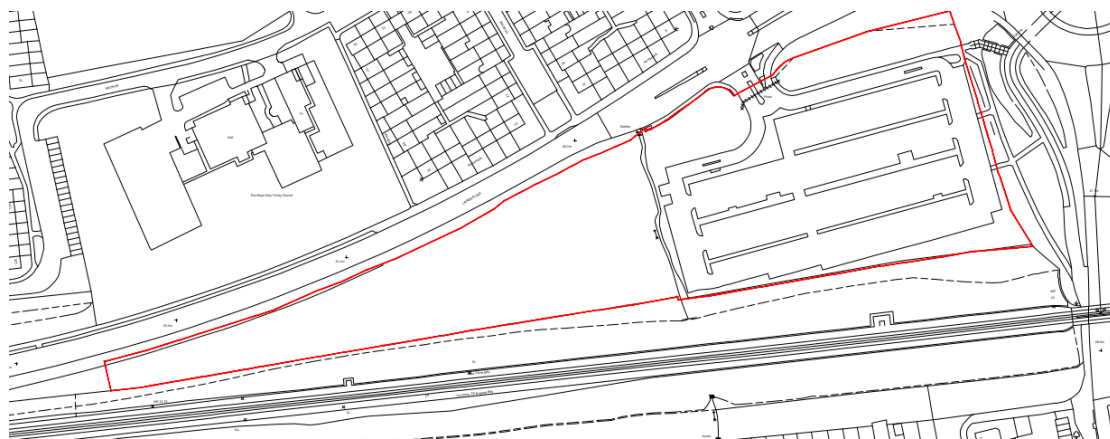


Figure 1 - Site Location Plan



Figure 2 - Site Ground Floor Plan

### 3.0 PLANNING POLICY & BEST PRACTICE

This report is designed to demonstrate that the external artificial lighting shall be compliant with any relevant planning guidance, regulations, and best practice guides. The following section summarises the design criteria adhered to as part of the lighting study.

#### 3.1 Secure by Design

- All street lighting for both adopted highways and footpaths, private estate roads and footpaths and car parks must comply with BS 5489-1:2013.
- Landscaping, tree planting and lighting schemes shall not conflict with each other.
- The overall uniformity of light for an SBD development is expected to achieve the criteria set out in BS5489-1:2013.
- The colour rendering qualities of the lamps used in an SBD development should achieve a minimum of at least 60Ra (60%) on the Colour Rendering Index.

#### 3.2 CIBSE Lighting Guide 6 – The Exterior Environment

*Security Lighting: it is essential in an area that is tempting to burglars and vandals and that tends to be unoccupied at night. Much security lighting will be achieved by good street lighting if it is borne in mind that back alleys should also be adequately lit.*

Our design proposal has been calculated in accordance with the above criteria (where applicable, and, based on current proposals we are more than the requirements set out by BS 5489-1:2013 whereby it is required that the scheme achieves an average illuminance of 5Lux and a Uniformity of 0.15.

### 3.4 Institute of Lighting Professionals: GN01:2011

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 night-time activity

Figure 3 – Table 1 Environmental Zones for exterior lighting control

Environmental Zone	Sky Glow ULR [Max %] <sup>(1)</sup>	Light Intrusion (into Windows) $E_v$ [lux] <sup>(2)</sup>		Luminaire Intensity $I$ [candelas] <sup>(3)</sup>		Building Luminance Pre-curfew <sup>(4)</sup>
		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*)	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	25

Figure 4 - Table 2 Light Limitations (to be read in conjunction with Table 1)

As Chapel Gate is a residential development located amongst other existing residential developments it can be classified as E3 Suburban.

#### 4.0 FACTORS TO BE TAKEN INTO CONSIDERATION

Factors being addressed in the external artificial lighting design:

- Vandal resistant lighting.
- Increased lighting levels around high-risk areas
- Compliance with secure by design, lighting design guides and Borough polices.
- Road access to car park, requiring to be lit and use defined.
- Negative impacts on nearby buildings.

## **5.0 PROPOSED LIGHTING ARRANGEMENT**

Due to the arrangement of the development external lighting needs to be provided to the external area. This will contribute towards achieving Secured by Design and CIBSE lighting guides standards.

The lighting shall generally consist of robust column mounted luminaires using fittings with controlled optics for road and path lighting and controlled flood lighting for general parking areas to create a uniform light effect across the site and the boundaries. Luminaires shall be carefully positioned to avoid obtrusive spill of lighting onto neighbouring properties. Generally, the lighting shall be selected such that the fittings naturally have a high level of horizontal light cut-off and a very low ULOR to comply with the Institute of Lighting Professionals (ILP) guidance of a ULOR lower than 5%.

## **6.0 OPERATION & MANAGEMENT**

All unadopted external artificial lighting shall electrically fed from local distribution cabinets and shall be controlled via a combination of photocells detectors and timeclock control. External columns shall be of a raise/lower hinged type with integral fused cut-out to ease maintenance and remove the requirement to lamp changes via raised platforms etc.

The development shall be subject to regular checks and works by the maintenance providers, and all faulty lamps shall be changed on behalf of the client.

**7.0 RESULTS**

The following figures illustrate the results of the lighting simulation.



Figure 5 – View of overall site

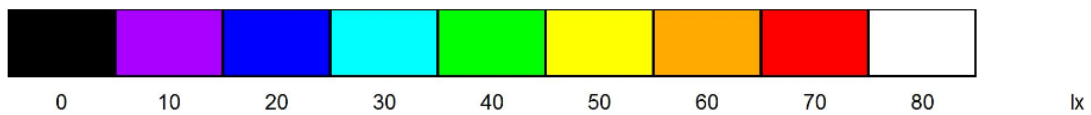
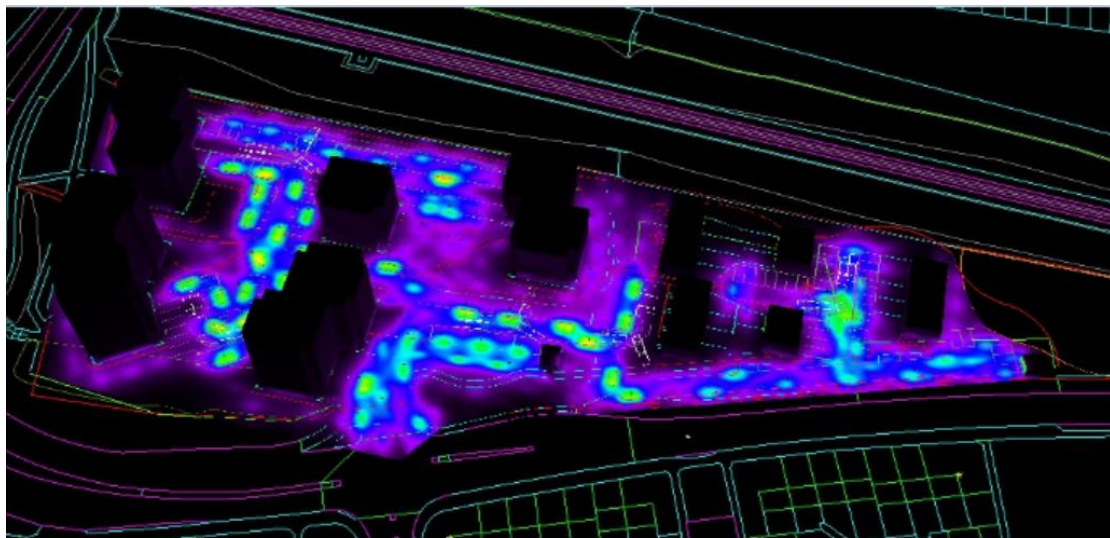


Figure 6 – View of overall site (with coloured lighting intensity levels)

Figures 5 and 6 illustrate the overall illumination lighting for the site. The lighting around the individual blocks is as indicated below.



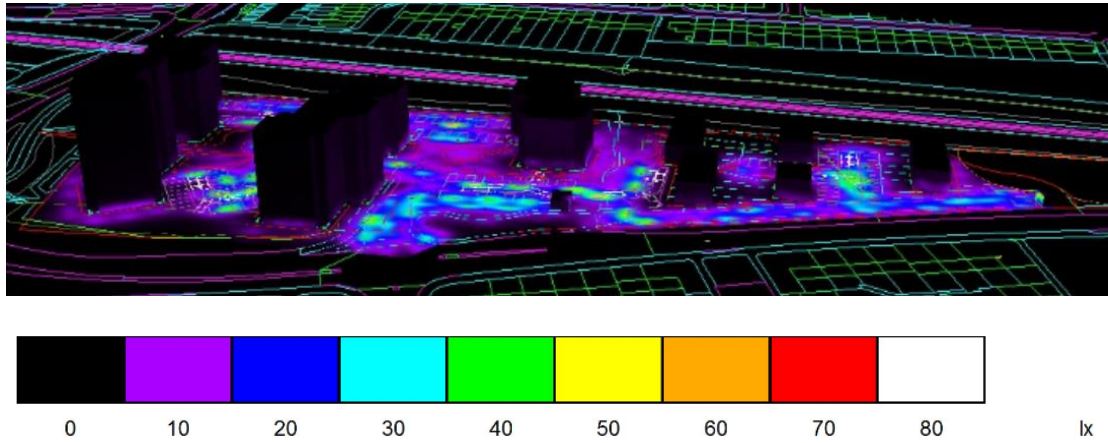


Figure 7 – Blocks and Houses elevation intensity levels

Figure 7 indicates lighting spill (in lux) on the apartment blocks and Houses of the site. This indicates the spill of light expected on to the adjacent building is equal to or less than indicated on Table 2.

Figure 3 & 4, table 1 & 2 indicate that for a zone E3 (suburban medium district brightness) the limit of light intrusion should not exceed 10 lux after 23.00hrs, which is achieved by careful positioning of columns and automatic lighting control.

The lighting around the block in figure 7 therefore complies with this requirement.





Figure 8 – Central spine route

This indicates the lighting along the roads, foot paths and parking spaces.

This indicates that the lighting throw onto the buildings is less than indicated on Table 2 and therefore complies with the lighting guide recommendations in figures 3 & 4.

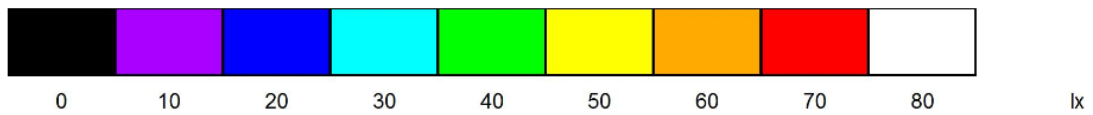
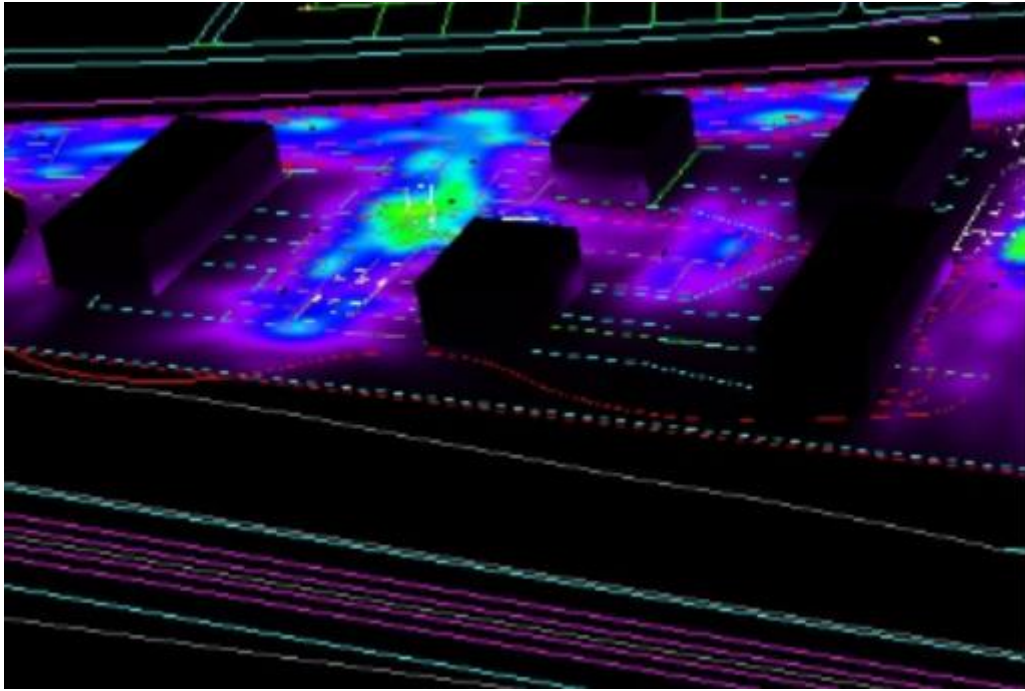


Figure 9 – Houses elevations of the site.

Again, this figure shows that there is limited light spill on to the façade of the buildings and that this does not exceed 10lux and therefore complies with the lighting guidance.

## 8.0 CONCLUSIONS

The final external lighting design is intended to complement the proposed landscaping solution, by utilising column mounted and wall mounted fittings to create an attractive lighting solution in accordance with all the above criteria. The effect of wall mounted fittings on flatted block entrance/exit, and on front of Houses entrance doors are not considered within report due to 0% upward light output ratio.

The design also addresses and take into consideration the following:

- **Illuminance/Brightness:** by exploring options with a greater amount of low powered fittings to create an even lighting level across the site which is fit for purpose and doesn't dazzle pedestrians or car users.
- **Reflectance/Light Spill:** selection and mounting of luminaires to avoid light spill in unwanted areas. The use of luminaires with filters and low ULOR to reduce obtrusive light onto neighbouring properties.
- **Uniformity:** by exploring options of low powered fittings carefully positioned which create a uniform lighting effect across the site reducing dark areas.
- **Colour Rendering:** All lamps/chips shall achieve a minimum of at least 60Ra (60%) on the Colour Rendering Index.
- **Lighting Control:** Lighting shall be controlled via a photocell detector and time-clock, programmed to operate during dusk to dawn.
- **Mitigation Measures:** any recommendations made by the appointed ecologist will be incorporated into the final lighting design, to ensure the lighting proposal do not adversely impact on any nearby habitats.

9.0 APPENDIX A - EXTERNAL LUMINAIRES

<p>X1</p>	<p><b>External Lighting</b> Column Mounted fittings</p>	<p>High-pressure die-cast aluminium IP66 Rating IK10 Rating Photo cell Time clock option. Part night switching. Sensor ready</p>	<p>DW WINDSOR  KIRIUM PRO</p>	
<p>X2</p>	<p><b>External Lighting</b> Wall mounted fittings on Block entrance/exits and in front of houses main doors.</p>	<p>Die-cast aluminium IP66 Rating IK10 Rating Photo cell option Time clock option.</p>	<p>DW WINDSOR  KIRIUM WALL KIRIUM PRO FAMILY</p>	

