

Lighting Report Vastern Road, Reading



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Issue Status: Planning Application

Project Number: 1108

Date: 12/03/2025

Client: Berkeley Homes

LB_1108_LR_01_Lighting Report_RevA

Project Ecologist Review

“I have reviewed the lighting report. The light temperature has been reduced to 2700k which is consistent with ILP guidance (Guidance Note 08/23: Bats and Artificial Lighting at Night).

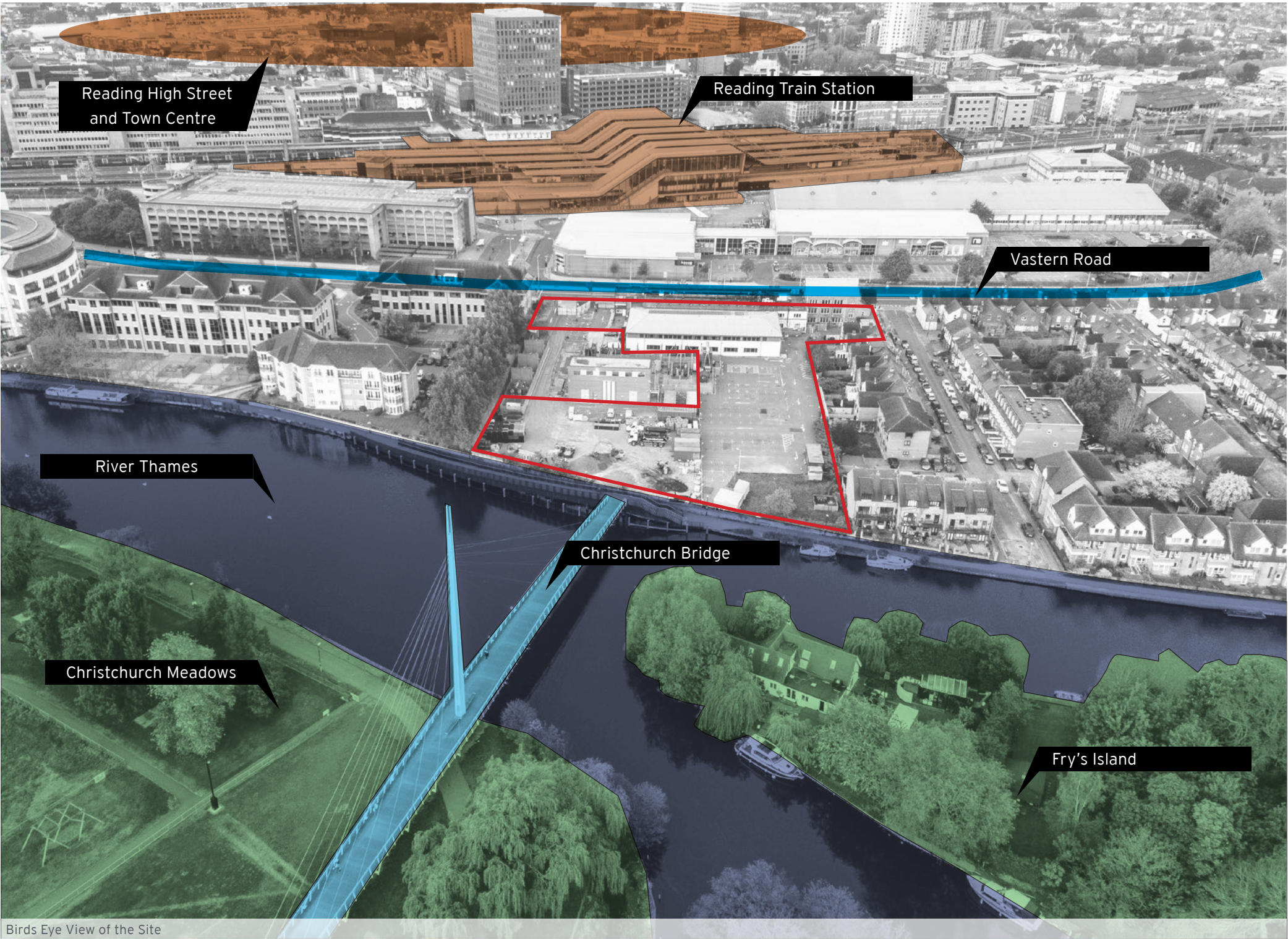
Lighting within the site has been directed downwards as demonstrated by the 3D lux images which show that pre and post curfew light levels above 2 lux are at a low height. This avoids significant light spillage to tree canopies, the river corridor and bird and bat boxes. Bird boxes have been moved higher up buildings to under eaves and on higher walls. Bat roosting features will be provided under roof tiles. I consider that light levels have now been reduced as far as possible and significant impacts to biodiversity have been avoided whilst meeting safety and security requirements.”

Iain Corbyn MCIEEM CEnv
Director and Principal Ecologist at Ecoconsult

04.03.2025

1. Introduction

1.1 Project Scope, Location and Context

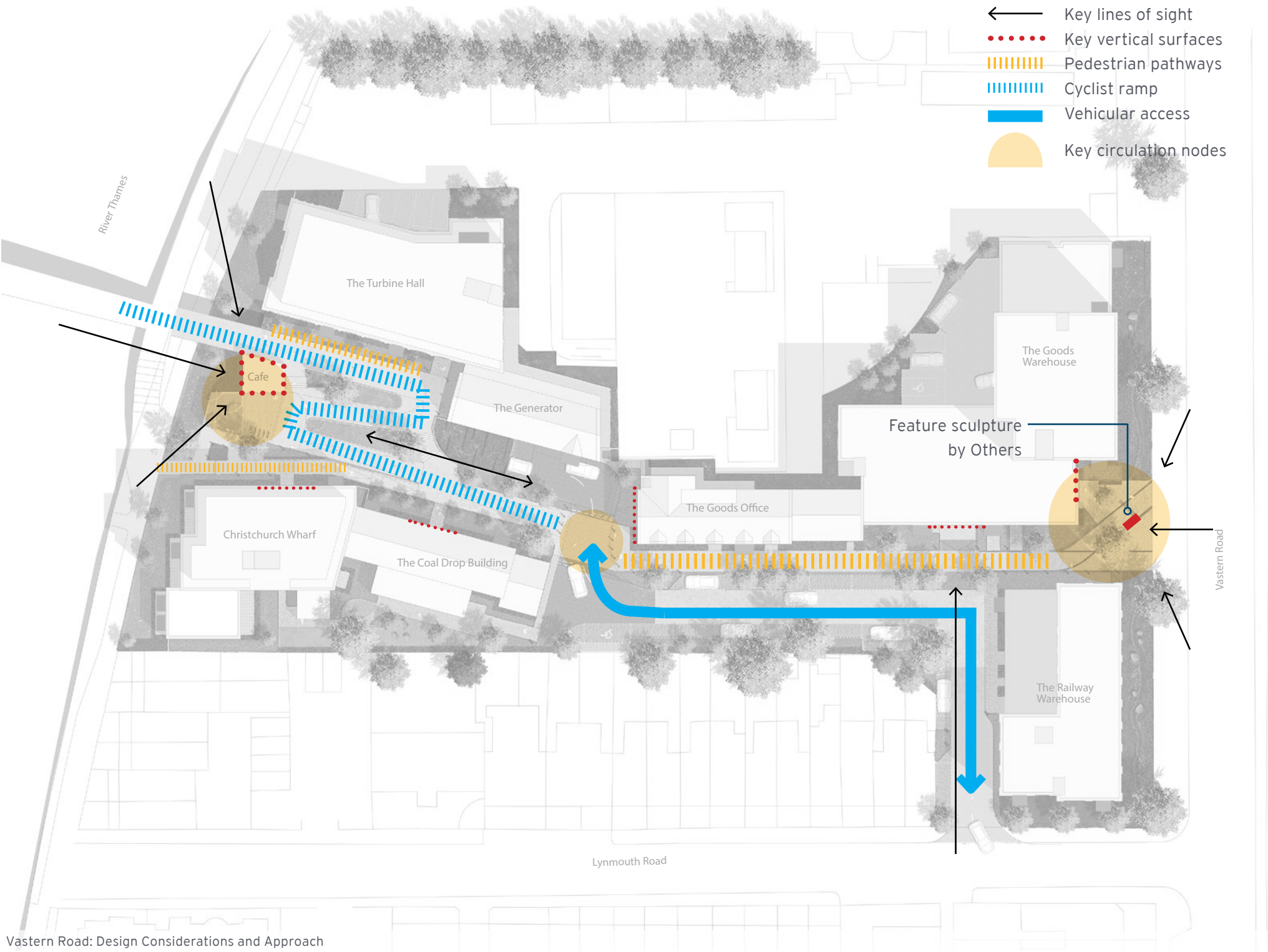


The following lighting report outlines Light Bureau's exterior lighting strategy for the planned Vastern Road development in Reading. The development's location provides the opportunity to create a direct connection for Christchurch bridge and the river Thames with the train station and town centre through the site. Therefore the design of the public realm in terms of circulation routes and entrance points would be key in enabling this connection.

The presented site-wide strategy aims to support the new development in activating the area and establishing a strong link between the town centre and the river while providing a comfortable and safe environment for its inhabitants. Special attention is paid to the close proximity of the river channel and its diverse ecosystem.

The report was prepared for approval of details reserved by conditions 32 and 45 in relation to permission LPA ref. 200188 / Appeal ref. APP/E0345/W/21/3276463 (granted on 17/03/2022) varied under Section 73 of the Town and Country Planning Act 1990 (as amended) application number 231673 (granted on 27/03/2024).

1. Introduction
1.2 Design Approach



A key consideration for the lighting design approach has been the use of minimal interventions to create a well illuminated safe environment that is also pleasant, unobtrusive and ecologically responsible.

We identified a few characteristic areas with their particular look and lighting needs:

Vastern Road Arrival Square - This is the first impression of the development when arriving from the city centre and train station. Exposed to spill light from the main road's high post top lighting it should create balanced ambience for the illuminated features to stand out and improve the impression of brightness without over illuminating the space. The **Avenue and pedestrian pathways** create the link between the city and river when crossing the development. They also offer the opportunity to slow down and enjoy the array of trees framing the pavements.

On the opposite side of the development's broad meandering **Bicycle Ramp** and stairs connect with the brightly illuminated Christchurch bridge. The **Garden Cafe and Riverfront** are located directly adjacent to the ecologically sensitive river area and therefore require a cautious approach with minimal or none lighting interventions.

The development is completed with **Vehicular Access** streets, parking as well as **Private Pathways** for access to the residential entrances. Following the principle to add minimal interventions the lighting concept for these spaces should be optimised to provide the necessary amenity lighting for a safe and comfortable environment while causing minimal light trespass and blending organically with the built environment.

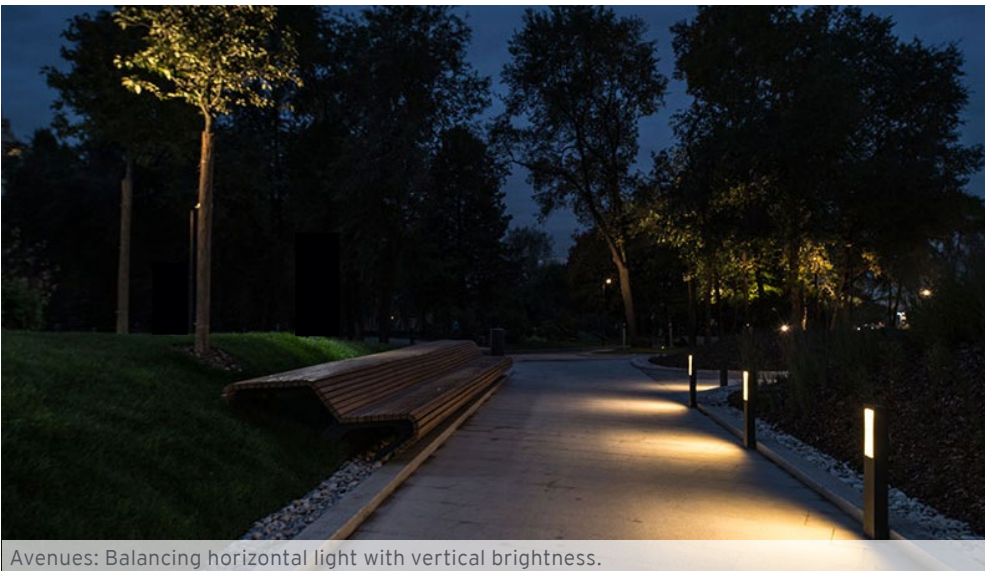
Vastern Road: Design Considerations and Approach

1. Introduction

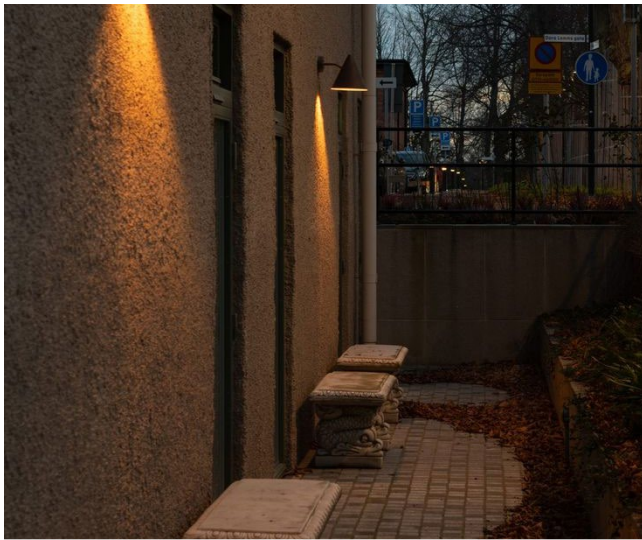
1.3 Inspiration



Arrival Square: Crating a balanced ambience for the illuminated features to stand out and improve the impression of brightness without over illuminating the space.



Avenues: Balancing horizontal light with vertical brightness.



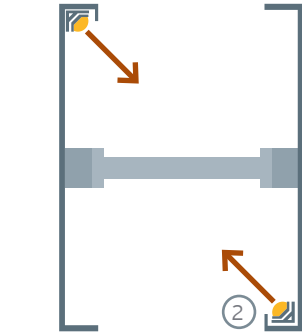
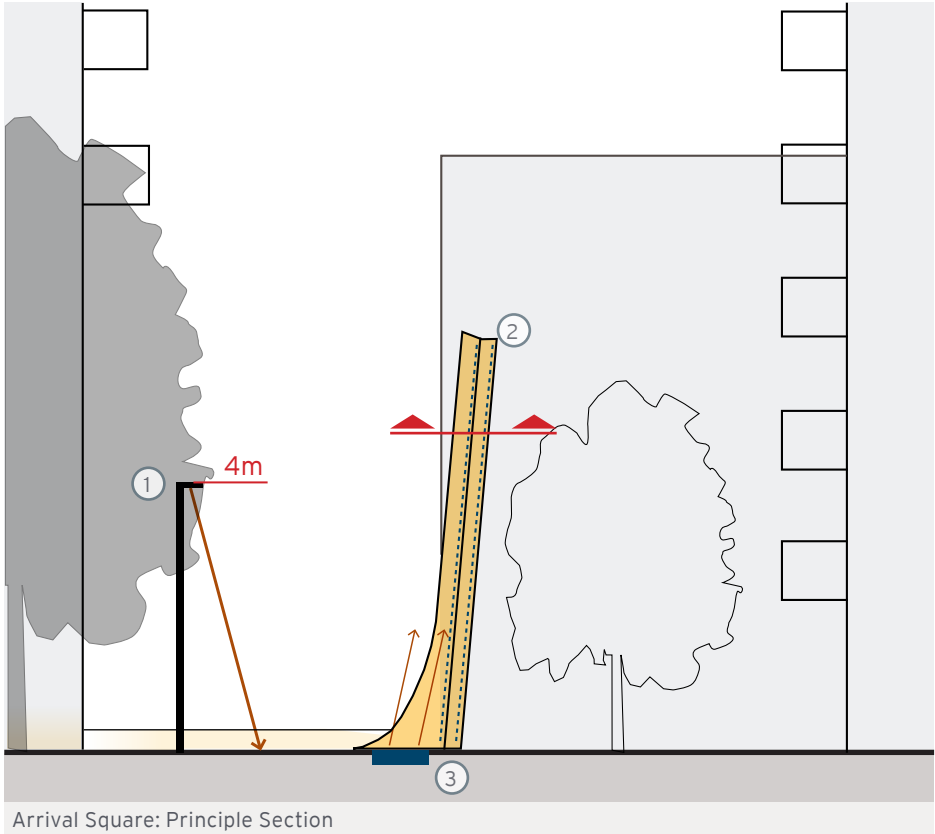
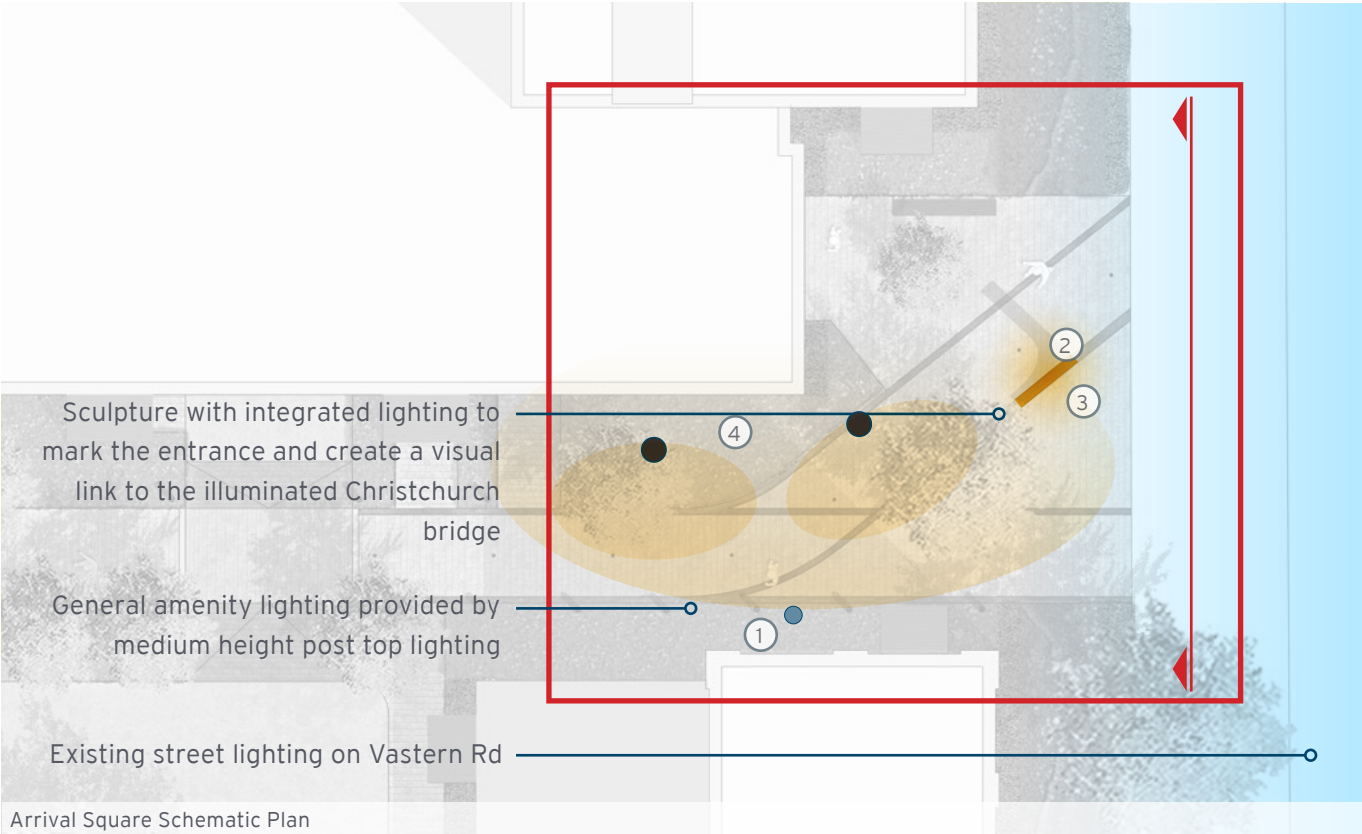
Garden Cafe: Discrete accents with minimal ecological impact.



Vehicular Access: Medium high light columns providing amenity lighting to the street and cycle ramp.

2. Lighting Design. Characteristic Areas

2.1 Vastern Road Arrival Square



Reference/Product: P01-B2/DWWindsor Daytona 450
 Description: 4m tall light column, high-performance post-top luminaire with rear shield.
 13W, 1620lm, 2700K and B2 street asymmetric optic.



Reference/Product: L02/ Ledflex Ultimo Neon
 Description: Flexible encapsulated linear luminaire for concealed integrated installation in sculpture.
 12W/m, 672lm/m, 2700K, dot-free diffuser.



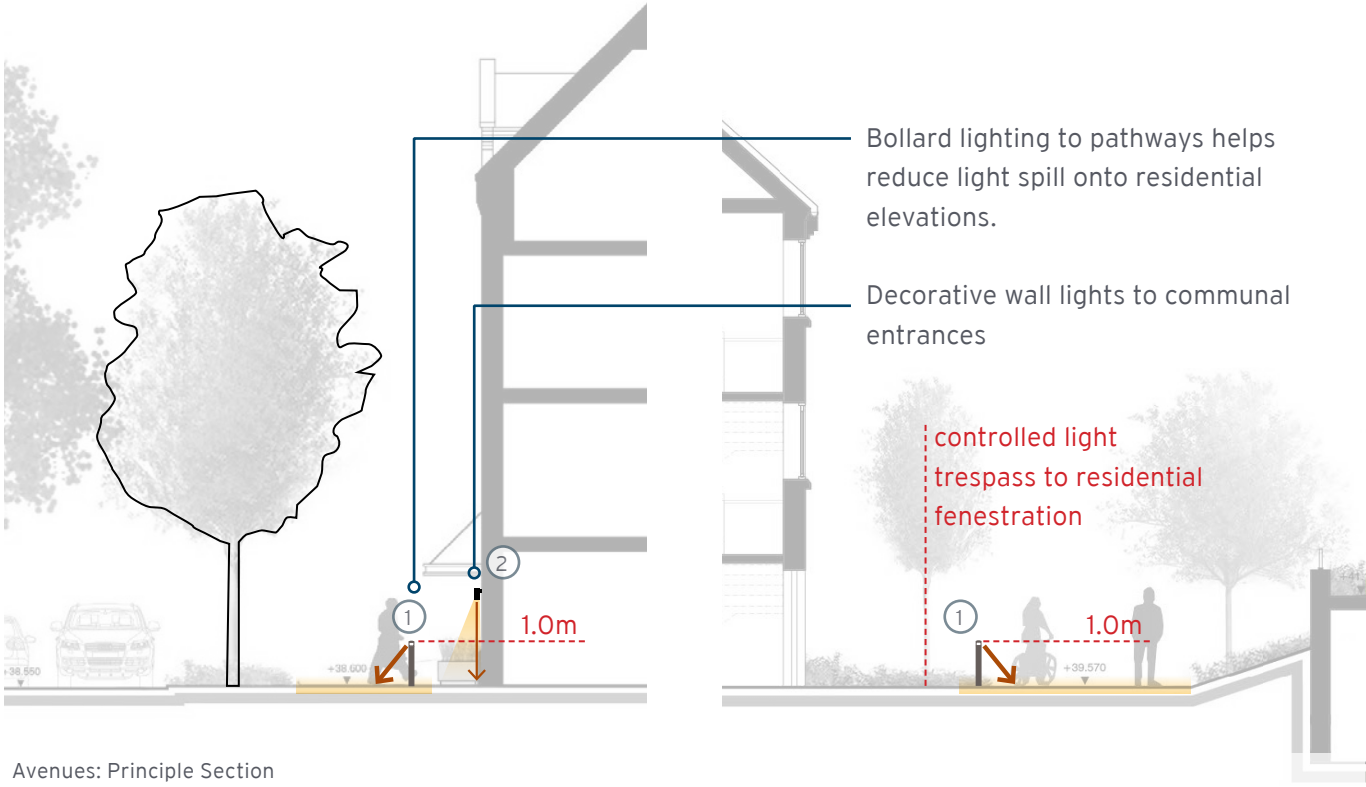
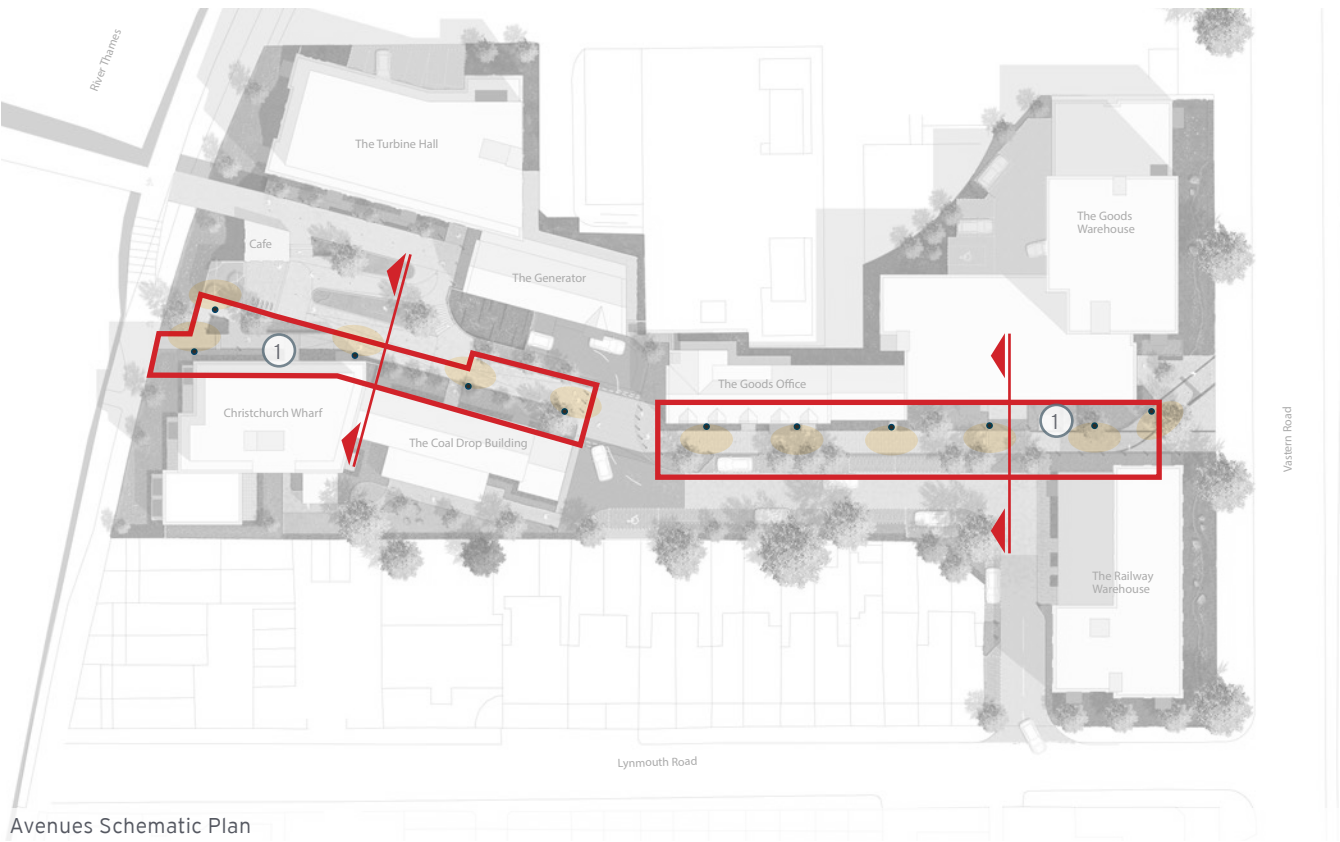
Reference/Product: U02 / Lightgraphix LD34
 Description: Ground recessed linear LED uplight with precise optical distribution and integrated glare shield.
 12W, 814lm, 2700K, narrow beam angle TBC.



Reference/Product: B01/DW Windsor Kirium Pro 200 Bollard
 Description: 1m tall Lighting bollard with high vandal and impact resistance and low glare shielded optic.
 20W, 2100lm, 2700K, narrow asymmetric optic.

2. Lighting Design. Characteristic Areas

2.2 The Avenues



Reference/Product: B01/DW Windsor Kirium Pro 200 Bollard
 Description: 1m tall Lighting bollard with high vandal and impact resistance and low glare shielded optic. 20W, 2100lm, 2700K, narrow asymmetric optic.



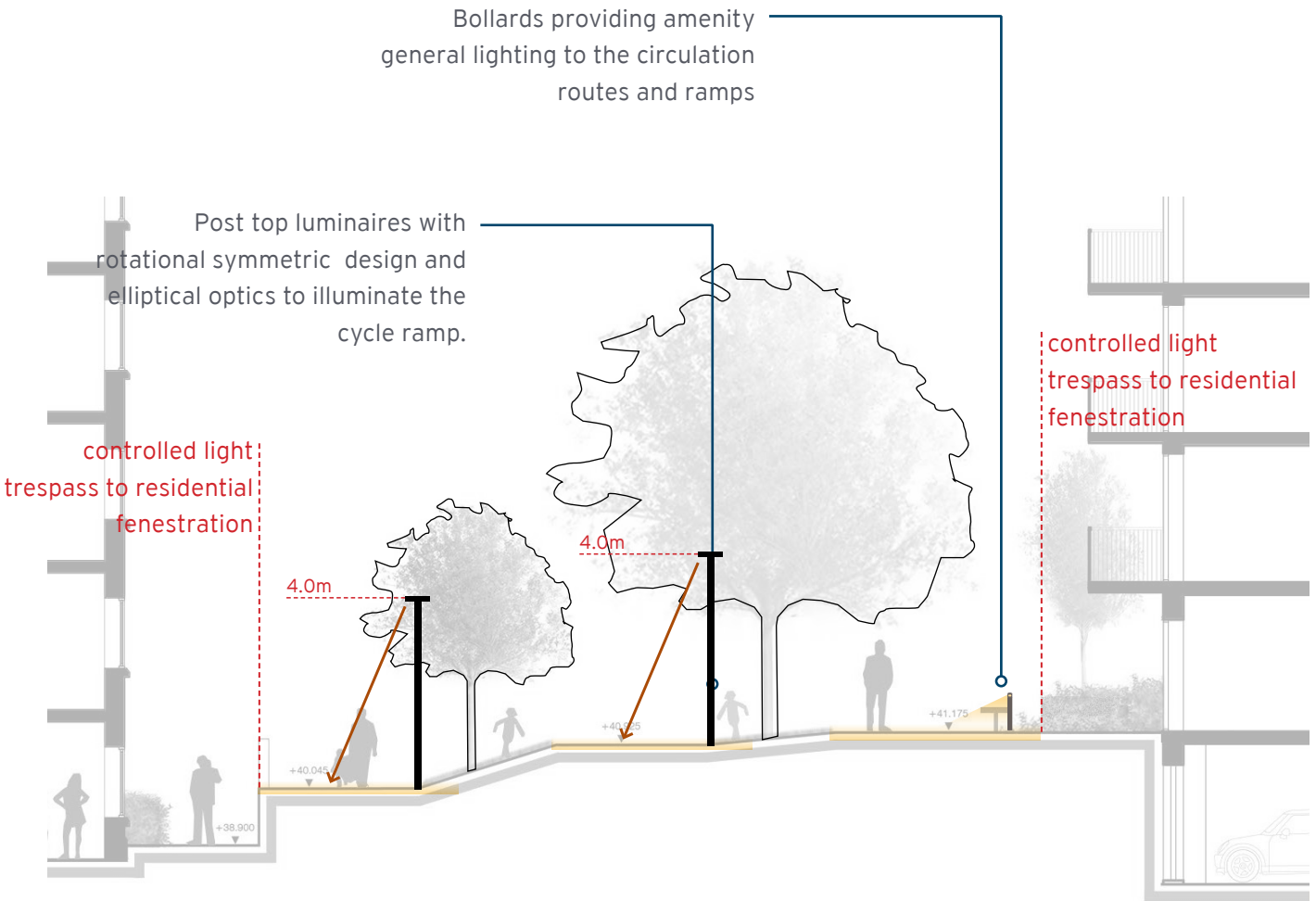
Reference/Product: W01, W02/ Plant from Zero Lighting
 Description: Decorative wall mounted light with downward light distribution and shielded top. 10W, 822lm, 2700K

2. Lighting Design. Characteristic Areas

2.3 Bicycle Ramp and Stair Access



Bicycle Ramp and Stair Access Schematic Plan



Bicycle Ramp and Stair Access: Principle Section

①



Reference/Product: B01/DW Windsor Kirium Pro 200 Bollard
Description: 1m tall Lighting bollard with high vandal and impact resistance and low glare shielded optic. 20W, 2100lm, 2700K, narrow asymmetric optic.

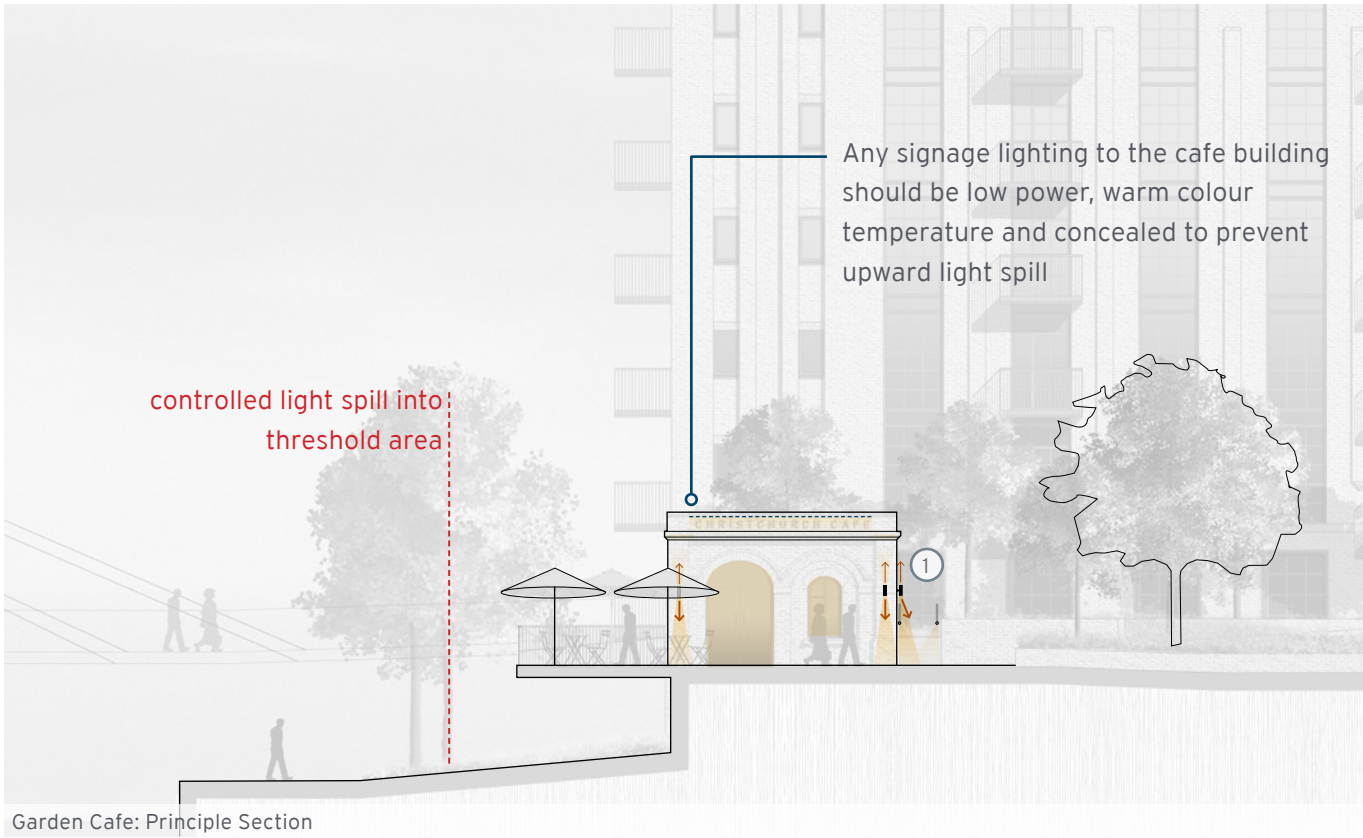
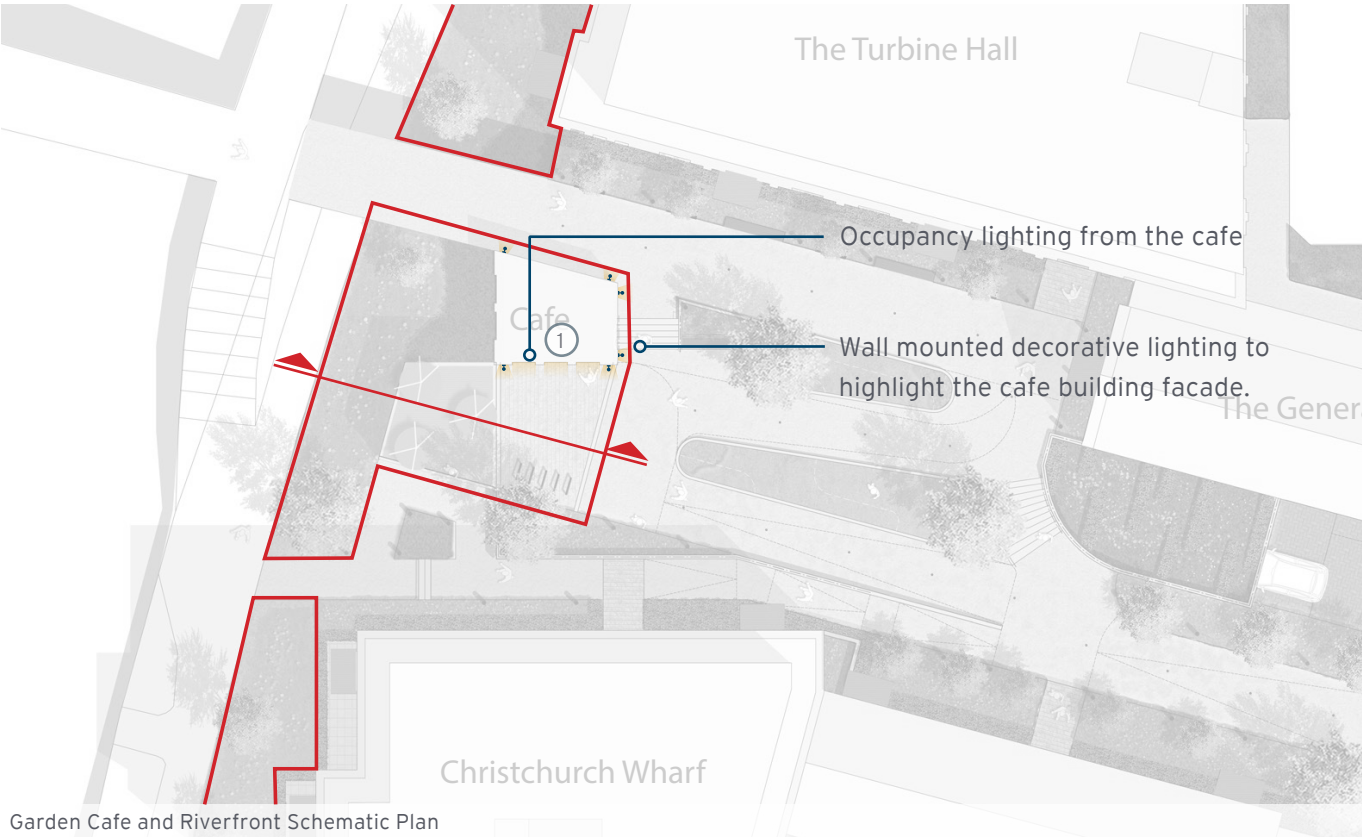
②



Reference/Product: P02-B1, B3/ DW Windsor Sephora 450
Description: 4m tall light column, high-performance post-top luminaire. 27W, 3463-3490lm, 2700K and B1 or B3 elliptical optic.

2. Lighting Design. Characteristic Areas

2.4 Garden Cafe and Riverfront



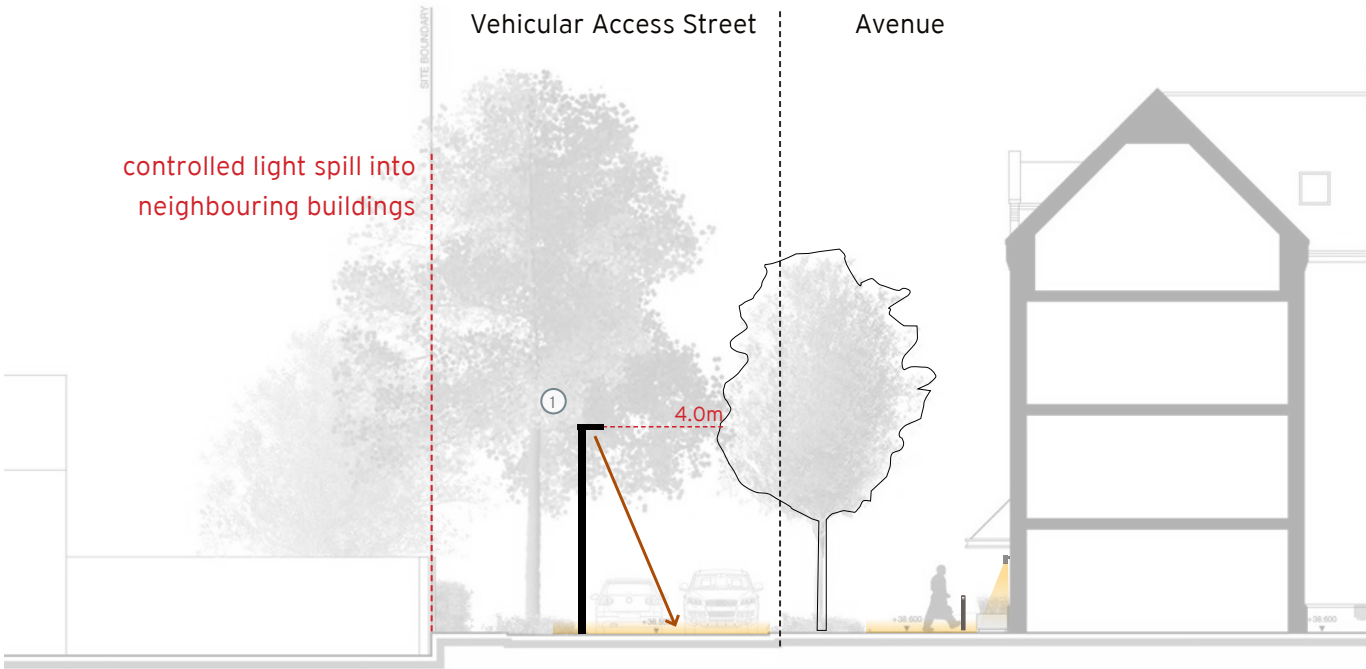
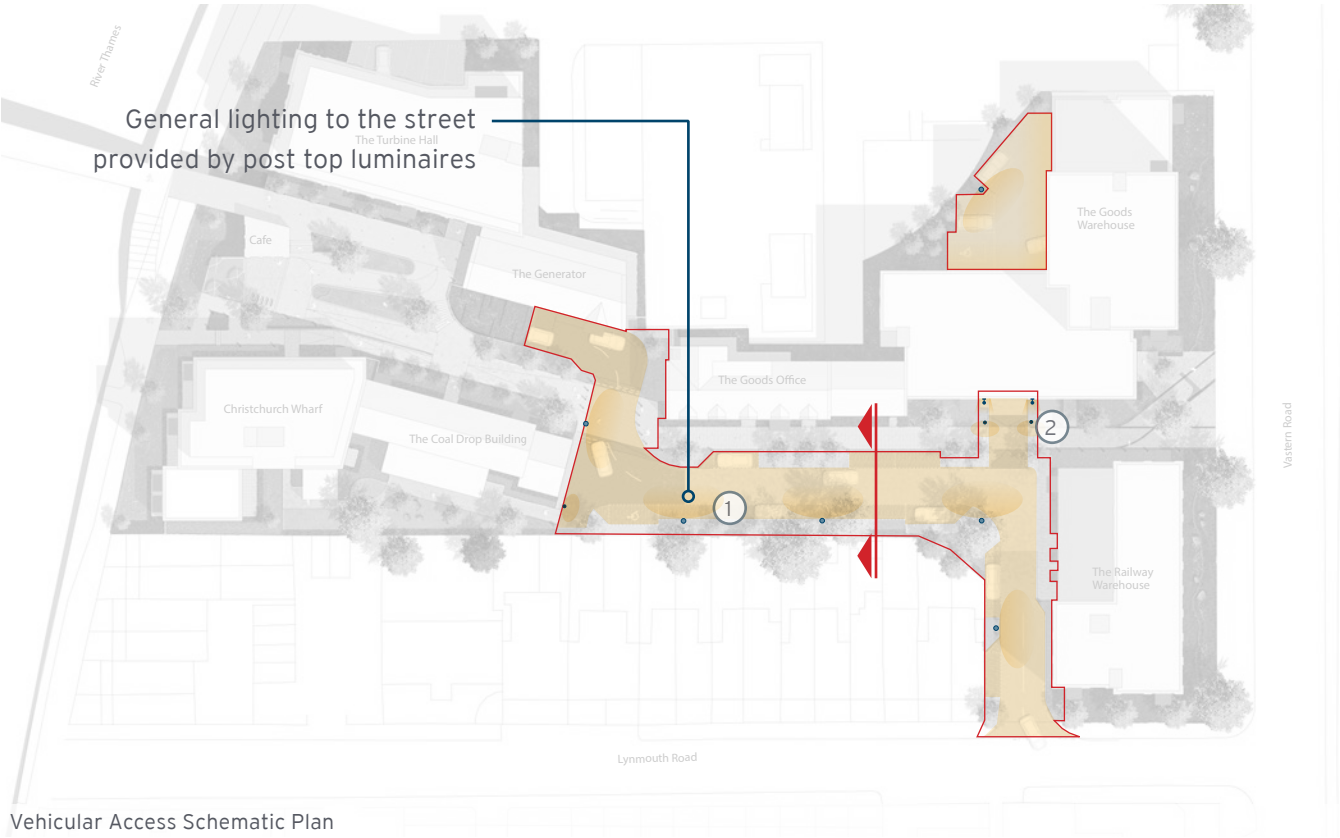
①



Reference/Product: W03/ Plant from Zero Lighting
Description: Decorative wall mounted light with downward light distribution and shielded top.
10W, 822lm, 2700K

2. Lighting Design. Characteristic Areas

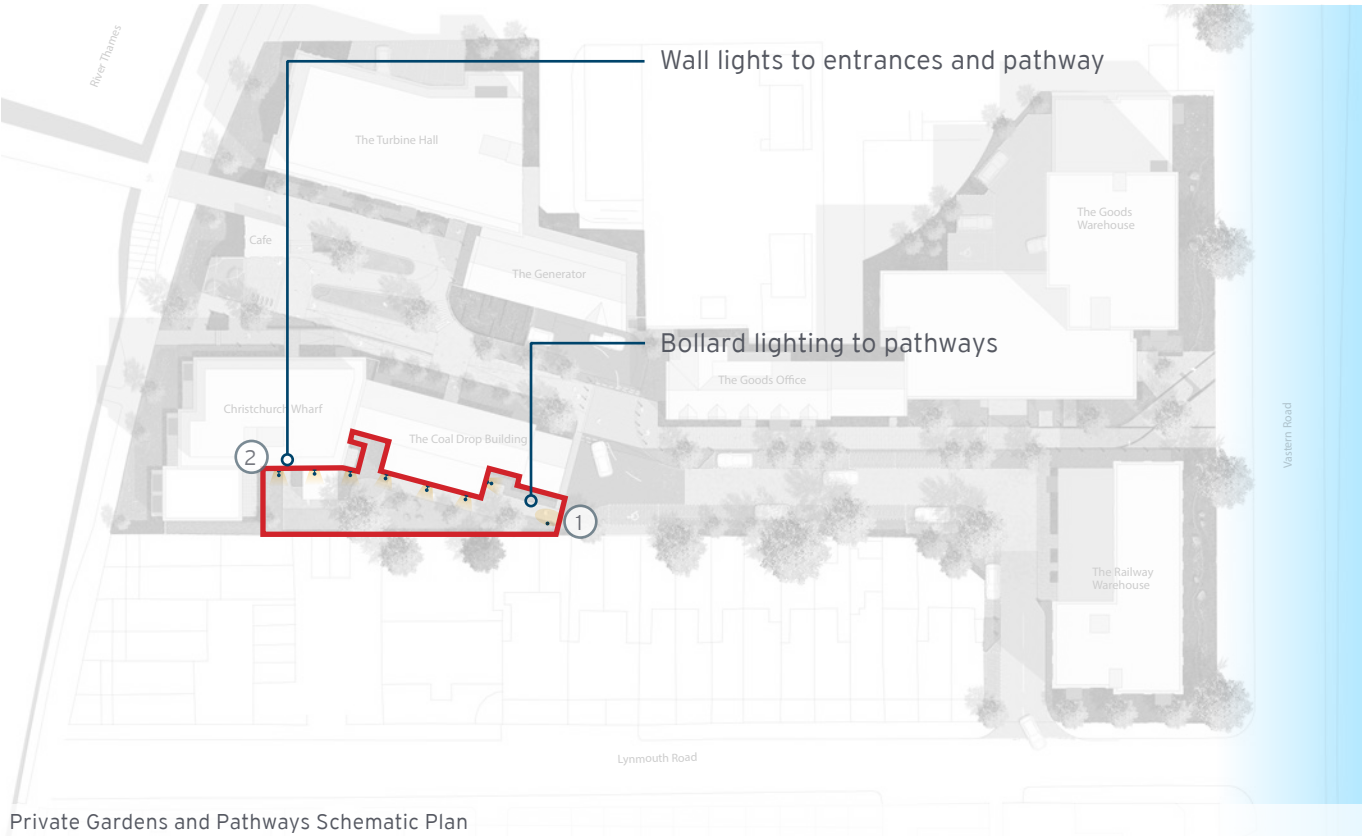
2.5 Vehicular Access



Reference/Product: P01-A1, A6/DW Windsor
Daytona 450
Description: 4m tall light column, high-performance
post-top luminaire with rear shield.
13/27W, 1662lm/2710lm, 2700K respectively for A1/
A6 asymmetric street optics.

2. Lighting Design. Characteristic Areas

2.6 Private Gardens and Pathways



Reference/Product: B01/DW Windsor Kirium Pro 200 Bollard
 Description: 1m tall Lighting bollard with high vandal and impact resistance and low glare shielded optic. 20W, 2100lm, 2700K, narrow asymmetric optic.



Reference/Product: W01, W02/ Plant from Zero Lighting
 Description: Decorative wall mounted light with downward light distribution and shielded top. 10W, 822lm, 2700K

3. Lighting Control Strategy

3.1 Key Principles



A factory set dimming system will be used for controlling the amenity lighting (light columns and bollards). The default light levels will be preset accordingly to establish a balanced visual hierarchy between the various areas of site to draw views and encourage visitors. To achieve this, stronger emphasis is placed on arrival experience and key intersections with routes connecting and leading to these areas feeling calmer and more subordinate. In order to prevent any negative impact towards wellbeing and privacy of residents living in the development, lighting curfew is proposed affecting

all public amenity and feature lighting across site. As part of this, all external ambient and feature lighting would be controlled separately from amenity street and pathway lighting, thus allowing to reduce overall site brightness during nighttime while still maintaining high level of safety and ease of navigation. Lighting should be organized in control groups per zone and luminaire type allowing for each group to be individually addressed, dimmed or switched off. The amenity lighting (light columns and bollards) will utilize automatic daylight dimming (time switches and photocells) to switch off the lighting in the

bright hours of the day. After curfew the amenity lighting will operate at pre-set lower levels covering the minimum requirements for safety and security. Any feature lighting will be switched off after curfew.

Presence detection (PIR) control is recommended for local common entrances only to dim light fittings when these spaces are not in use.

The lighting to all publicly accessible areas should be coordinated and integrated with the overall public realm and lighting scheme for Reading.

Curfew times will be aligned with the prescriptions of local authorities.

4. Mitigation of Obtrusive Light

4.1 Considerations

Environmental Zone and Light Restrictions

Following “GN01:2020 Lighting Professionals Guidance Notes for the Reduction of Obstructive Light” we’ve considered the area of the development as E3 zone with the following limitations applied.

- Minimal light trespass into windows kept with the right control strategy below 10 lux pre-curfew. Post-curfew (23.00hrs) we recommend to reduce the luminaire output to achieve vertical illuminance of <2 lux.
- Minimal Upward Light Ratio of the overall installation. All columns have shielded sources and accessories in order to eliminate direct upward light. Wall mounted luminaires and bollards have shielded sources, directing their light flux down. The lighting strategy includes some feature tree uplights, low decorative bollards and wall lights which are controlled separately and should be switched off after curfew.
- The specified light fittings are equipped with dimmable sources that can be adjusted to match the local authorities requirements.

Upward light ratio (ULR) is calculated as the percentage of lumen output directed above the horizontal plane against the total luminous flux of the entire exterior scheme as follows:

Total upward luminous flux: 3308 lum
Total luminous flux of the scheme: 90371 lum

ULR: 3.66%

*With the following assumptions:
- All light columns are Dark Sky Certified with 0% glow above the horizontal plane;
- Bollards emit up to 5% of their flux upwards;
- Decorative wall lights are shielded emitting 0% light upwards;
- An allowance of 800lm is assumed for feature uplighting to the Arrival square sculpture.

TABLE 1 _ ENVIRONMENTAL ZONES		
Environmental Zone	Lighting Environment	Examples
E0_Protected	Dark (SQM 20.5+)	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1_Natural	Intrinsically dark (SQM 20 to 20.5)	National Parks, Areas of Outstanding Natural Beauty, etc
E2_Rural	Low district brightness (SQM ~15 to 20)	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 nigh time activity

Table 2 - Environmental Zones - ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2020

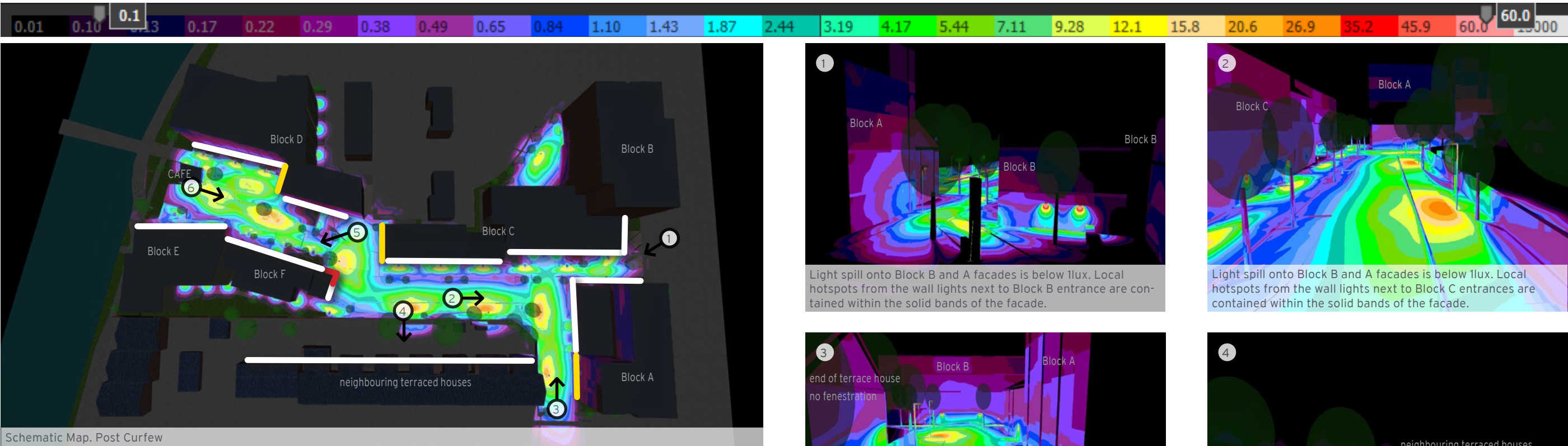
TABLE 2 _ OBTRUSIVE LIGHT LIMITATIONS FOR EXTERIOR LIGHTING INSTALLATIONS						
Environmental Zone	Building Fa- cade Lumi- nance [Max cd/m²] (1)	Sky Glow ULR [Max %] (2)	Light Intrusion (into win- dows) Ev (lux) (3)		Luminaire Intensity I (candelas) (4)	
			Pre-curfew	Post-curfew	Pre-curfew	Post-curfew
E0_Protected	<0.1	0	0	0	0	0
E1_Natural	<0.1	0	2	0 (1*)	2,500	0
E2_Rural	5	2.5	5	1	7,500	500
E3_Suburban	10	5	10	2	10,000	1,000
E4_Urban	25	15	25	5	25,000	2,500

Based on Tables 3,4,6 and 8 - Obtrusive Light Limitations for Exterior Lighting Installations
ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2020

SQM = Sky Quality Measurements referenced by the International Dark-Sky Association (IDA), the criteria for E01 being revised in mid 2019 but not retrospective
ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux that goes directly into the sky.
Ev = Vertical Illuminance in Lux - measured flat on the glazing at the centre of the window.
I = Light Intensity in Candelas (cd)
L = Luminance in Candelas per Square Metre (cd/m2)
Curfew = the time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by the local planning authority. If not otherwise stated - 23.00hrs is suggested.
* = Permitted only from Public Road Lighting Installations
(1) Maximum permitted building facade luminance - Taken as the product of the design average luminance and reflectance divided by n.
(2) Upward Light Ratio - Some lighting schemes will require the deliberate and careful use of upward light, e.g. ground recessed luminaires, ground mounted floodlights, festive lighting, to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.
(3) Light Intrusion (into Windows) - These values are suggested maxima and need to take account of existing light intrusion at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.
(4) Luminaire Intensity - This applies to each luminaire in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some sports lighting applications with limited mounting heights, may be difficult to achieve.

4. Mitigation of Obtrusive Light

4.2 Lighting Calculation - Post Curfew



The false colour schematic map above illustrates residential elevations where light trespass might occur calculated for Post Curfew. Non marked elevations are either not illuminated, non-fenestrated or non-residential elevations at ground floor.

- elevations where light levels are below 1lux
- elevations where light levels are below 2 lux
- elevations where light levels are above 2 lux.

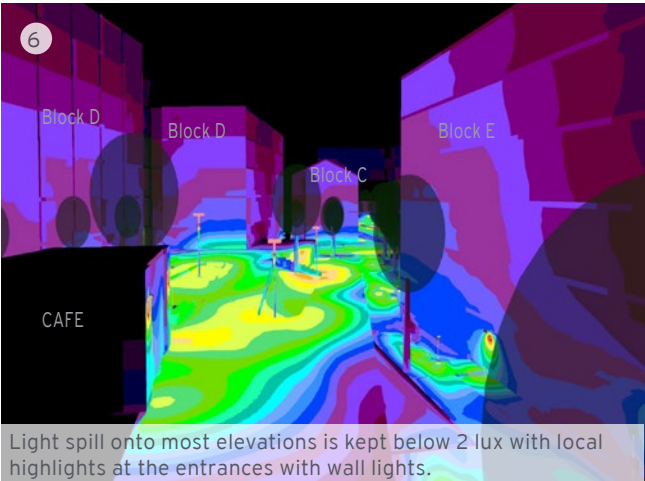
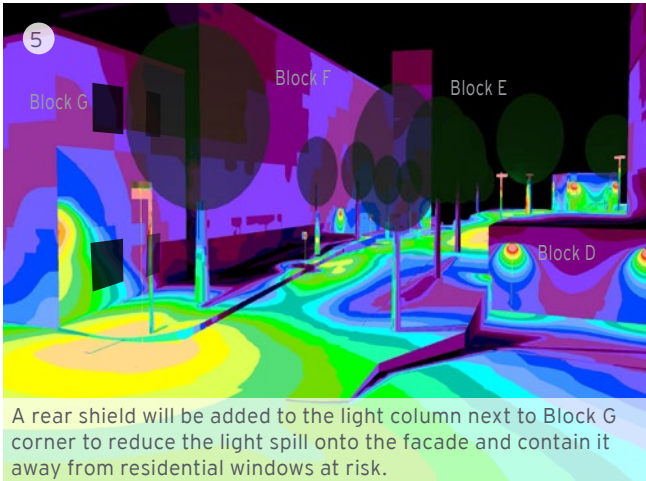
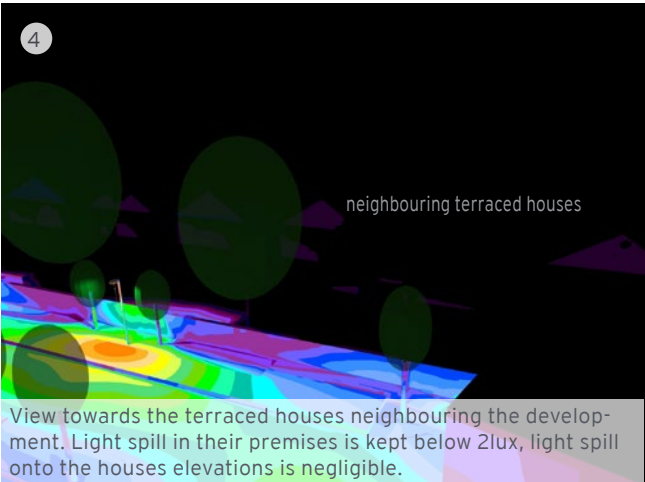
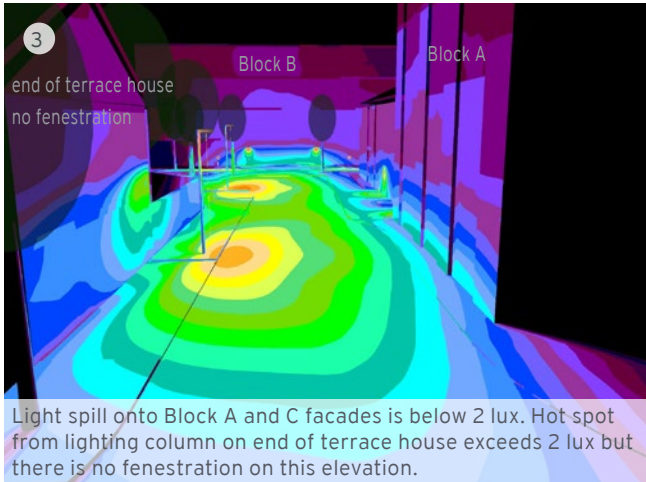
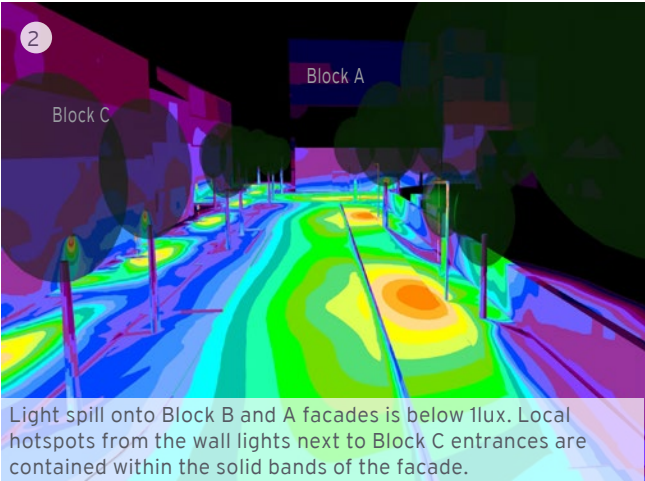
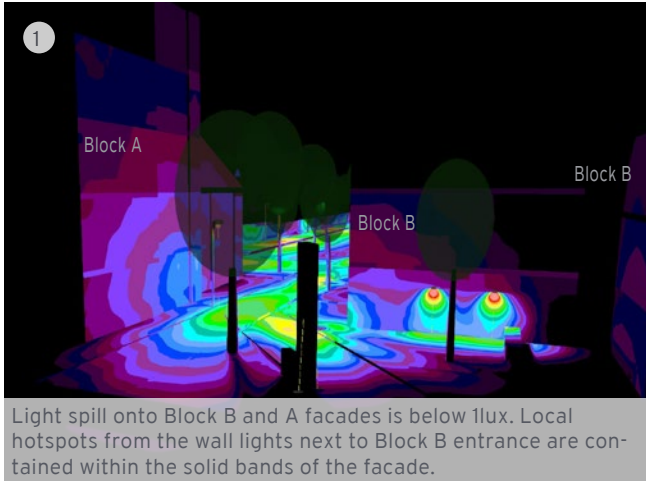
Please note local hot-spots from wall lamps at entrances are not considered as all wall lamps will be mounted on non-fenestrated sections of the facades and these hot-spots will not project onto residential windows.

The height at which light spill onto the vertical planes exceeds 1 lux POST CURFEW is as follows:

- Block A average/max: 0m/3m*
- Block B average/max: 0m/2m*
- Block C average/max: 2m/3.2m*
- Block D average/max: 2.5m/3.2m
- Block E average/max: 0m/5.5m*
- Block F average/max: 0/5m*
- South Fence (edge of site) average/max: 2.5/4.5m*

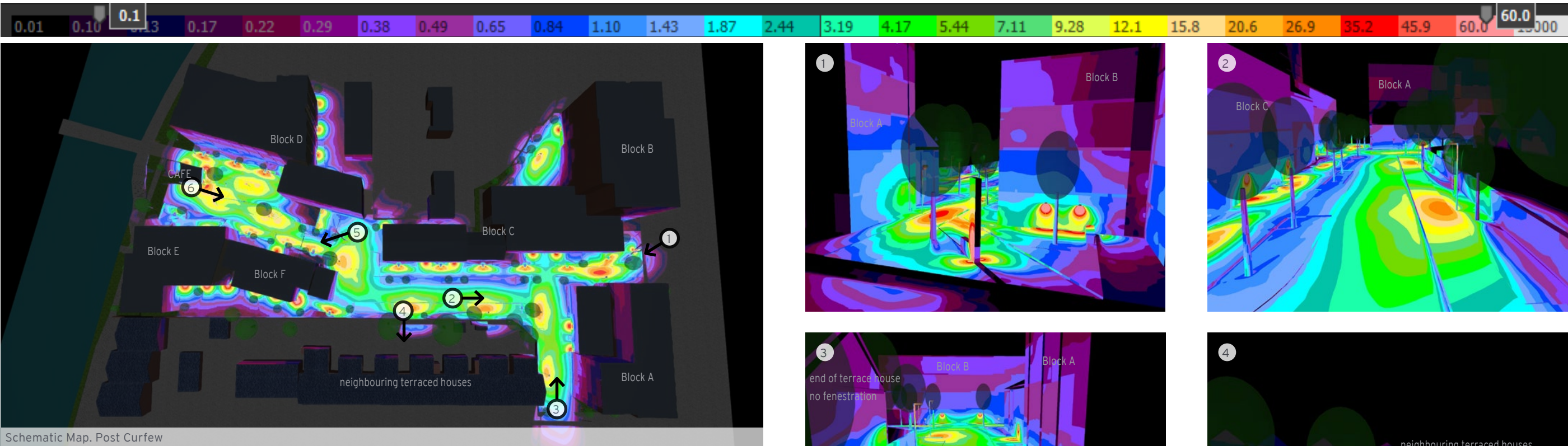
*Peaking maximum values are localized isolated patches of maximum 2m width.

* For detailed isolux lines illustrating the calculated light levels please refer to the Appendices.



4. Mitigation of Obtrusive Light

4.3 Lighting Calculation - Pre-curfew



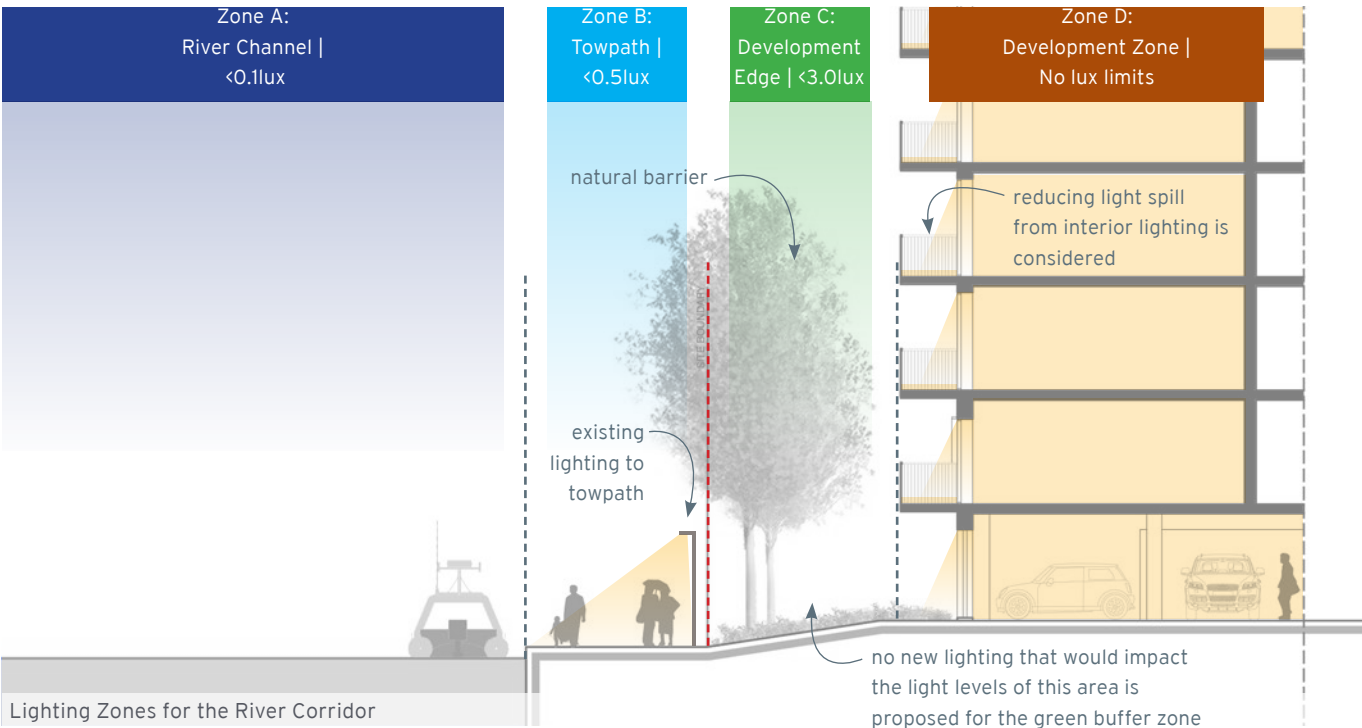
Pre-curfew light levels will be increased to activate the area. A maximum of 10lux light spill on residential fenestrated elevations is observed to ensure the mitigation of light trespass.

- The height at which light spill onto the vertical planes exceeds 2 lux PRE CURFEW is as follows:
- Block A average/max: 2.2m/4m
 - Block B average/max: 0/3m*
 - Block C average/max: 1.7m/2.5m
 - Block D average/max: 2.7m/6m*
 - Block E average/max: 0m/5.5m*
 - Block F average/max: 0/5m*
 - South Fence (edge of site) average/max: 0/4m*
- *Peaking maximum values are localized isolated patches of maximum 2m width.

* For detailed isolux lines illustrating the calculated light levels please refer to the Appendices.

5. Reducing the Adverse Impact on Wildlife

5.1 Considerations



The proposed lighting strategy considers the adverse effects that lighting can have upon wildlife. It is based on the commenced Bat Survey Report, Habitat Survey Report and Ecological Assessment for the development and it's coordinated with the updated locations for bird and bat boxes (O448-EC012-SW-XX-SPC-O-135-001 Ver:P02 from Oct 2024).

As a guide we've used ILP's Guidance Note 08/18: Bats and artificial lighting in the UK as well as WaterSpace Design Guidance: Protecting bats in waterside development produced by Bath Planning Department's Environment and Design team.

Based on the above we've outlined three ecologically sensitive zones one of which falls within the development's boundary. This zone is identified as a buffer zone between the development and the river channel. Although no artificial lighting is proposed for this area we've investigated the potential impact of artificial lighting within the new buildings along the river.

Additionally the following principles are incorporated:

- All decorative and feature lighting including upward pointing light fixtures will be switched off after curfew;
- The selected luminaires have warm colour temperature (2700 Kelvin) light sources that do not emit ultra violet (UV) light. This avoids potential ecological impact by ultra violet light as it is known to attract flying insects and moths;
- Height of lighting columns is up to 4m. Low level lighting is proposed near the buffer Zone C.

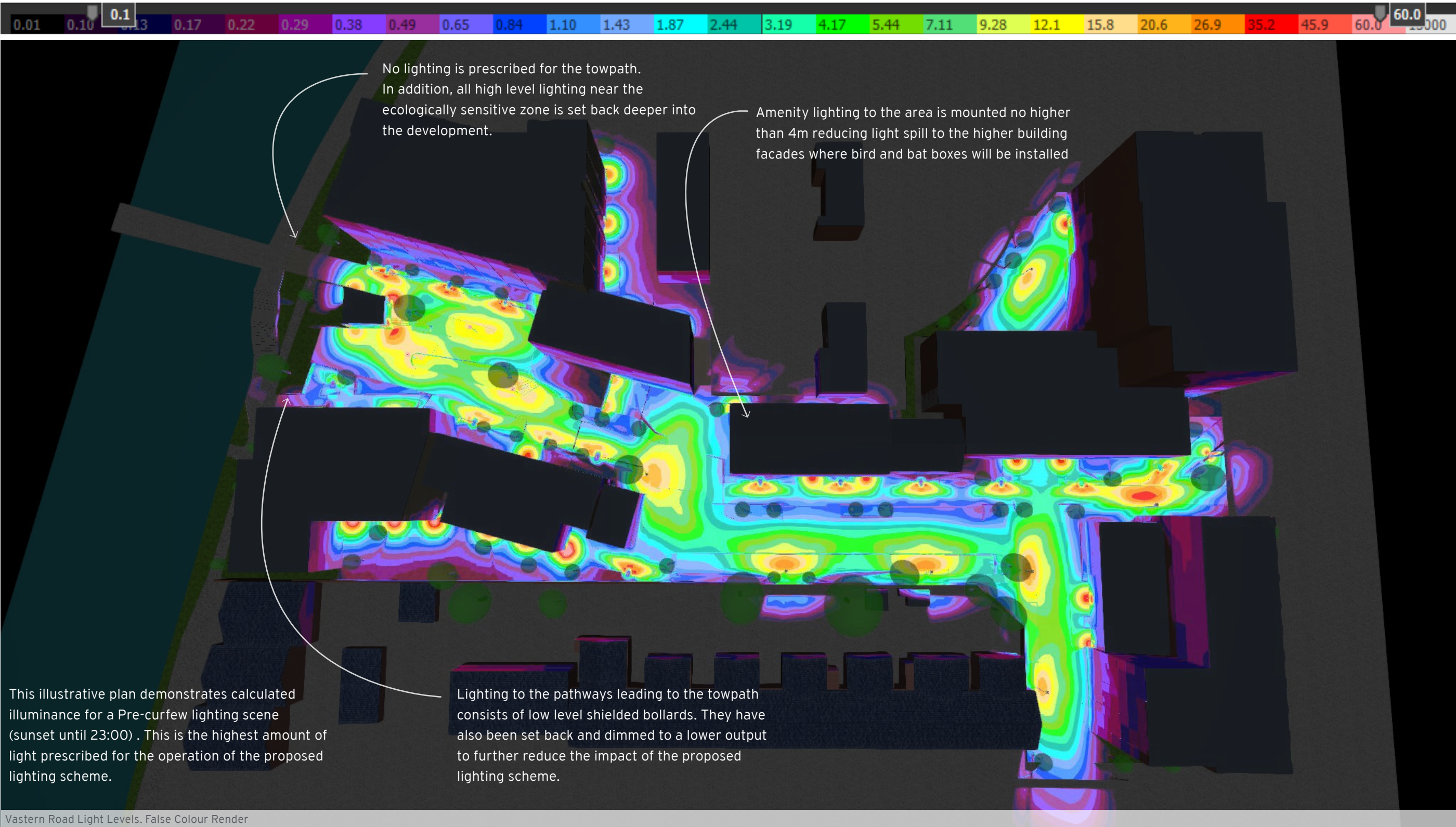
To prevent light spill onto elevations with proposed bird and bat boxes uplights and post mounted lighting is avoided.

A site visit after dark was organized on the 07.03.2023 observing a considerable amount of existing lighting along the riverfront which falls outside of the scope of the development. The aim of this lighting strategy is to not add to the existing.



5. Reducing the Adverse Impact upon Wildlife

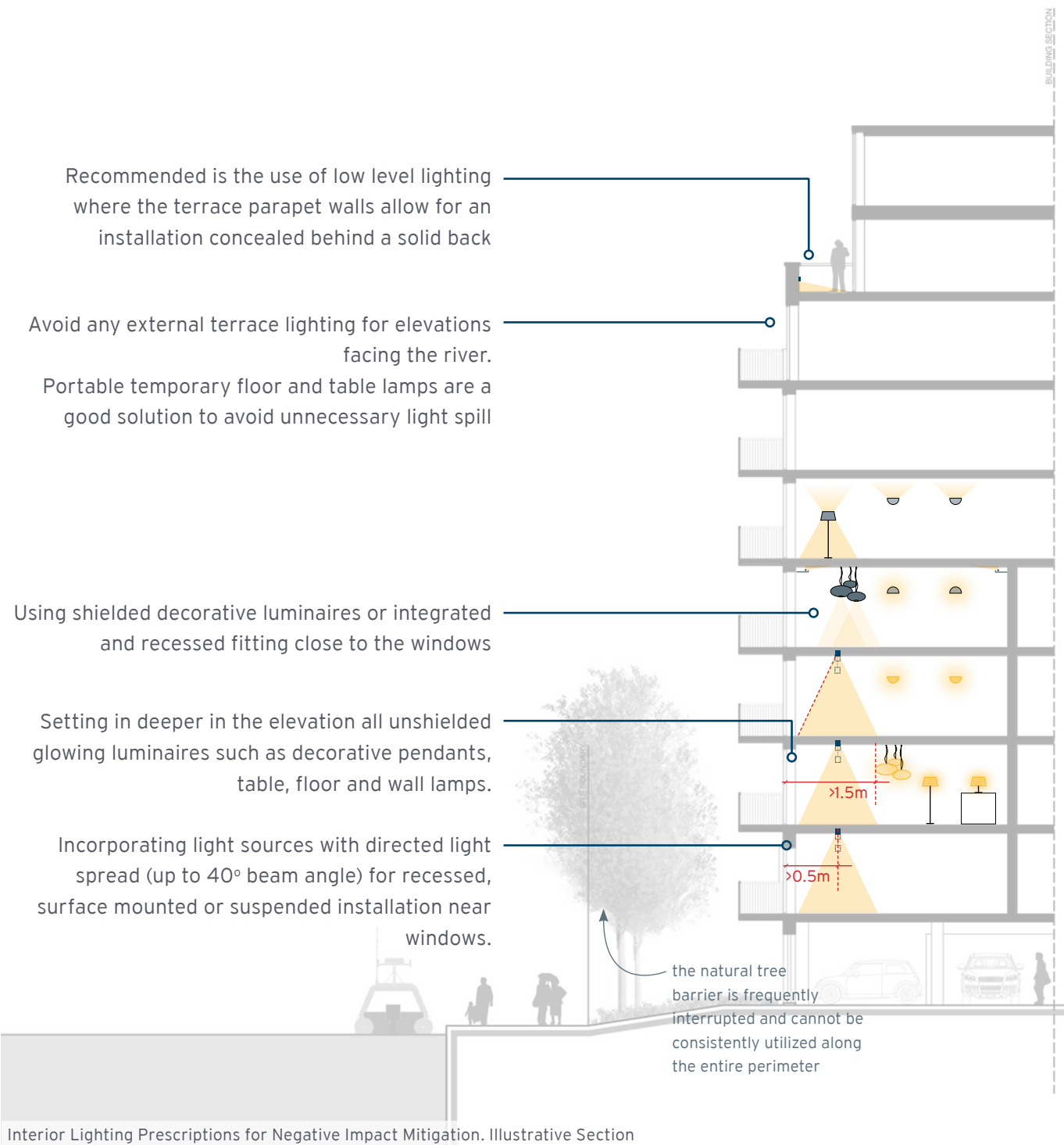
5.2 Lighting Calculation - Exterior Lighting



* For detailed isolux lines illustrating the calculated light levels please refer to the Appendices.

5. Reducing the Adverse Impact upon Wildlife

5.3 Lighting Calculation - Interior Lighting



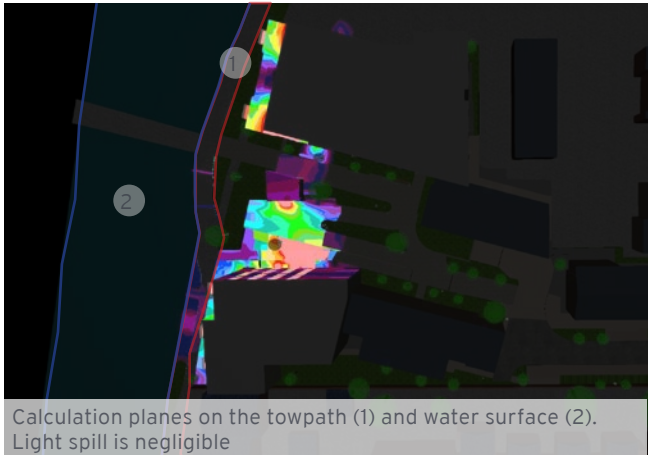
The interior lighting within the buildings along the river bank might have a negative impact upon the wildlife unless mitigated.

The offset of the buildings provided by the threshold Zone C as well as the trees along that ban would help reduce the potential impact of the interior lighting however further measures are incorporated:

- No unshielded lighting or luminaires aimed outwards beyond the surface limits of the enclosed spaces should be installed on the balconies and terraces;
- Overall any permanent exterior lighting to elevations facing the river is strongly discouraged.
- General interior lighting should comprise of good quality light sources with controlled light beam distribution near the windows.

Following the above prescriptions would ensure the successful mitigation of light spill into the sensitive river channel area.

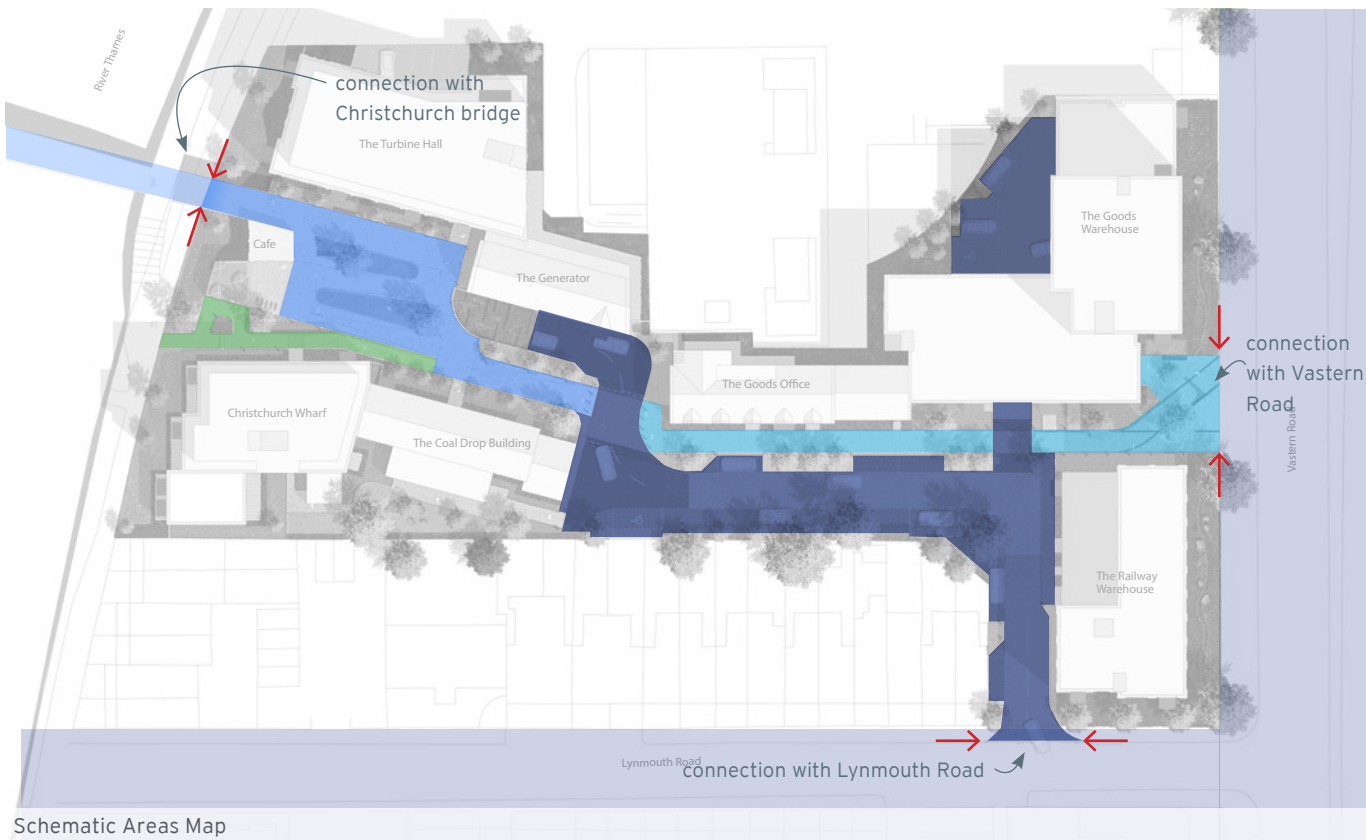
A lighting calculation simulating interior lighting strictly following the above prescriptions was performed for the riverfront buildings. The results show negligible light spill to the towpath surface and water surface. Therefore these results are not incorporated into the isolux layout exports.



Calculation plane results	
Towpath (Perpendicular illuminance)	
Average	0.013 lx
Min	0.00 lx
Max	0.15 lx
Water (Perpendicular illuminance)	
Average	0.013 lx
Min	0.00 lx
Max	0.08 lx

6. Safety and Security

6.1 Considerations



Area Name	Lighting Situation	Traffic Flow*	Ambient Illum.*	Light Class Adjusted Light Class	E _{avg} (lux)	E _{min} (lux)
Arrival square, pedestrian and bicycle access pathways	C1	high	medium	S3/P3 P4	7.5 5.0	1.5 1.0
Pedestrian and bicycle access: ramps and stairways	as per Table 3 of BS 5489-1 Annex A P3				20 7.5	10 1.5
Vehicular access streets	D3	normal	medium	S3/P3	7.5	1.5
Pedestrian only pathways	E1	normal	low	S5/P5	3.0	0.6

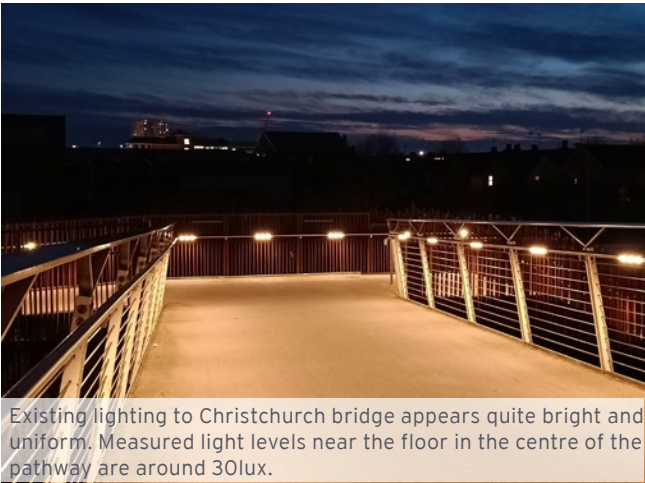
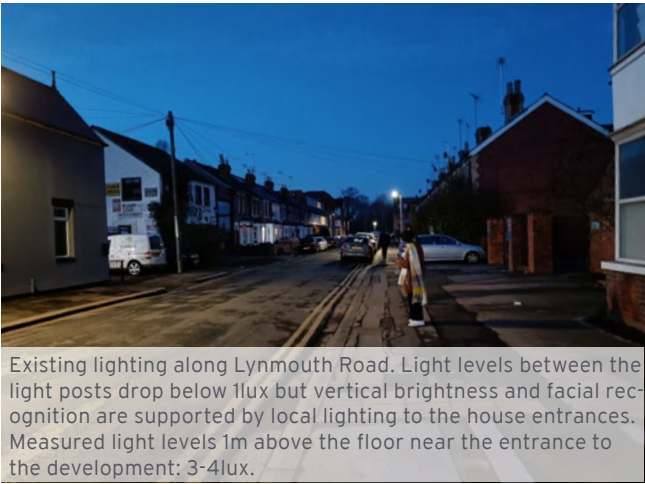
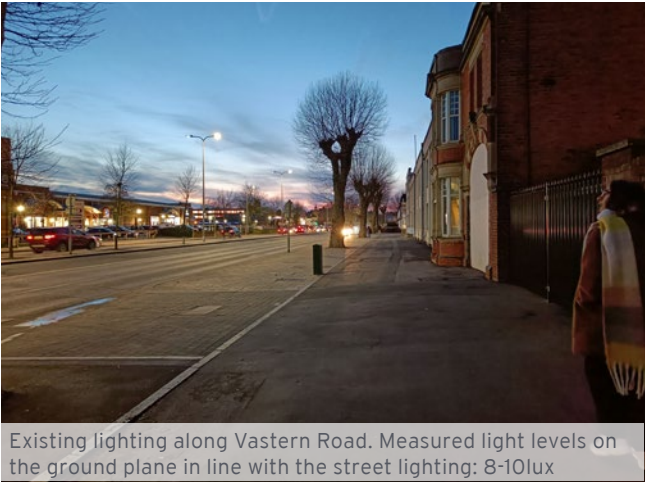
Before curfew the lighting design aims to activate the space and create an attractive and pleasant environment for the residents and guests of the development. However, to comply with the aforementioned post-curfew considerations the lighting after a predetermined curfew hour will be reduced.

To ensure a safe and secure transition and use of the publicly accessible areas the post-curfew lighting scheme has been developed to comply with the prescriptions of BS EN 13201 and BS 5489-1.

The following assumptions have been made when determining the relevant lighting situations and classes:

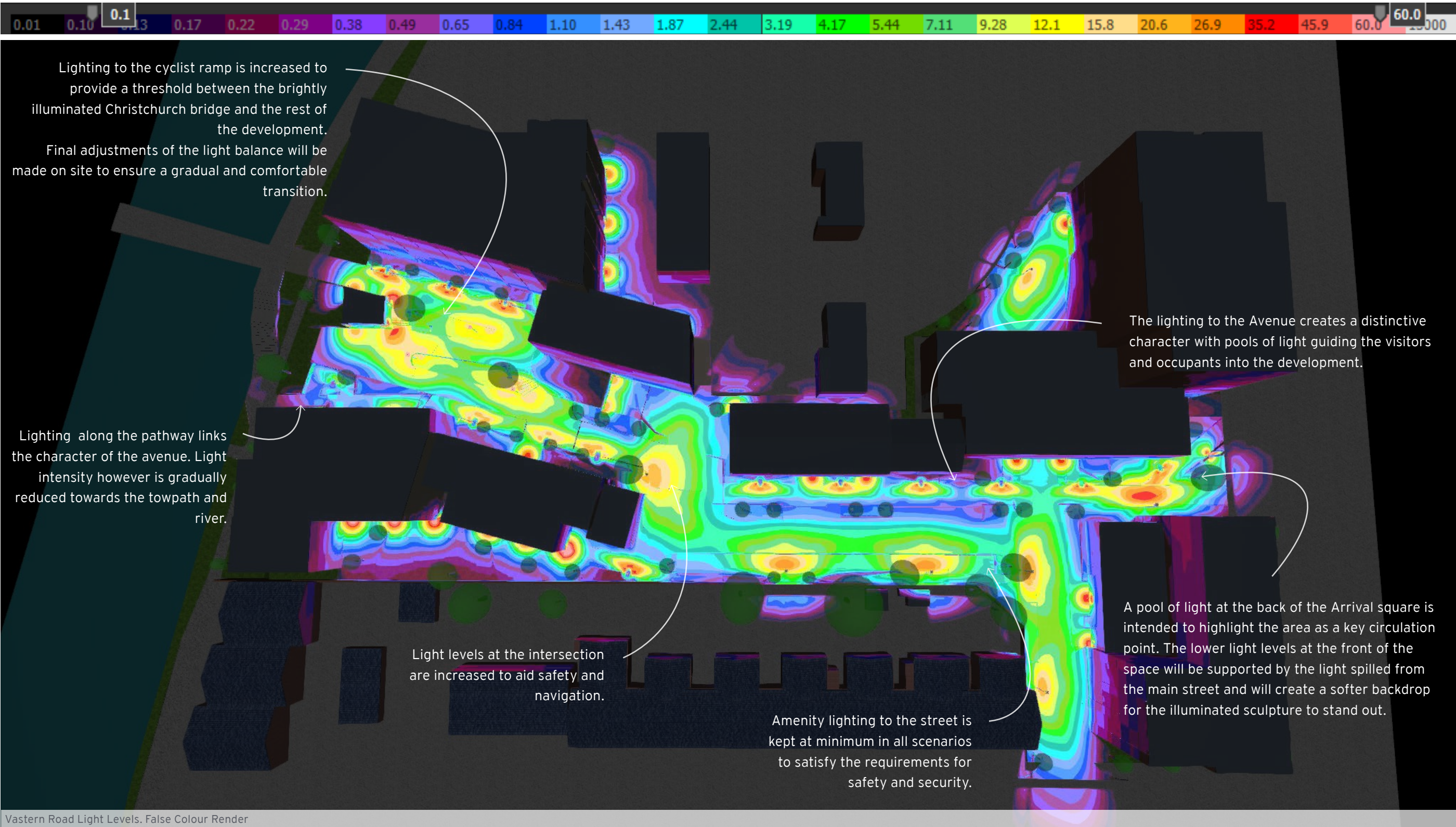
- Normal crime risk, facial recognition - necessary, normal difficulty of navigational task.
- Traffic calming measures are not taken into consideration.
- Ambient illumination and traffic flow marked with star(*) are assumed.

Please note that light classes for the pedestrian and bicycle access areas have been adjusted in favor of biodiversity concerns related to the ecological significance of the project site.



6. Safety and Security

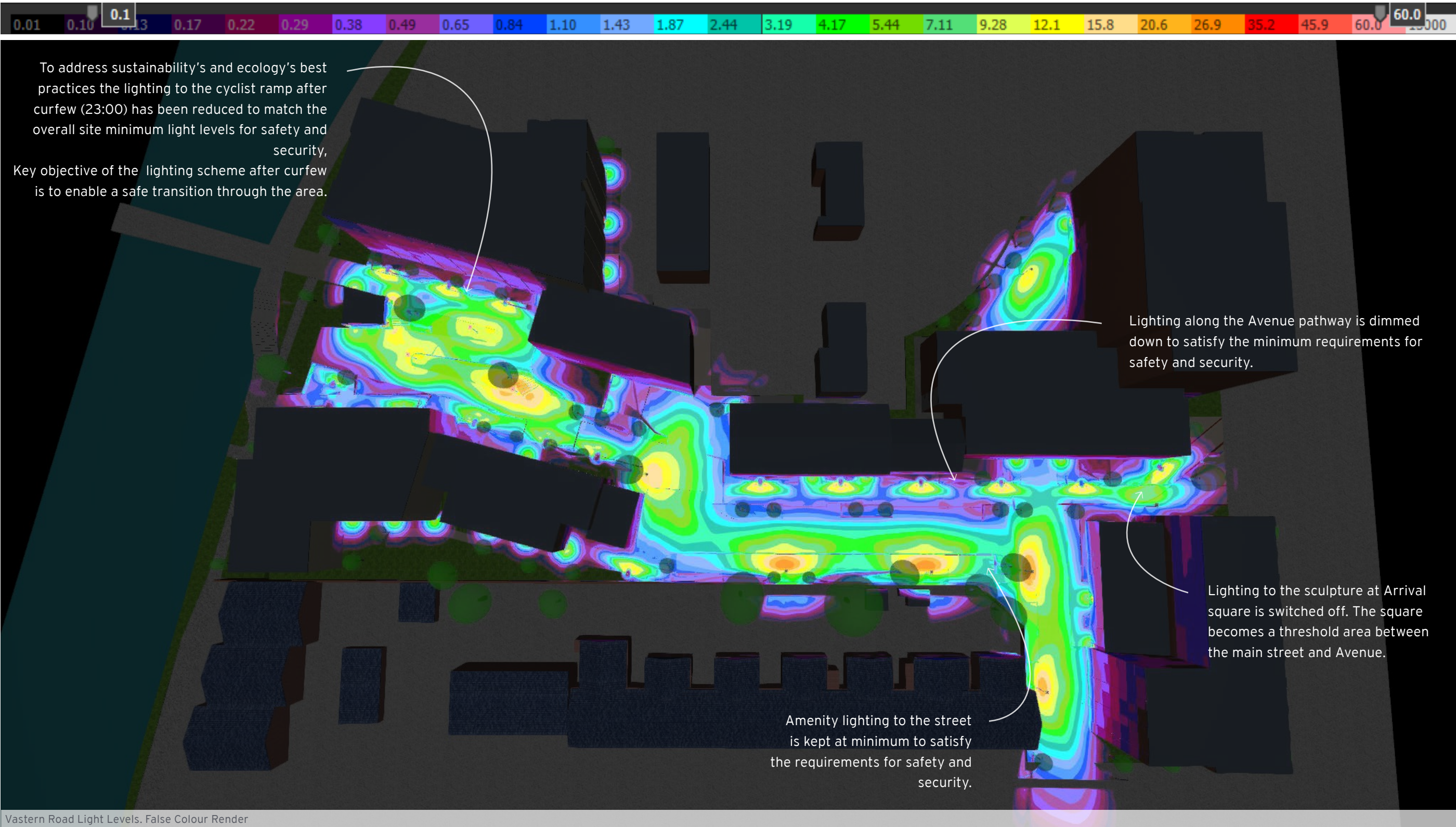
6.2 Lighting Calculation - Pre-curfew



* For detailed isolux lines illustrating the calculated light levels please refer to the Appendices.

6. Safety and Security

6.3 Lighting Calculation - Post Curfew



* For detailed isolux lines illustrating the calculated light levels please refer to the Appendices.

7. Appendices

LB_1108_LL_01 - Lighting Layout. Pre-curfew
LB_1108_LL_02 - Lighting Layout. Post Curfew

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LIGHT BUREAU

PART OF AFRY

Light Bureau Limited
Ingate Works, Battersea
London SW8 3NS
United Kingdom
Phone +44 (0)20 7498 6111
mail@lightbureau.com

Light Bureau
C/o AFRY
Lilleakerveien 8
0283 Oslo
Norway
Phone +47 454 78 101
mail@lightbureau.com

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