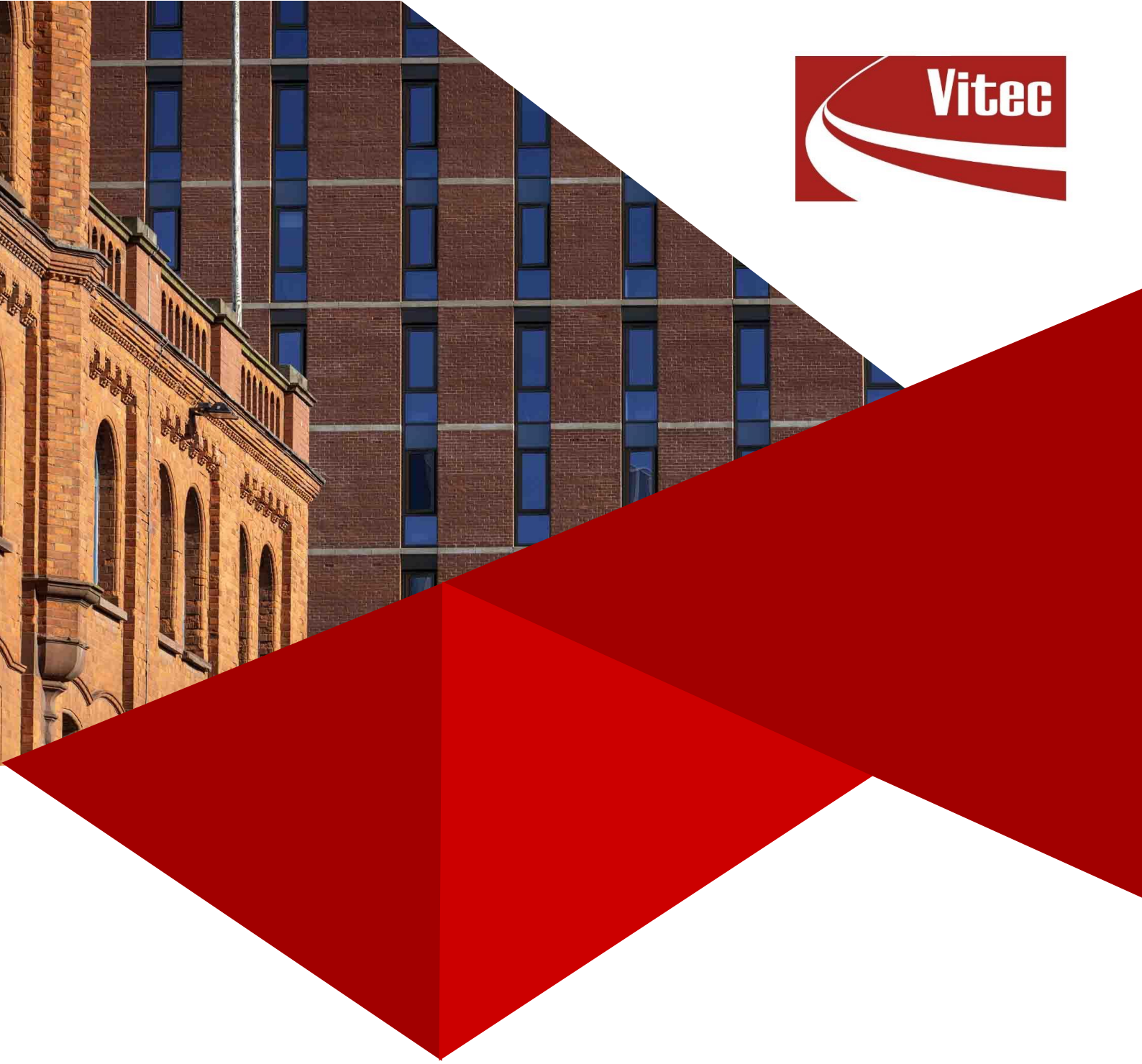


LIGHTING IMPACT ASSESSMENT
FORMER DEBENHAMS STORE, STAINES

Document Reference: 5039 / LIA 001

Issue: 03

Prepared by: Geraint Harris

Date: 01 December 2021

www.vitecconsult.com

Contents

1.0 Introduction

This report has been prepared on behalf of High Street Living [Staines] Ltd to accompany an application for Planning Consent for the proposed residential development of the former Debenhams Store, Thames Street, Staines.

The development will consist of demolition of the former Debenhams Store and redevelopment of site to provide 226 dwellings (Use Class C3) and commercial units (Use Class E) together with car and cycle parking, hard and soft landscaping, amenity space and other associated infrastructure and works.'

1. Vitec fully audit all work prior to completion and a robust audit trail exists to demonstrate accountability.

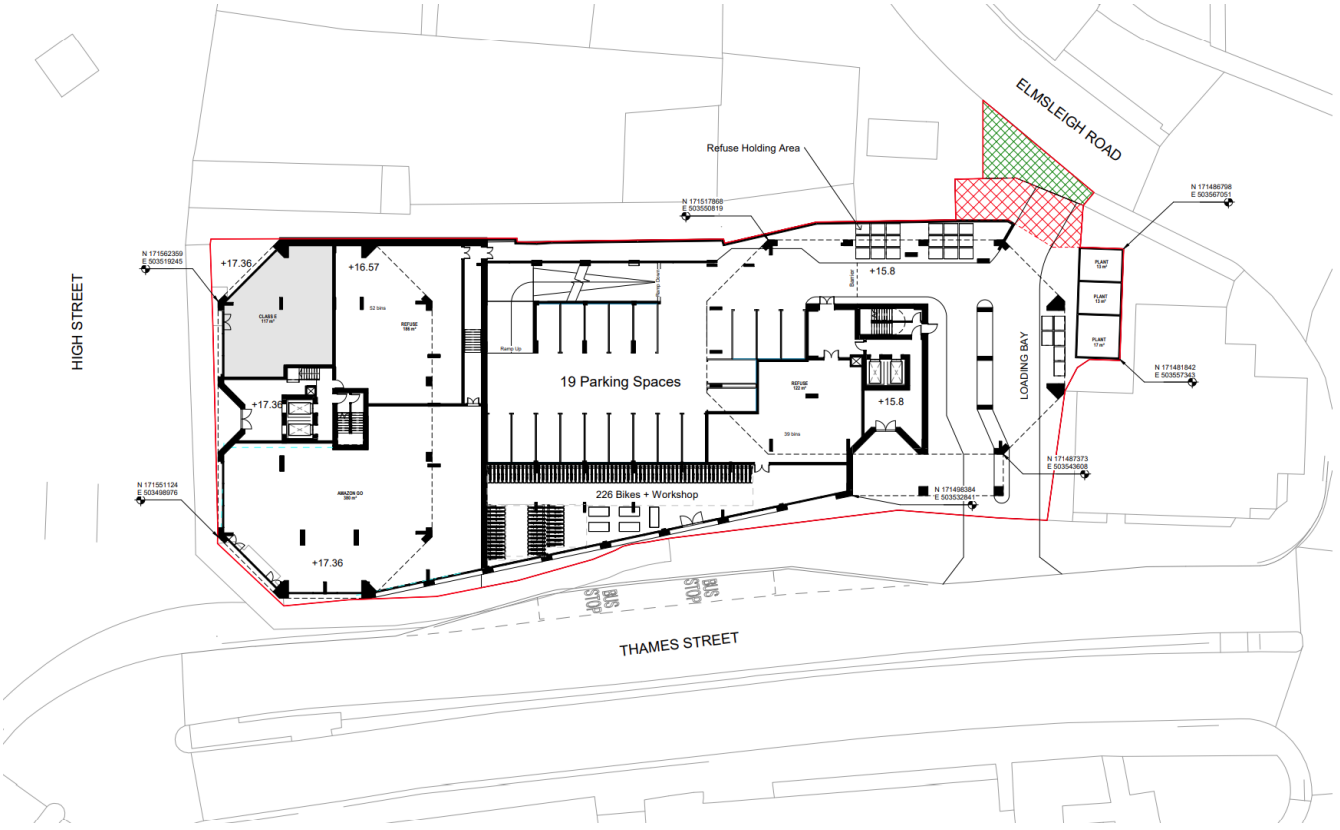
2. CPD (Continual Professional Development) records are kept and technicians are required to complete a minimum 20 hours per year in training activities.

2.0 Document Brief

This document has been produced with the intent of providing a clear and straightforward assessment of the proposed developments proposed ventilation and flue strategies.

3.0 Proposed Site Location

The proposed redevelopment will take place at the former Debenhams Store, Thames Street, Staines.



4.0 Lighting Impact Assessment

Outline

This report has been prepared by Vitec; a specialist services consultancy with knowledge and experience in lighting impact assessments and mitigation. The purpose of this report is to assess the effects resulting from artificial lighting that will be required for safe and secure operation of the application site.

This lighting impact assessment has been prepared retrospectively; it assesses the baseline lighting levels on and around the application site, which is based on the proposed building amenity lighting only.

Potential effects of the proposed lighting has been assessed against the existing baseline conditions contributed by the luminaires.

The report assesses the potential effects of obtrusive light that could arise from artificial lighting of the application site. The principal objective is to identify the effects associated with obtrusive light on various sensitive receptors, propose suitable mitigation and assess likely significant residual effects.

Obtrusive light or light pollution is any light that strays to areas other than where it is intended and can include light intrusion (spill light) into neighbouring properties, upward light (which can create sky glow) and visual source intensity (glare). It can also create effects upon ecological receptors in the area, particularly with respect to bat roosts and foraging corridors.

The lighting impact assessment considers the maximum adverse scenario in relation to the proposed artificial lighting, in order to assess the significance of the potential effects on identified receptors.

5.0 Legislative and Policy Framework

5.1 National Policy and Legislation

Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

Since 2005, artificial light was incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states:

"Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a 'Statutory Nuisance' andit shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by aperson living within its area, to take such steps as are reasonably practicable to investigate the complaint".

National Planning Policy Framework: 2012 DCLG

The National Planning Policy Framework (NPPF) sets out the governments planning policies for England and how they are expected to be applied and provides a framework for local plans. Under the broad heading of "Achieving Sustainable Development", Chapter 11 "Conserving and enhancing the natural environment" deals with obtrusive light in clause 125 which states"

"By encouraging good design, planning policies and decisions should limit the impact from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

In the glossary, "Pollution" is defined as

"...anything that affects the quality of land, air water or soils which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions including…light"

5.2 Relevant British Standards

The most applicable British Standards for lighting that relate to the proposed development are:

BS EN 12464-2: 2014- *Lighting of Work Places (Outdoor work places)* – This guidance is important as it contains guidance for task lighting of Industrial based tasks.

5.3 Guidance

Guidance Notes for the Reduction of Obtrusive Light; 2011 Institution of Lighting Professionals (ILP)

Guidance notes produced by the Institution of Lighting Professionals are among the most commonly referenced guidance notes for good practice within the lighting design industry.

Obtrusive light (or sometimes referred to as light pollution) refers to any light emitted in a direction in which it is not required or wanted and as such is detrimental to other users. The assessment has been carried out in accordance with thepublished guidance documents from the ILP.

The quantitative limits are the same for both guidance documents. They quantify the levels of direct upward light, light intrusion, viewed source intensity and glare regarded as acceptable for varying environmental zones. Light intrusion refers to the spilling of light beyond the boundary of the area to be lit.

This includes the intrusion of light into bedroom windows. Sky glow refers to the brightening of the sky above towns cause by direct or reflected upward light.

Glare refers to the uncomfortable brightness of a light source when viewed against a dark background. **Figure 1** illustratesthe different types of obtrusive light.

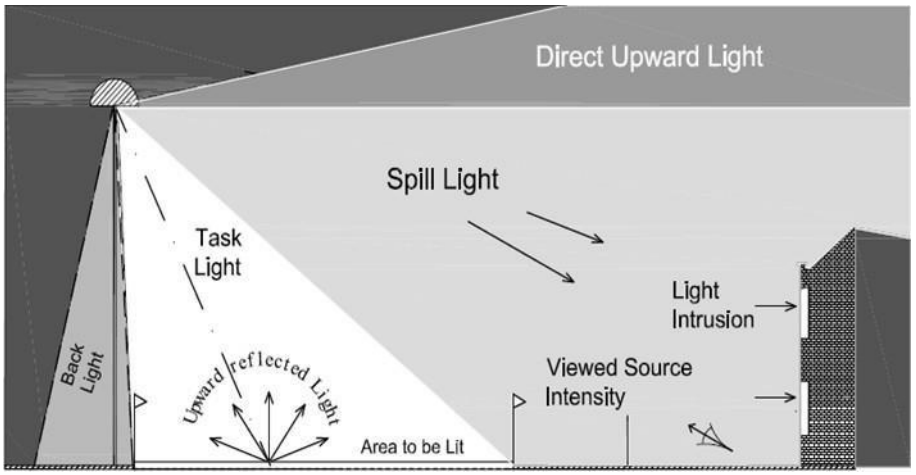


Figure 1 Obtrusive light diagram

5.4 Professional Lighting Guide PLG 04 "Guidance on Undertaking Environmental Lighting Impact Assessments" Institution of Lighting Professionals (ILP):2013

PLG 04 is used to ensure that the lighting impact assessment is correctly carried out:

"...this document is designed to provide an explanation of, and guidance on, the process for producing a Lighting Assessment…to remove orminimise environmental problems".

6.0 Assessment Methodology and Significance Criteria

6.1 Methodology

The methodology employed for this assessment was appropriate to the location of the application site. It included a desk-top survey, and a site visit during which the baseline conditions were assessed. In addition, the potential effects of the proposed lighting were evaluated through the use of appropriate assessment criteria.

The methodology takes guidance from the Institution of Lighting Professionals PLG 04 document "Guidance on Undertaking Environmental Lighting Impact Assessments". This sets out good practice which was followed during theassessment.

The desk-top study involved research into relevant local and national legislation, policy and guidance relating to obtrusivelight. It also involved consultation with relevant parties and studying of ordnance survey maps, plans and aerial photography views to identify likely receptor locations prior to the site visit.

Research undertaken during the desk-top study was used to clearly define the assessment locations which formed the basis of the site visit. Baseline conditions were also assessed in these locations, along with the extent of any receptor viewpoints in the direction of existing artificial lighting and potential artificial lighting, associated with the application site.

6.2 Study Area

The study area was determined during the desk-top survey by assessing the potential areas that could be affected by a change in artificial lighting. This included the application site and potential sensitive receptor areas located to the north, east, south and west of the application site.

The study area is detailed in **Section 2 above**.

6.3 Surveys

Site surveys were carried out in the daylight and at night to assess the existing baseline lighting and its effect on surrounding receptors, as well as to assess the potential effect from the artificial lighting associated with the applicationsite. During the survey, the application site was visited, as well as a number of adjacent off-site locations.

The visit allowed an assessment of potential receptor types and locations to be made, the night- time visual scene wasrecorded in accordance with guidance from the ILP document PLG04 (as detailed in **Section 2**).

6.4 Potential Effects from Artificial Light

There are a limited number of potential effects that arise from artificial lighting. These are as follows:

Effects from light intrusion through windows on residents

Light intrusion (or light spill) is the term for the spilling of light beyond the boundary of the area being lit. The ILP Guidance Notes places a limit on the amount of vertical Illuminance which falls upon the centre of a dwelling window. The suggested maxima values quoted

are relative to the amount of light measured as a baseline without the presence of the obtrusive light source.

Effects from viewed source intensity on residents and sightseers

Table 1 below advises limits on luminaire intensity or viewed source intensity from luminaires to an observer. The greatest problems are usually encountered from poorly aimed floodlights or security lighting, or from lighting which islocated too close to properties.

Effects from upward light (or sky glow)

Light emitted above the horizontal either directly from luminaires or indirectly as reflected light from surfaces such as thelandscape or buildings, has the potential to cause sky glow.

The ILP "Guidance Notes for the Reduction of Obtrusive Light" places limits on the percentage of direct upward lightemitted from the luminaires in their installed attitude, which is dependent upon the environmental zone in which the application site lies.

Indirect upward light is subject to material reflectance properties. It is not easily quantifiable, but is unlikely to be as significant as direct upward light and is not an assessment criterion used in the ILP guidance notes.

Effects from disability glare on transport users

The proposed lighting strategy includes requirements for lighting to be installed such that glare is minimised inaccordance with the ILP guidance notes.

Effects from light spill on ecology

Light spill has the potential to affect both flora (plants etc) and fauna (from insects through to reptiles, wild animals anddomestic animals). Light spill can disrupt feeding patterns and force ecological receptors to leave their habitat. The lighting strategy will seek to mitigate light spill where there are potential ecological receptors that could be adversely affected. This will be sought through guidance provided by the ILP for the reduction of obtrusive light.

Effects from high energy consumption

Lighting installations have the potential to consume high quantities of energy and they should be carefully designed by a competent lighting professional. Where lighting is proposed to replace existing lighting, the proposed lighting should aimto improve upon the energy and optical performance of the existing equipment. This can be achieved in a variety of waysbut good practice would be to implement an LED based lighting solution, with a suitable lighting control system that is applicable to the application.

6.5 Obtrusive light limitations

In the absence of suitable statutory guidance, it is proposed that the Institution of Lighting Professionals (ILP) "Guidancenotes for the reduction of obtrusive light" GN01:2011 is used, in order to provide suitable assessment criteria against which to assess the impacts of artificial lighting.

The relevant criteria of upward light, light intrusion and direct source intensity are discussed below and **Table** 1 sets limitsfor each criterion.

Table 1 Obtrusive light criteria relating to each Environmental Zones

Environmental Zones	Sky Glow ULR (Max %)	Light Trespass (into Windows) Ev (lux)		Source Intensity I (k) cd		Building Luminance Average, 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 (1*)	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5	10	2	10	1.0	10
E4	15	25	5	25	2.5	25

Notes to Table:

- ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directlyinto the sky;
- E_V is Vertical Illuminance in Lux;
- I is Light Intensity in Candelas;
- L is Luminance in Candelas per square metre; and
- Curfew refers to a time when the local planning authority has agreed that the lighting installationshould be switched off; this typically refers to 23h00 – 07h00.
- (*) Permitted only from Public road lighting installations.

6.6 Classification of Environmental Zone

The ILP Guidance Notes Guide quantify the levels of Obtrusive light regarded as acceptable for varying environmentalzones E0 to E4 as defined in **Table 2**:

Table 2 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 night-time activity**

Comparison of the baseline conditions measured during the site assessment and the criteria outlined in the above tabledefine the environmental zone.

6.7 Significance Criteria

The significance of an effect from artificial lighting will be based upon the sensitivity of the receptor and the magnitude ofchange at that receptor due to the revised conditions.

The sensitivity of the receptor has been classified as High, Medium, or Low according to the descriptions provided in **Table 3.**

The magnitude of change is determined as being High, Medium, Low or Negligible and descriptions for each are providedin **Table 4.**

The significance criteria are derived from the combination of the relevant receptor sensitivity and the magnitude of change which that receptor will experience as an effect from the lighting of the application site. These significance criteriaare shown in **Table 6** and they can be either beneficial or adverse effects.

Table 3 Criteria for Receptor Sensitivity

Sensitivity	Description of Criteria
High	The environment is fragile and an impact is likely to leave it in an altered state from which recovery would be difficult or impossible. Human (Amenity) – receptors which are sensitive to a change in lighting such that the quality of life would be affected (i.e. lighting is designated a statutory nuisance) Human (Safety) - receptors where a change in the lighting has the potential to eitherdramatically improve or reduce safety (for pedestrians, drivers or workers). Ecological – where a change in the lighting affects the habitats, breeding or feeding of fauna (e.g. protected habitats or other special areas) or growth patterns of fauna / crops.
Medium	The environment has a degree of adaptability and resilience and is likely to accommodate the changes caused by an impact, although there may still be some residual modification as a result. Human (Amenity) – receptors which are sensitive to a change in lighting however not such that the quality of life would be affected. Human (Safety) - receptors where a change in the lighting has the potential to either improve or reduce safety (for pedestrians, drivers or workers). Ecological – where a change in the lighting affects the movement or feeding patterns of fauna but the receptor can adapt.
Low	The environment is adaptable and is resilient to change. Nearly all impacts can be absorbed within it without modifying the baseline conditions. Human (Amenity) – receptors which would not noticeably be aware of a change in lighting. (i.e. in areas of medium to high luminance) Human (Safety) - receptors where a change in the lighting has limited potential to affectsafety (for pedestrians, drivers or workers). Ecological – area with limited wildlife.
Negligible	Receptor has little or no night-time activity

Table 4 Criteria for Magnitude of Change

Magnitude of Change	Description of Criteria
High	A large change compared to the natural variations in background levels. A clear breach of limits and standards may occur. For example, levels of obtrusive light in the formof sky glow, light trespass or glare towards a receptor which exceeds the limits set within the ILP guidance for a higher environmental zone might classify as a high magnitude of change.
Medium	Change which is noticeable and may be a breach of limits and standards. In terms of the limits set in the ILP guidance this might equate to exceeding the limit but within the limits set for the next Environmental Zone.
Low	Change which, when compared to background levels, is only just noticeable.
Negligible	Change is not noticeable.

Table 5 Sensitivity of Receptor Matrix

Magnitude of Change	Sensitivity of Receptor				
		High	**Medium**	**Low**	**Negligible**
	High	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Table 6 Significance Criteria

Significance Criteria	Significance Criteria
Major beneficial	Substantial reduction in obtrusive light at sensitive receptors and/or users of the application site such that large scale improvements to visual amenity, human safety or health is delivered. Significantly improves ecological habitats
Moderate beneficial	Moderate reduction in obtrusive light at sensitive receptors and/or users of the application site such that noticeable improvements to visual amenity, human safety or health are delivered. Improves ecological habitats
Minor beneficial	Minor reduction in obtrusive light at sensitive receptors and/or users of the application site such that perceptible improvements to visual amenity, humansafety or health is delivered; perceptible improvement to ecological habitats.
Neutral/Not significant	No appreciable effect on sensitive receptors. Effects are reversible.
Minor adverse	Minor increase in obtrusive light at sensitive receptors and / or users of the application site such as an increase in Glare, Light Trespass to properties, increasein Sky Glow or effects on flora and fauna. Effects are reversible or temporary.
Moderate adverse	Moderate increase in obtrusive light at sensitive receptors and / or users of the application site such as an increase in Glare, Light Trespass to properties, increase in Sky Glow or effects on flora and fauna. Requires monitoring and localremedial work. For example, lighting which is visible and causes nuisance to a sensitive receptor outside the application site.
Major adverse	Major increase in obtrusive light at sensitive receptors and / or users of the application site such as an increase in Glare, Light Trespass to properties, increase in Sky Glow or effects on flora and fauna. Requires extensive remedial works. For example a floodlighting installation which directs light into the eyes ofoncoming motorists causing disability glare and potential reduction in visual performance leading to an increased risk of collision.

6.8 Assumptions and Limitations

The assessment is limited to the lighting conditions as found at the time of the survey. It is assumed that these conditionsare representative of the typical conditions on the site.

7.0 Baseline Conditions

7.1 Site Description and Context

The application site is located in a busy urban area within Staines Town Centre, the site is bounded by High Street, and A308 / Thames Street.

Existing Lighting

There is existing highway / street amenity lighting on all roads as described below:

High Street

7/8mt+ decorative street lighting columns with downward LED lanterns.

A308 Thames Street

7/8mt+ decorative street lighting columns with downward LED lanterns.

Baseline Survey Information

The site survey was undertaken on 20 May 2021, the weather was dry but mostly overcast. The survey involved assessing the baseline artificial lighting levels; identifying sensitive receptors and assessing potential effects of the lighting on the identified potential sensitive receptors.

The environment surrounding the application site is intrinsically dark, categorised as an E4 Environmental Zone in accordance with the ILP Guidance Notes. (See Table 2)

Average illuminance was measured on the pavement boundary on each street and the recorded values were:

High Street	20.6 lux
A308 Thames Street	23.1 lux

8.0 Sensitive Receptors

As part of the baseline review, the survey area was visited to identify potential sensitive receptors to artificial light. This includes consideration towards potential human and ecological receptors.

It is understood that are no significant ecological receptors

Human residential receptors were identified south of the application site.

Table 7 summarises the receptor location and sensitivity.

Table 7 Summary of receptor locations and sensitivity

Receptor Type	Receptor Location	Description	Sensitivity
Human- Residential	Location 1	High Street + A308 Thames Street	Medium

9.0 Lighting Requirements

9.1 Artificial Lighting requirements

In addition to the existing highways / street amenity lighting, the application site requires lighting for safety and amenity to the front Main Entrance on within the courtyards [no impact to any sensitive receptors, entrance and amenity space [no impact to any sensitive receptors].

See Appendix A for initial Lighting Design layout and calculations,

There will be a minimal increase in artificial lighting from the baseline lighting levels to the current levels facilitates the safe and secure operation of the proposed development, as well as to provide security lighting which will aid the CCTV system, by providing adequate light for facial recognition.

Artificial lighting shall be designed in compliance with BS EN 12464-2: 2014 (Lighting of Outdoor Work Places) and will be required in the following areas:

10.0 Potential Effects

10.1 Potential Effects from Construction Artificial Lighting (without mitigation)

Construction lighting will not be required; therefore there are no expected effects.

10.2 Potential Effects from Operational Artificial Lighting (without mitigation)

As a result of the additional exterior lighting detailed above (i.e. without mitigation), there is a potential for obtrusive light due to poorly designed or installed lighting equipment in the form of;

Poorly designed lighting generally consists of the installation of a limited number of luminaires that are being used to light a wide area. Due to this, the lighting is normally installed with tilt angles that are too great, because there is a need to spread the light as far as possible, lighting the intended area, as well as surfaces where the lighting was not intended.

Poorly designed lighting can contribute the following obtrusive light components: Light spill into windows: this is typical of wall mounted luminaires with high tilt angles; Upward light causing sky glow: this is typical of up-lighting;

Glare: due to high light source intensity from floodlights; and Intrusive light affecting ecology: caused by excessive height and tilt.

The potential effects from operational lighting without mitigation are likely to be of Moderate significance, based on the above components of obtrusive light, all of which could occur unless mitigation measures are implemented.

11.0 Scope of Mitigation

11.1 Mitigation by Design - Operation

Many of the potential effects of artificial lighting can be effectively mitigated by a suitable lighting strategy, good design and choice of suitable lighting equipment and the lighting design being carried out by a suitably qualified and competent professional. The following paragraphs detail good lighting practices to be applied to the design of the artificial lighting required within the application site during the Operation phase.

Exterior lighting of the application site should comply with guidance outlined above for lighting of outdoor workplaces. *(BS EN 12464-2:2014)*

The existing lighting could be improved through the implementation of a suitable lighting strategy, which would propose the installation of double asymmetric luminaires to ensure that light is focussed downwards onto the floor or other surfaces in the horizontal plane, minimising the potential for direct upward light, light spill and light trespass.

Where luminaires are installed close to the application site boundaries, the designer shall ensure that luminaires are focussed downwards, with the inclination angle not exceeding 30°.

Glare shall be minimised by ensuring that luminaires are specified with an inclination angle not greater than 30°. Security lighting requires some vertical illuminance in order to help CCTV cameras reproduce detail to a good

standard. Lighting should be carefully designed to ensure that vertical illuminance does not fall outside of the required areas.

Glare from existing lighting should be reduced by decreasing the angle of tilt on the luminaires installed across the application site.

12.0 Residual Effects Assessment

The potential effects associated with the additional lighting would be minimised by the application of the mitigation measures outlined above. With the implementation of the mitigation, it is assessed that obtrusive light will be minimised. This is due to the reduction in inclination angle and subsequent glare.

Residential receptors are unlikely to be sensitive to changes in lighting due to their existing surroundings. Mitigation measures implemented for the reduction of obtrusive light would further reduce the potential for obtrusive light to a minimum and within ILP Guidance Limits.

Following the implementation of mitigation measures as outlined in **Section 11**, the residual effects are assessed to beof
minor (adverse) significance.

The proposed lighting is unlikely to cause a significant increase in obtrusive light when compared to the existing baseline conditions. Mitigation measures for luminaire tilt shall be sufficient for the control of glare, light spill, light trespass and upward light.

The application of the above mitigation measures would ensure that light intrusion, light source intensity (glare) and upward light onto potential receptors is minimised, resulting in the residual effects detailed in **Table8.**

Table 8 Significance of Effects (after mitigation)

Environmental Effect	Receptor Location	Sensitivity of Receptor	Impact Magnitude	Nature of Impact Permanent / Temporary	Residual Effects
				Operation	
Direct Source Luminance or Glare	1 , 2 , 3	Medium	Low	Permanent	**Minor (adverse)**
Sky Glow or Upward Light	1 , 2 , 3	Medium	Low	Permanent	**Minor (adverse)**
Disability Glare	1 , 2 , 3	Medium	Low	Permanent	**Minor (adverse)**
Light Intrusion	1 , 2 , 3	Medium	Low	Permanent	**Minor (adverse)**

13.0 Conclusions

13.1 Introduction

This report addresses the effects resulting from artificial lighting associated with the development on the application site and its surroundings. It assesses the potential effects from obtrusive light associated with the exterior lighting design. The principal objective is to assess likely significant residual effects.

13.2 Baseline Conditions

The application site is within an Urban Environment. As such the area is assessed to be an E4 Environmental Zone.. Lighting is currently installed within and surrounding the application site.

13.3 Potential Significant Effects

The requirement for artificial lighting to support the application site means that there could be some minor residualaffects to residential receptors

13.4 Mitigation and Enhancement

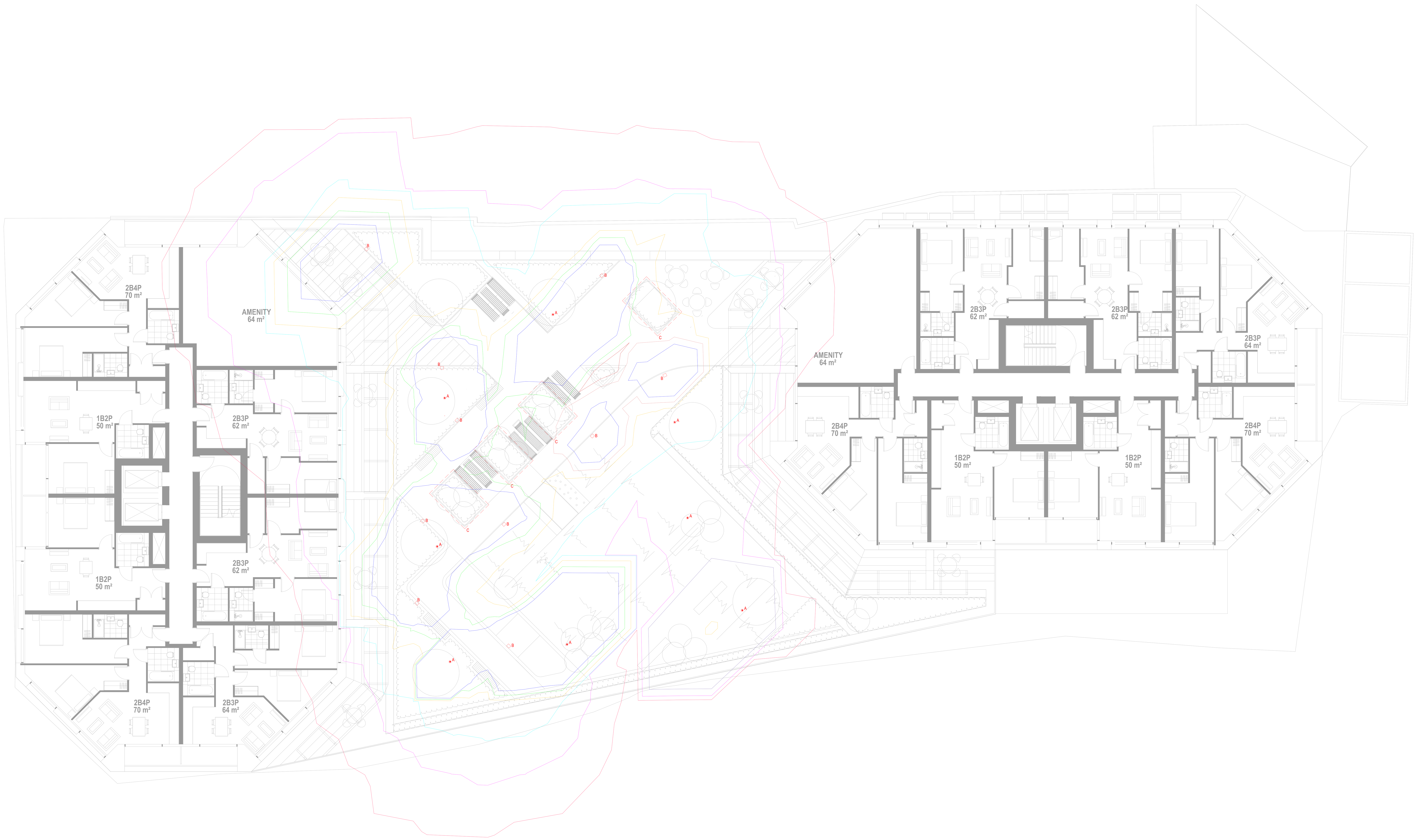
The result of incorporating the mitigations identified in Section 11 will be to reduce the significance of the potential effects to ensure that the significance of the effects shall be:

minor (adverse).

13.5 Residual Effects

Following mitigation, the residual effects are likely to be of minor significance due to the low number of potentialreceptors, and the containment of light within the application site. Potential glare will be reduced by limiting the inclination angle of the luminaires to ≤30°.

APPENDIX A – Initial External Lighting Layout



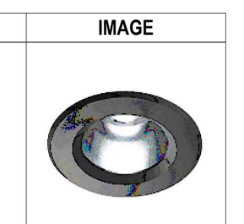
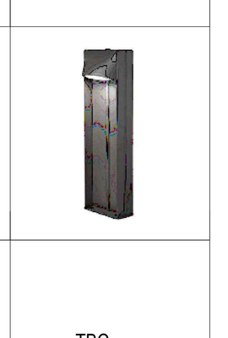
NOTES

1. THIS DRAWING OUTLINES THE PROPOSED EXTERNAL LIGHTING STRATEGY TO BE DEVELOPED.
2. LUMINAIRES ARE INDICATED FOR ILLUSTRATION PURPOSES AND ARE SUBJECT TO DETAILED DESIGN CALCULATIONS.
3. THE LIGHTING STRATEGY HAS BEEN DEVELOPED WITH DUE CONSIDERATION TO THE ENVIRONMENT AND ECOLOGICAL IMPACT. THE EXTERNAL LIGHTING SHALL BE IN ACCORDANCE WITH ILP PUBLICATION THE OUTDOOR LIGHTING GUIDE AND CIBSE LG06.
   CLASSIFICATION IS CONSIDERED TO BE - ENVIRONMENTAL ZONE E3 - MEDIUM DISTRICT BRIGHTNESS.

   LL LUMINAIRES SHALL BE SELECTED TO BE LOW LEVEL DOWNWARD DIRECTIONAL, THEY SHALL BE DIRECTED AWAY FROM RESIDENTIAL PROPERTY AND THE SKY GLOW ULR SHALL BE < 2.5%.

   LIGHT INTRUSION INTO WINDOWS SHALL BE <5LUX EV PRE-CURFEW AND <1LUX EV POST-CURFEW
4. CONSIDERATION HAS BEEN GIVEN TO CRIME PREVENTION, DETECTION AND PEDESTRIAN SAFETY AND SECURITY.
5. THE EXTERNAL LIGHTING SHALL BE IN ACCORDANCE WITH BS 5489-2:2013 WITH LIGHTING LEVELS BEING IN ACCORDANCE WITH BS EN 13201-2:2003.
6. AREAS INDICATED ARE TO BE TO NCC ADOPTABLE HIGHWAYS STANDARDS.
7. WHERE COLUMN HAS NOT BEEN STATED, EXISTING COLUMN TO REMAIN AND TO REPLACE LIGHTING COLUMN LUMINAIRE.
8. LOCAL AUTHORITY LAND LIGHTING FINAL DESIGN WILL BE CARRIED OUT BY LOCAL AUTHORITY HIGHWAYS LIGHTING CONTRACTORS IN ACCORDANCE WITH LOCAL AUTHORITY REGULATIONS FOR FINAL ACCEPTANCE.
9. FINAL LIGHTING DESIGN IS TO BE IN ACCORDANCE WITH ILP GUIDANCE NOTES FOR REDUCTION OF RESTRICTIVE LIGHT 2020 - GUIDANCE NOTE 01/20 AND BAT CONSERVATION ACT 2018.
10. ALL LUMINAIRES TO BE FLAT GLASS WITH ANGLE OF LIGHT OMITTED BELOW 30 DEGREES TO ENSURE ULOR OF A MAXIMUM OF 2.5%..

LIGHTING SCHEDULE - ALL CARPARK AND PUBLIC REALM AREAS/FOOTPATHS TO BE 3000K COLOUR TEMPURATURE

SYMBOL	DESCRIPTION	MANUFACTURER	CATALOGUE No.	IMAGE
A	RECESSED WEATHER AND VANDAL RESISTANT DOWNLIGHTER SUITABLE FOR SUB SURFACE RAIL APPLICATIONS. LED ARRAY, 14.2W, 1676LMS, 118LM/W, 4KG. VARIOUS RANGE OF FITTING OPTION INCLUDING - MATT WHITE FINISH, MATT SILVER FINISH, REMOTE BOX 3 HOUR DURATION EMERGENCY, DALI DIMMING/MONITORING, MEDIUM BEAM, WARM WHITE LEDS (3000K) LED, FROSTED GLASS DIFFUSER.	DESIGN PLAN LIGHTING TERMINUS S12	TMR/2000WNW/C49/S12C	
B	WEATHER AND VANDAL RESISTANT BOLLARD WITH LIGHT OUTPUT OF 100 LM/W. 14W, 1201, LM 86, LM/W, 15KG. VARIOUS RANGE OF FITTING OPTION INCLUDING - MATT SILVER FINISH, MATT BLACK FINISH, INTEGRAL 3 HOUR DURATION EMERGENCY, DALI 3 HOUR DURATION EMERGENCY, DALI DIMMING/MONITORING, PHOTOCELL. WARM WHITE LEDS (3000K) – 1100/1400LM ONLY	DESIGN PLAN LIGHTING ZELOS BEAM	TLSBB/1400NW/XC49	
C	DECORATIVE LED STRIP LIGHTING TO BE INSTALLED AS INDICATED ON THE LAYOUT DRAWING. THESE LED STRIP DO NOT HAVE AN IMPACT ON THE LIGHTING OVERSPILL - THESE ARE FOR DECORATIVE PURPOSES ONLY.	TBC	TO BE CONFIRMED DURING THE DETAIL DESIGN STAGE.	TBC

LUX LEVEL LEGEND

ISOLINE SCHEDULE

REFERENCE	LUX LEVEL
(line)	0.2
(line)	0.5
(line)	1
(line)	5
(line)	10
(line)	15
(line)	30

Rev	Drawn	App	Date	Description
P01	SD	GH	30/11/2021	Planning Stage.

Drawing Status

PLANNING STAGE

Client

HIGH STREET LIVING (STAINES) LTD

Project:

FORMER DEBENHAMS STORE STAINES

Drawing Title:

PROPOSED ROOF GARDEN PARK OUTLINE LIGHTING LAYOUT

Role	Name	Signed	Date
Designed	Shaun Davies	[signature]	30.11.2021
Drawn	Shaun Davies	[signature]	30.11.2021
Checked	Mark Eldridge	[signature]	30.11.2021
Approved	Geraint Harris	[signature]	30.11.2021

Original Scale 1:100 | Original Size A0

Vitec
CARDIFF: 7 Village Way, Greenmeadow Springs Bus. Pk. Tongwynlais, Cardiff CF15 7NE Tel: 02920 620232 Email: cardiff@vitecconsult.com
LONDON: 12 Melcombe Place, London NW1 6JJ Tel: 0207 979 2005 Email: london@vitecconsult.com
Visit Us At: www.vitecconsult.com

Project No. 5039 | Drawing No. LTG 1 | Rev. P01

RELUX®

Installation : Lighting

Project number	:	Staines
Customer	:	
Processed by	:	NM
Date	:	30.11.2021

1 Luminaire data

1.1 Designplan, Zelos Wall Max TLSWM-1... (TLSWM-1100NW-XC49)

1.1.1 Data sheet

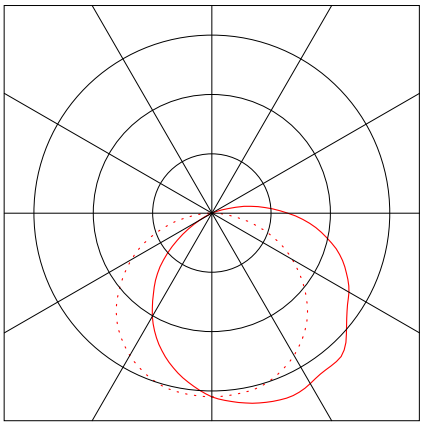
Manufacturer: Designplan

TLSWM-1100NW-XC49 **Zelos Wall Max TLSWM-1100NW-XC49**

Luminaire data		
Luminaire efficiency	:	105.44%
Luminaire efficacy	:	154.36 lm/W
Classification	:	A31 ↓96.6% ↑3.4%
CIE Flux Codes	:	42 72 90 97 105
UGR 4H 8H	:	30.8 / 25.1
Power	:	8.5 W
Luminous flux	:	1312.1 lm

Equipped with		
Quantity	:	1
Designation	:	LED
Colour	:	4000K
Luminous flux	:	1244.4 lm
Colour reproduction	:	>80

Dimensions : 362 mm x 162 mm x 214 mm



1 Luminaire data

1.2 Designplan, Terminus S12C TMR/2000... (TMR/2000MNW/C49...)

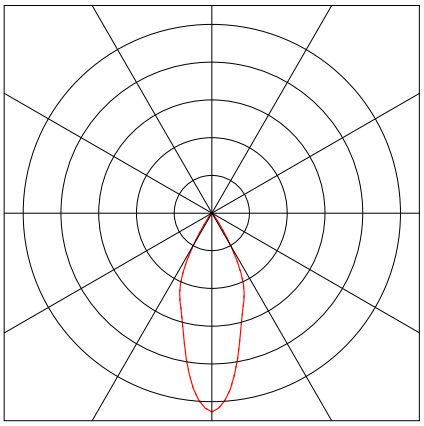
1.2.1 Data sheet

Manufacturer: Designplan

TMR/2000MNW/C49/S12C **Terminus S12C TMR/2000MNW/C49/S12C**

Luminaire data		
Luminaire efficiency	:	95.2131%
Luminaire efficacy	:	106.44 lm/W
Classification	:	A80 ↓100.0% ↑0.0%
CIE Flux Codes	:	99 100 100 100 95
UGR 4H 8H	:	10.8 / 10.8
Power	:	14.18 W
Luminous flux	:	1509.3 lm
Dimensions	:	Ø235 mm x 8 mm

Equipped with		
Quantity	:	1
Designation	:	LED
Colour	:	4000K
Luminous flux	:	1585.2 lm
Colour reproduction	:	>80

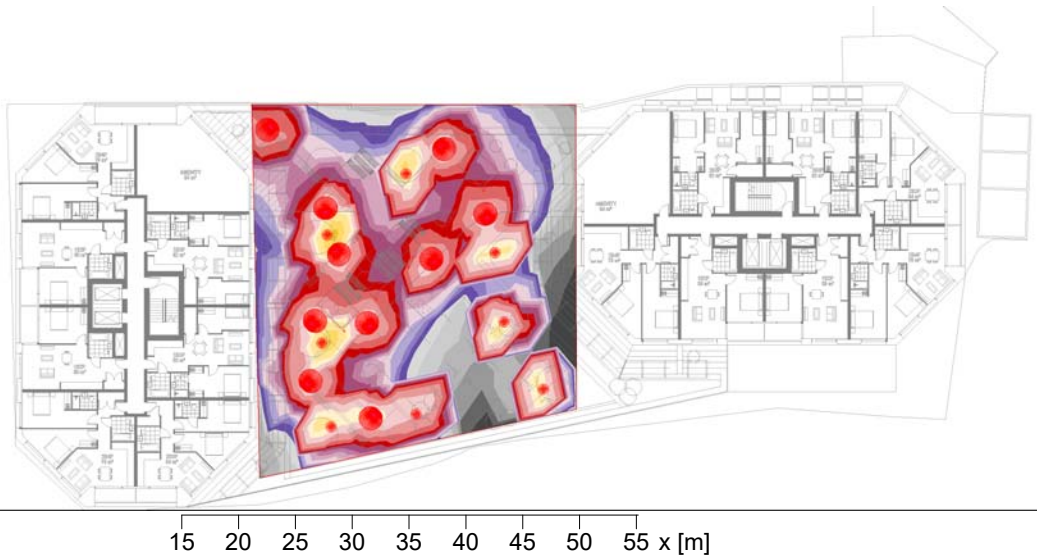


RELUX®

2 Exterior 1

2.2 Summary, Exterior 1

2.2.1 Result overview, Evaluation area 1



Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	25125.60 lm
Total power	198.4 W
Total power per area (840.08 m²)	0.24 W/m² (1.07 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	22 lx
Emin	0.1 lx
Emin/Em (Uo)	0.00
Emin/Emax (Ud)	0.00
Position	0.00 m

Type No.\Make

Designplan

1 10

Order No. : TLSWM-1100NW-XC49
Luminaire name : Zelos Wall Max TLSWM-1100NW-XC49
Equipment : 1 x LED 8.5 W / 1244.4 lm

2 8

Order No. : TMR/2000MNW/C49/S12C
Luminaire name : Terminus S12C TMR/2000MNW/C49/S12C
Equipment : 1 x LED 14.18 W / 1585.2 lm