

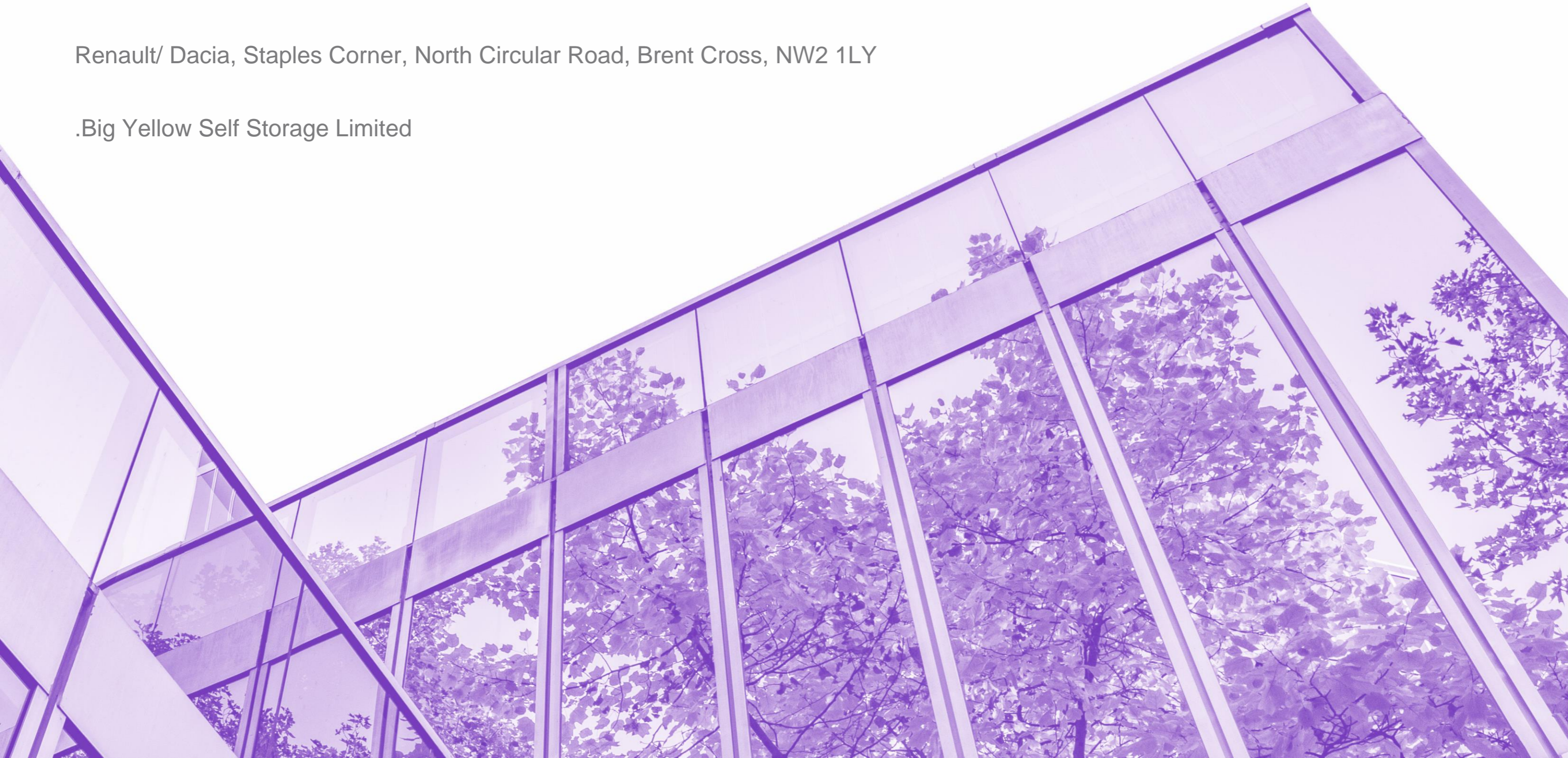


# Big Yellow Staples Corner

## External Lighting Statement

Renault/ Dacia, Staples Corner, North Circular Road, Brent Cross, NW2 1LY

.Big Yellow Self Storage Limited





---

Client .Big Yellow Self Storage Limited

---

Revision Draft Issue

---

Date of issue 01/12/2023

---

Report production Neil Granger CEng MCIBSE MIET

---

QA by Trevor Dingle BEng (Hons) CEng  
MCIBSE

---

# Contents

1.0	Executive Summary	4
2.0	Introduction	5
3.0	Lighting Design Considerations	6
4.0	Summary and Next Steps	11



## 1.0 Executive Summary

Tuffin Ferraby Taylor (TFT) Ltd. have been commissioned by .Big Yellow Self Storage Limited to prepare this External Lighting Statement to support a planning application for the development of New Staples Corner Self Storage, in the London Borough of Barnet, London.

The proposals are for the demolition of an existing car dealership within the neighbouring Staples Corner Business Park (London Borough of Brent) and replacing this store in the London Borough of Barnet with the construction of a six-storey self-storage facility (Use Class B8), flexible office space (Use Class E(g)(i)) and larger external storage units (Use Class B8).

The proposal includes the erection of a five-storey self-storage facility (Use Class B8) operated by Big Yellow Self Storage. The facility will comprise a permanent ground floor providing 2,430m<sup>2</sup> (GIA) of self-storage floorspace (Use Class B8). Self-storage floorspace would increase through the installation of demountable mezzanine floors across the first, second, third, fourth and fifth floors. The demountable mezzanine floors would be added under permitted development, after practical completion of the storage building. Flexible office space of 378m<sup>2</sup> at ground floor and 160m<sup>2</sup> of external storage units on the ground floor will be provided. The total area including demountable mezzanine floors is 18,190m<sup>2</sup>. Permanent floor space is provided on the ground floor only.

.Big Yellow Self Storage Limited’s vision for the development involves a holistic sustainability approach which seeks to satisfy the local and regional policies and go beyond the standards set by Building Regulations. From a review of the applicable codes, standards and guidance, the following design criteria and considerations have been identified for New Staples Corner:

Consideration	Classification
Environmental zone classification	– E3 (suburban, medium district brightness)
Vehicular route	– P4 classification, Ave Illuminance 5 lux, Min illuminance 1 lux
Car Park	– Medium traffic classification, Ave Illuminance 10 lux, 0.25 uniformity
Pedestrian routes	– Illuminance to suit wayfinding and security
Light spill / intrusion	– maximum illuminance on the vertical plane: 10 lux (pre-curfew) 2 lux (post-curfew)
Glare	– A larger number of lower output luminaires – A higher luminaire mounting position on a building façade or column, utilizing a narrower beam. – Lower aiming angle of luminaires – to be <70° where practicable.
Sky glow	– maximum ULR of 5%
Facades and signage	– maximum building façade luminance (L <sub>b</sub> ) of 10 cd/m <sup>2</sup> – maximum sign luminance (L <sub>s</sub> ) of 800 cd/m <sup>2</sup>
Colour temperature	– 3000K
Colour rendering	– Ra ≥ 80

Consideration	Classification
Ecology	<ul style="list-style-type: none"> <li>– <i>“To ensure the foraging habitat along the River Brent has no indirect impacts from the proposals, the lighting to be installed as part of the development that will be situated along the northern boundary of the site or facing the River Brent should be in line with [ILP] Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2014)”</i></li> <li>– <i>“Lux levels from the proposals should not exceed the present levels of light cast on the river and northern boundary of the site and should avoid lighting the new proposed landscaping elements.”</i></li> </ul>
Other considerations	<ul style="list-style-type: none"> <li>– All luminaire light emitting diode (LED) type.</li> <li>– All luminaires to have an average initial luminous efficacy of not less than 95 luminaire lumens per circuit Watt.</li> <li>– Have automatic control to prevent operation during daylight hours (time clock and photocell mounted on the north face of the building).</li> <li>– Have switching capability such that all external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.</li> </ul>



## 2.0 Introduction

### 2.1 The Applicant

The Applicant is Big Yellow Self Storage Limited (hereafter referred to as 'The Applicant' or 'Big Yellow').

### 2.2 Purpose

The Applicant has appointed Tuffin Ferraby Taylor (TFT) Ltd (hereafter referred to as 'TFT') to identify the key planning requirements associated with the external lighting at the site and the proposed design response. This will consider aspects such as light pollution, ecology, safety and energy efficiency and tie into the wider sustainability strategy for the site, whilst ensuring that the scheme provides a safe and inviting environment for visitors, minimising the impact on the environment and the surrounding areas.

### 2.3 Proposed Development

The proposals are for the demolition of an existing car dealership within the neighbouring Staples Corner Business Park (London Borough of Brent) and replacing this store in the London Borough of Barnet with the construction of a six-storey self-storage facility (Use Class B8), flexible office space (Use Class E(g)(i)) and larger external storage units (Use Class B8).

The proposal includes the erection of a five-storey self-storage facility (Use Class B8) operated by Big Yellow Self Storage. The facility will comprise a permanent ground floor providing 2,430m<sup>2</sup> (GIA) of self-storage floorspace (Use Class B8). Self-storage floorspace would increase through the installation of demountable mezzanine floors across the first, second, third, fourth and fifth floors. The demountable mezzanine floors would be added under permitted development, after practical completion of the storage building. Flexible

office space of 378m<sup>2</sup> at ground floor and 160m<sup>2</sup> of external storage units on the ground floor will be provided. The total area including demountable mezzanine floors is 18,190m<sup>2</sup>. Permanent floor space is provided on the ground floor only.



Figure 1 - Proposed Development Location



### 3.0 Lighting Design Considerations

There are several factors that require consideration when undertaking external lighting design:

- Policy and guidance
- Environmental zone classification & illuminance criteria
- Light pollution / Obtrusive Light
- Ecology
- Colour Temperature and Colour Rendering
- Equipment/product selection

#### 3.1 Policy and guidance

There are several documents that set out the requirements and best practice with respect to external lighting for users, pedestrians and vehicles. These include:

- BS5489-1:2020 - Design of road lighting - Lighting of roads and public amenity areas. Code of practice.
- BS EN13201-2:2015 – Road lighting
- CIE136: 2000 - Guide to the lighting of urban areas
- SLL Code for Lighting (2022)
- CIBSE Lighting Guide 6: The Outdoor Environment (2016)
- The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

There are also a number of additional guidance documents specific to the location of the proposed site. These include:

- The London Plan (2021)
- Light Pollution in London, Environment Committee, London Assembly (May 2023)
- Barnet's Local Plan (2012)
- Barnet's Draft Local Plan (2021-2036)
- London Borough of Barnet Streetscape Design Guide (2022)
- ILP Guidance Note 08/18 – Bats and Artificial Lighting in the UK (2018)

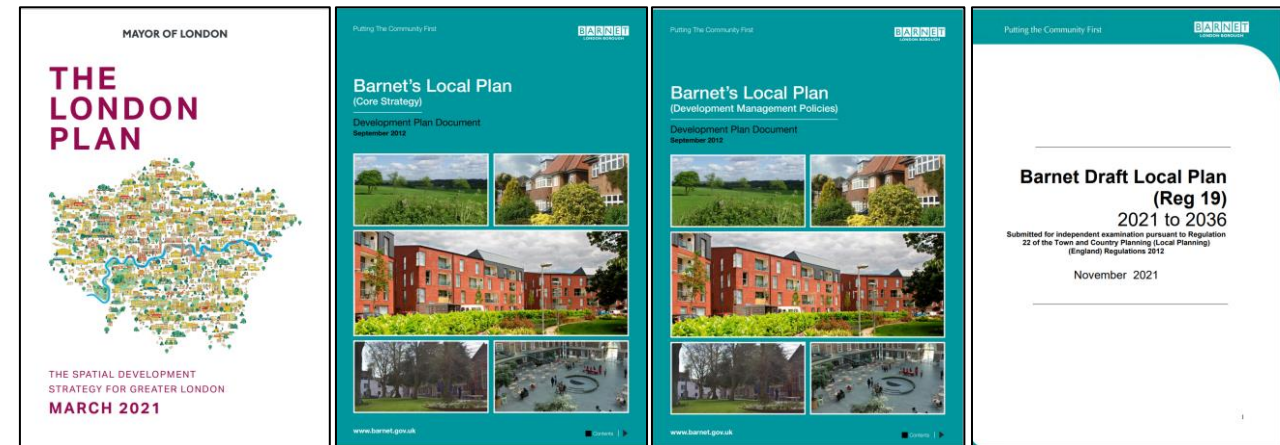


Figure 2 - The London Plan (2021), Barnet's Local Plan (2012 and 2021-2036)

From these documents, key design criteria such as environmental zone classification, illumination levels and sky glow and glare limits will be derived.

#### 3.2 Environmental zone classification and illuminance criteria

##### 3.2.1 Environmental zone classification

The ILP Guidance Note GN01 - Reduction of Obtrusive Light (2021) deals with the problem of obtrusive light. Part of this relates to establishing the local environment zones as suggested by the table below.

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

Figure 3 - Table 2 from ILP GN01

From a review of the site, although there are a large number of vehicular routes, including dual carriageway, and industrial buildings to the south east of the site and around to the north, it is unlikely that these would be considered to be areas with “high district brightness”. The area concerned is also unlikely to have a high level of night-time activity and therefore building lighting is likely to be restricted to access lighting during working hours in winter and security lighting out of hours.

Given the above and the fact that the area would not be considered as a “dark outer suburban location”, we anticipate that New Staples Corner is in an E3 environmental zone.

### 3.2.2 Illuminance criteria – vehicular routes

BS5849-1:2020 gives a guide to the selection of lighting classes for vehicular routes and therefore target levels of illuminance required. An extract from the regulation relating to subsidiary roads including pedestrian areas, footpath and cycle tracks is below:

Traffic flow	Lighting class		
	E1 to E4 <sup>(1)</sup>	E1 to E2 <sup>(1)</sup>	E3 to E4 <sup>(1)</sup>
	Pedestrian and cyclists only	Speed limit v ≤ 30 mph	Speed limit v ≤ 30 mph
Busy <sup>(2)</sup>	P5	P4	P3
Normal <sup>(3)</sup>	P5	P5	P4
Quiet <sup>(4)</sup>	P6	P5	P4

Figure 4 - Table 4 from BS5489-1:2020

From a review of the above, it is anticipated that roads to and at the site will be considered to be “normal” traffic flow (“Normal traffic flow refers to areas where the traffic usage is of a level equivalent to a housing estate access”) and the site is considered to be an E3 environmental zone.

Cross referencing the table extracted from BS EN 13201-2:2015, we anticipate that a minimum maintained illuminance of 5 lux, with a minimum illuminance of 1 lux is required for vehicular routes at New Staples Corner, consistent with a P4 classification.

Class	Horizontal illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}^a$ [minimum maintained] lx	$E_{min}$ [maintained] lx	$E_{v,min}$ [maintained] lx	$E_{sc,min}$ [maintained] lx
P1	15,0	3,00	5,0	5,0
P2	10,0	2,00	3,0	2,0
P3	7,50	1,50	2,5	1,5
P4	5,00	1,00	1,5	1,0
P5	3,00	0,60	1,0	0,6
P6	2,00	0,40	0,6	0,2
P7	performance not determined	performance not determined		

<sup>a</sup> To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1,5 times the minimum  $\bar{E}$  value indicated for the class.

Figure 5 - Table 3 from BS EN 13201-2:2015

We do not anticipate that there will be any roads and areas adopted by the Local Authority. However, if it is deemed to be required, the decision on classification will rest with the authority.

### 3.2.3 Illuminance criteria – outdoor car park

BS5849-1:2020 gives a guide to the target levels of illuminance required for the outdoor car park areas, as follows:

Type of area and usage	Values in lux	
	$\bar{E}$	$U_o$
Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks	5	0.25
Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes	10	0.25
Heavy traffic, e.g. parking areas of major shopping centres, major sports and multipurpose sports and building complexes	20	0.25

Figure 6 - Table 4 from BS5489-1:2020

From a review of the above, it is anticipated that an average horizontal illuminance of 10 lux and uniformity of 0.25 will be required for the car park at New Staples Corner.

### 3.2.4 Illuminance criteria – pedestrian routes

Whilst vehicle routes and car park lighting follows specific British Standards figures as noted previously, it is proposed that the pedestrian routes are not illuminated to a specific lux level, excepting whether there is need for a minimum level for security, including CCTV.

We anticipate that low level, more discrete directional / wayfinding lighting will be provided to ensure safe navigation of the site. This approach has been considered in order to minimise light pollution and unnecessary energy usage.

## 3.3 Light pollution / Obtrusive light

Poorly considered external lighting has a high likelihood of having a detrimental impact on neighbouring properties, users of the buildings and surrounding areas, and local wildlife. There are a number of factors that require to be considered as part of the overarching ‘light pollution’ considerations:

- Light spill / intrusion
- Glare
- Sky Glow
- Overlit facades and signs

The above points can all be mitigated through care in design and consideration of surroundings. Establishing need for lighting, as well as the correct levels required, also ensures there is no waste in energy and therefore unnecessary carbon emissions.

In accordance with BREEAM criteria Pol 04 (based on 2018 New Construction) we propose that the external lighting design will be compliance with Institution of Lighting Professionals (ILP) Guidance notes for the

reduction of obtrusive light, 2021. We note that this supersedes the previous 2011 version referenced in the BREEAM guidance, which has been withdrawn. The factors key to compliance are discussed below.

### 3.3.1 Light spill / intrusion

Light spill / intrusion is generally the impact of lighting beyond the target and/or boundary area of a site, that potentially adversely affects others. The image below shows the typical types of intrusive light in relation to the target area.

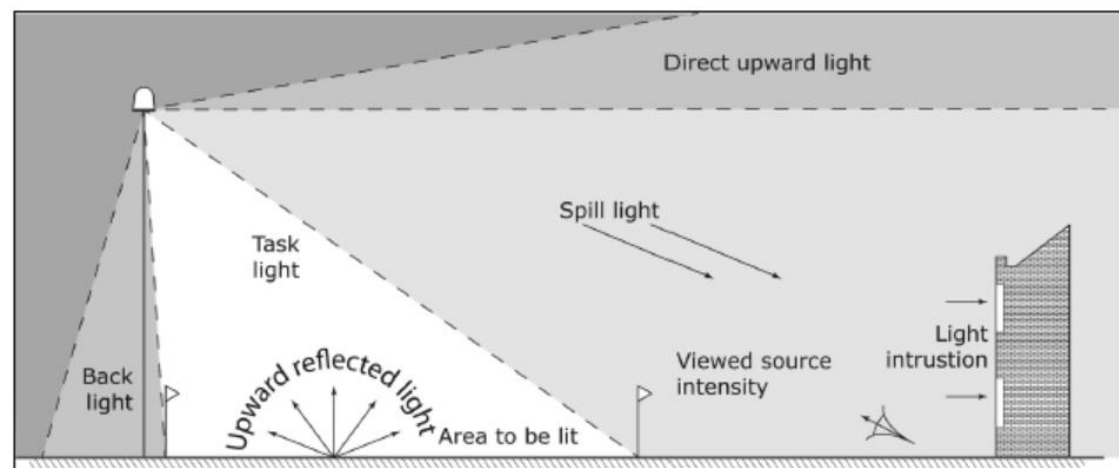


Figure 7 - Figure 1 from The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

There are limits on the intrusive light on the vertical plane, typically associated with spill light intruding on a neighbouring building (e.g. housing). The limits are defined for both pre- and post-curfew, which is defined by the local authority, but is generally considered to be 23:00.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E <sub>v</sub> )	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

Figure 8 - Table 3 from The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

From a review of the above, given that the site is considered to be an E3 environmental zone, a maximum illuminance on the vertical plane will be 10 lux (pre-curfew) and 2 lux (post-curfew).

### 3.3.2 Glare

Glare is the uncomfortable brightness of a light source (particularly where contract ratios between source and background are high). Poor luminaire selection can lead to 'temporary blinding' or 'dazzling' – a risk where vehicular movement occurs.

The table below shows an approximation of the glare based on angle of light emitted.

Angle of light emitted (degrees)	Sky glow effect	Glare effect
100 - 180	Local	Little
95 - 100	Significant	Some
90 - 95	High	High
85 - 90	Significant	High
0 - 85	Minimum	Some

Figure 9 - Table 1 from The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

Consideration will need to be given to a combination of the following in the lighting design:

- A larger number of lower output luminaires
- A higher luminaire mounting position on a building façade or column, utilizing a narrower beam.
- Lower aiming angle of luminaires – to be <70° where practicable.

### 3.3.3 Sky glow

Sky glow is associated with lighting that contributes to the brightening of the night sky. Limits on the upward light ratio (ULR), the maximum permitted percentage of luminaire flux that goes directly into the sky, are defined within The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021).

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR) / %	0	0	2.5	5	15

Figure 10 - Table 6 from The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

From a review of the above, given that the site is considered to be an E3 environmental zone, a maximum ULR of 5% will be allowable. As such, luminaire selection will be critical to achieving this, with review of photometrics and aiming angles necessary during the detailed design.



### 3.3.4 Overlit facades and signs

Overlit facades and signage can cause intrusion and adversely affect neighbours. As such, there are defined limits for façade and sign luminance.

Light technical parameter	Application conditions	Environmental zones				
		E0	E1	E2	E3	E4
Building façade luminance ( $L_b$ )	Taken as the product of the design average illuminance and reflectance divided by $n$	< 0.1 cd/m <sup>2</sup>	< 0.1 cd/m <sup>2</sup>	5 cd/m <sup>2</sup>	10 cd/m <sup>2</sup>	25 cd/m <sup>2</sup>
Sign luminance ( $L_s$ )	Taken as the product of the design average illuminance and reflectance divided by $n$ ( $\pi$ ), or for self-luminous signs, its average luminance	< 0.1 cd/m <sup>2</sup>	50 cd/m <sup>2</sup>	400 cd/m <sup>2</sup>	800 cd/m <sup>2</sup>	1.000 cd/m <sup>2</sup>

Figure 11 - Table 8 from The Reduction of Obtrusive Light Guidance Note 01/21, Institution of Lighting Professionals (ILP) (2021)

From a review of the above, given that the site is considered to be an E3 environmental zone, a maximum building façade luminance ( $L_b$ ) of 10 cd/m<sup>2</sup> and a maximum sign luminance ( $L_s$ ) of 800 cd/m<sup>2</sup> are allowable.

### 3.4 Ecology

A well-considered lighting strategy can help eliminate or mitigate the potential effects of lighting on surrounding light sensitive areas. Lighting can be used to enhance the look and feel of landscaping, but it can also be detrimental to wildlife. As such, it is important to identify any site specific risks that need to be addressed as part of the design.

An ecologist has been appointed as part of the project and has identified a number of considerations for the site that will have an impact on the external lighting. These relate to the presence of bats in the area, specifically foraging habitat along the River Brent.

The ecologist's recommendations are:

- “To ensure the foraging habitat along the River Brent has no indirect impacts from the proposals, the lighting to be installed as part of the development that will be situated along the northern boundary of the site or facing the River Brent should be in line with [ILP] Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2014)”
- “Lux levels from the proposals should not exceed the present levels of light cast on the river and northern boundary of the site and should avoid lighting the new proposed landscaping elements.”

It is confirmed that the external lighting design shall take cognisance of these recommendations, including the updated ILP guidance from 2018.

## 3.5 Colour Temperature and Colour Rendering

### 3.5.1 Colour temperature

Colour temperature of lighting is an important consideration in lighting design, irrespective of whether internal or external. Daylight and sunlight throughout a day will vary in colour temperature, with a warmer (orange/yellow) at sunrise and sunset and a cooler (blue) in the middle of the day. Accordingly, colour temperature is typically expressed in Kelvins (K) with the warmer colours between 2700 and 3000K, cooler colours at 4000K and daylight generally considered to be at 6500K.

Lighting of different colour temperature can be used to enhance the depth of colour and is regularly used within retail to increase vibrancy of product, such as clothing. Different colour temperatures (as well as different colour rendering – see 3.5.2) can also be used to enhance buildings materiality, with red brick or sandstone benefiting from a warmer colour temperature.

Different users will also have different perception of colour temperature, with warmer colours considered to be more ‘welcoming’. It is not just humans, however, who may prefer lighting of different colour temperature.

As noted in the ecology section, bats have been noted as having a foraging habitat along the River Brent and the lighting design must consider this. Research referenced in the ILP Guidance Note 08/18 – Bats and Artificial Lighting in the UK (2018) states that “...warmer colour temperatures with peak wavelengths greater than 550nm (~3000°K) cause less impacts on bats.”

As such, it is proposed that lighting for New Staples Corner will be specified to be of 3000K colour temperature.

### 3.5.2 Colour rendering

Colour rendering, the ability of an artificial light source to accurately render colours of objects in a way that is consistent with natural daylight, also needs to be considered for the development. The colour rendering index (CRI) helps define this, with Ra ratings given between 0 (very poor) and 100 (excellent).

As light sources and technology have advanced, higher Ra values have been achieved more consistently, with high quality LED lighting able to achieve >95, though it is more normal for good lighting design to achieve an Ra ≥ 80.

Given the nature of the project, it is proposed that lighting for New Staples Corner will be specified to be a minimum of Ra 80.

## 3.6 Equipment/product selection

Luminaire selection is an important consideration. In accordance with BREEAM criteria Ene 03 and Pol 04 (based on 2018 New Construction) we propose that all external lighting will be specified to:

- Be of light emitting diode (LED) type.
- Have an average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt. Note that it is proposed to increase this value to a minimum of 95 luminaire lumens per circuit Watt.

- Have an upward light component aligned with the previously stated considerations with respect to light pollution.

Lighting controls are also an important consideration to minimise unnecessary use. In accordance with BREEAM criteria Ene 03 and Pol 04 (based on 2018 New Construction) we propose that all external lighting will be specified to:

- Have automatic control to prevent operation during daylight hours (time clock and photocell mounted on the north face of the building).
- Have switching capability such that all external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.

In addition,

- Where safety and/or security lighting is provided and is necessary to be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes.
- Illuminated advertisements are designed in compliance with ILP PLG05 The Brightness of Illuminated Advertisements and in line with the figures noted in 3.3.4 of this report.
- Have presence detection in areas of intermittent pedestrian traffic through either passive infrared (PIR) or microwave sensors.



## 4.0 Summary and Next Steps

### 4.1 Summary

From a review of the applicable codes, standards and guidance, the following design criteria and considerations have been identified for New Staples Corner.

Consideration	Classification
Environmental zone classification	– E3 (suburban, medium district brightness)
Vehicular route	– P4 classification, Ave Illuminance 5 lux, Min illuminance 1 lux
Car Park	– Medium traffic classification, Ave Illuminance 10 lux, 0.25 uniformity
Pedestrian routes	– Illuminance to suit wayfinding and security
Light spill / intrusion	– maximum illuminance on the vertical plane: 10 lux (pre-curfew) 2 lux (post-curfew)
Glare	– A larger number of lower output luminaires – A higher luminaire mounting position on a building façade or column, utilizing a narrower beam. – Lower aiming angle of luminaires – to be <70° where practicable.
Sky glow	– maximum ULR of 5%
Facades and signage	– maximum building façade luminance ( $L_b$ ) of 10 cd/m <sup>2</sup> – maximum sign luminance ( $L_s$ ) of 800 cd/m <sup>2</sup>
Colour temperature	– 3000K
Colour rendering	– Ra ≥ 80
Ecology	– <i>“To ensure the foraging habitat along the River Brent has no indirect impacts from the proposals, the lighting to be installed as part of the development that will be situated along the northern boundary of the site or facing the River Brent should be in line with [ILP] Guidance Note 08/18 Bats and Artificial Lighting in the UK (BCT, 2014)”</i>

	– <i>“Lux levels from the proposals should not exceed the present levels of light cast on the river and northern boundary of the site and should avoid lighting the new proposed landscaping elements.”</i>
Other considerations	<ul style="list-style-type: none"> <li>– All luminaire light emitting diode (LED) type.</li> <li>– All luminaires to have an average initial luminous efficacy of not less than 95 luminaire lumens per circuit Watt.</li> <li>– Have automatic control to prevent operation during daylight hours (time clock and photocell mounted on the north face of the building).</li> <li>– Have switching capability such that all external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.</li> </ul>

### 4.2 Next steps

The next steps for the project are to:

- Develop the external lighting design drawing and specification.
- Engage with manufacturers with respect to initial equipment selection.
- Engage with the ecologist with respect to collaboration on the lighting near the River Brent.
- Identify with the local authority whether there will be any adoptable lighting.