

# CANNON PARK STUDENT ACCOMMODATION

Land off De Montfort Way, Coventry

Applicant: ES Coventry Ltd

## LIGHTING IMPACT ASSESSMENT



12 September 2018

# Caldwell

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# 1 General

Caldwell Consulting have been instructed to provide Options and Proposals for the MEP Services for the redevelopment of the existing car park to provide a new student accommodation building and associated amenities, a new multi-story car park, landscape enhancements, new pedestrian crossing and other public realm improvements including this Lighting Impact Assessment.

Development details are as follows;

- Applicant:  
ES Coventry Ltd.
- Location:  
Land off De Montfort Way Coventry, adjacent to Cannon Park Shopping Centre
- Proposed Development:  
The proposed development as described above will comprise of an 808 bed student accommodation over various floor levels with a maximum of six storeys with a multi-storey car park being constructed to the north of the site.

It is proposed to reduce and set back the floors to the south of the site towards the dwellings in Squires Way and Stare Green, see outline sketch below.



*'Architects outline sketch of proposed development looking from south west corner of the site, dwellings in Squires Way detailed on right hand side of the image'*



*'Proposed elevation fronting onto De Montfort Way, dwellings in Squires Way detailed on right hand side of the image'*

## 2 Purpose of this Report

This Report provides an assessment of the potential effects from obtrusive light that may arise from the Lighting Strategy for the proposed development.

The Lighting Assessment will:

- identify potential existing obtrusive light within and around the Application Site
- establish the minimum construction and operational lighting required to safely and securely construct and operate the proposed development;
- describe potential effects on sensitive receptors as a result of obtrusive light from the proposed development
- set out details of the lighting strategy which includes measures to minimise obtrusive light both during construction and following completion

### 2.1 Guidance

#### 2.1.1 Obtrusive Light

Guidance on obtrusive light is set out within the following guidance and good practice documents;

- The Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light
- ILP Professional Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments
- Commission Internationale De L'Eclairage (CIE) 150
- CIE 126 Guidelines for Minimising Sky Glow
- Lighting in the Countryside: Towards Good Practice

### 2.2 Ecological

Guidance on obtrusive light in relation to bats as issued by the Bat Conservation Trust is listed below;

- Bat Conservation Trust – Bats and Lighting in the UK
- Statement on the Impact and Design of Artificial Light on Bats

Matters relating to local ecology will be addressed by a suitably qualified Ecologist who will undertake any necessary surveys, recording, monitoring and producing a report as necessary to inform, advise and closely liaise with the Developer, Site Manager, Engineers etc. as required.

### **2.3 CIBSE Lighting Guide 06: The Outdoor Environment**

The Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 06 provides general and specific lighting design criteria for the outdoor environment.

The guide covers many technical aspects which are likely to be of interest to designers and specifies lighting equipment in outdoor situations.

### **2.4 British Standards**

BS EN 5489-1 Code of Practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas: Lighting of roads and public amenity areas - defines lighting classes for road lighting aimed at the visual needs of road users, and it considers environmental aspects of road lighting.

## **3 Methodology**

This section provides an outline of methods and procedures undertaken in producing the lighting assessment including how the baseline lighting conditions were determined and the assessment process undertaken.

### **3.1 Baseline Conditions**

#### **3.1.1 Desk Based Information**

A desktop review of the Application Site and surrounding area has been undertaken to identify potential light sensitive receptors and to establish the appropriate ILP Environmental Zone classification for the Application Site as defined by the ILP's Guidance Notes for Obtrusive Light.

The following sources of publicly available information were reviewed:

- Ordnance Survey mapping
- Google aerial photography
- Google Street View

Although the desk-based information enables a framework to be established for the assessment, the Google aerial view and Google Street View may not be current and therefore cannot be relied on as being definitive.

### **3.2 Site Visit**

A site visit was undertaken in June 2018 to identify sensitive receptors as well as existing lighting at the Application Site and within the surrounding area.

### **3.3 Sensitive Receptors**

Sensitive receptors within and immediately around the Application Site have been identified and detailed later in this report.

### 3.4 ILP Environmental Zone

The ILP have established Environmental Zones for exterior lighting based on the existing external ambient lighting levels in the area, see table below.

The ILP Environmental Zone classification for the Application Site has been determined based on professional judgement.

The ILP Environmental Zone classification determines the obtrusive light limitations for exterior lighting installations for that area.

Environmental Zone Classifications, ILP 2011	Surrounding	Lighting Environment	Examples
<b>Environmental Zone</b>			
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
<u>E4</u>	<u>Urban</u>	<u>High district brightness</u>	<u>Town/city centres with high levels of night- time activity</u>

### 3.5 Assessment

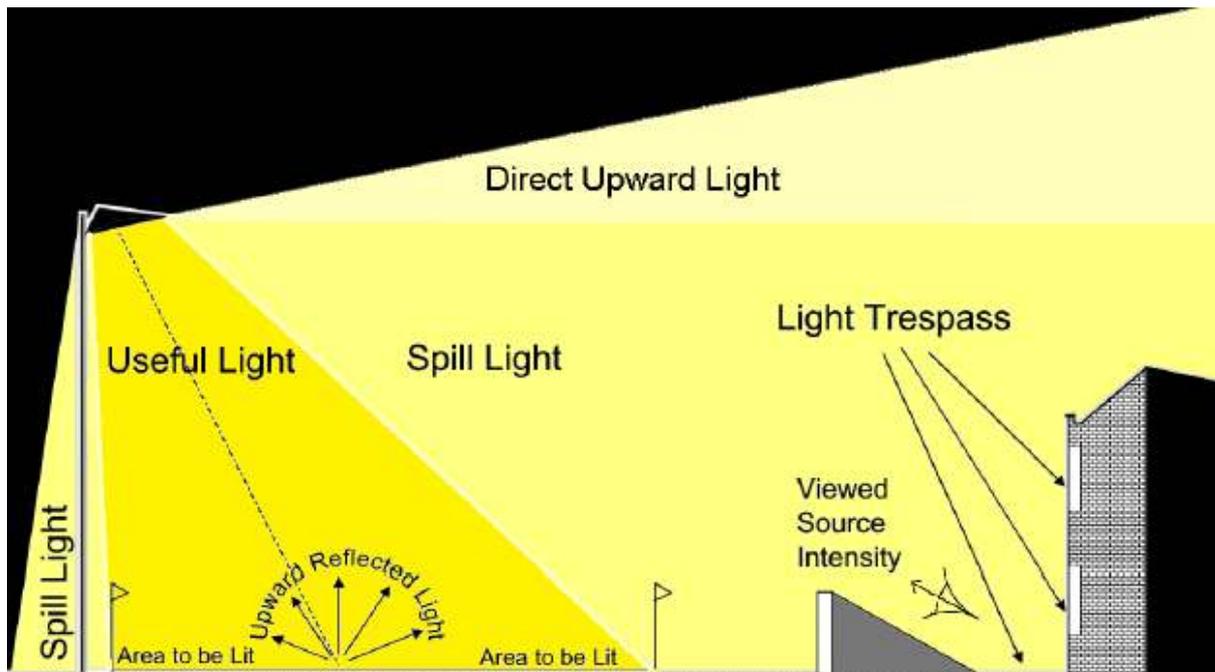
An assessment has been completed to establish the possible effects of obtrusive light that may arise from the proposed development.

This includes the consideration of potential adverse effects of the following three components of obtrusive light:-

**Sky glow**, the brightening of the night sky above areas with large amounts of artificial light which may be reflected from illuminated surfaces or come from direct upward lighting installations.

**Glare**, the brightness of a light source which is uncomfortable when viewed against a dark background. This is mostly experienced when light sources are not covered by a shield or directed by a suitable lens/reflector set up.

**Light intrusion**, when light affects areas beyond the boundary of the area which is to be lit. This is also known as ‘spill’ or ‘trespass’ and may cause nuisance or disturbance to sensitive receptors.



***Diagrammatic Representation of Types of Obtrusive Light (ILP)***

As the design and final internal layout of the development has not yet been agreed, currently between RIBA Work Stage 2 and Stage 3, a detailed Lighting Strategy has not been determined at this date however, it will be developed by Caldwell Consulting and illumination calculations will be produced in order to ensure that lighting illumination levels and glare from the proposed design will not significantly impact on sky glow, glare, light intrusion.

The Lighting Strategy will be developed to meet the specified limitations of the relevant ILP Environmental Zone E4.

## 4 Existing Conditions

### 4.1 The Application Site and Surroundings

#### 4.1.1 The Application Site

As detailed above the Application Site comprises the existing car park adjacent to Cannon Park Shopping Centre which also accommodates a Tesco PLC 'Click and Collect' facility, access to and egress from the car park is from De Montfort Way, Coventry.

The existing car park lighting comprises of a mix of 4m lighting columns each with 3Nr globe type lanterns and 20m lighting columns with circular lanterns with discharge lighting.

Overspill lighting at present is not controlled except in the upwards direction, see below for typical existing car park lighting luminaires.



*'View towards Squire Way and Stare Green showing existing car parking lighting columns and lanterns – looking towards the south/south east corner of the site' - 'Google Street View'*



*'View towards St Joseph The Worker Catholic Church' showing existing car parking lighting columns and lanterns – looking towards the north of the site' - 'Google Street View'*

The proposed development will comprise of student accommodation and associated amenities to include dedicated surface car parking for around 60 vehicles and a multi-storey car park.

The development will vary in height ranging from three to six storeys and will be tapered back from the dwellings to the south and south east corner of the site in Squires Way and Stare Green.

The multi-storey car park will be encircled by the student accommodation on three sides, north, south and east, and will comprise of six storeys, Ground to 5<sup>th</sup> floors.

The dedicated student accommodation surface car parking will be located at the south west and southern end of the site and be bounded by existing trees around the south western corner and southern borders of the site.

There are existing sources of external lighting in close proximity and in some cases immediately adjacent to the Application Site comprising of Coventry City Council streetlighting located on De Montfort Way to the west of the site and in Shultern Lane, the lane runs behind the existing tree line from the north east to the south east corner of the site.

#### 4.1.2 The Application Site Surroundings

The Application Site is accessed from De Montfort Way and it is proposed that access to the Student Accommodation and the Multi-storey Car Park will also be from De Montfort Way.

We are unaware of any Historic England Listed Sites in the vicinity of the proposed Development.

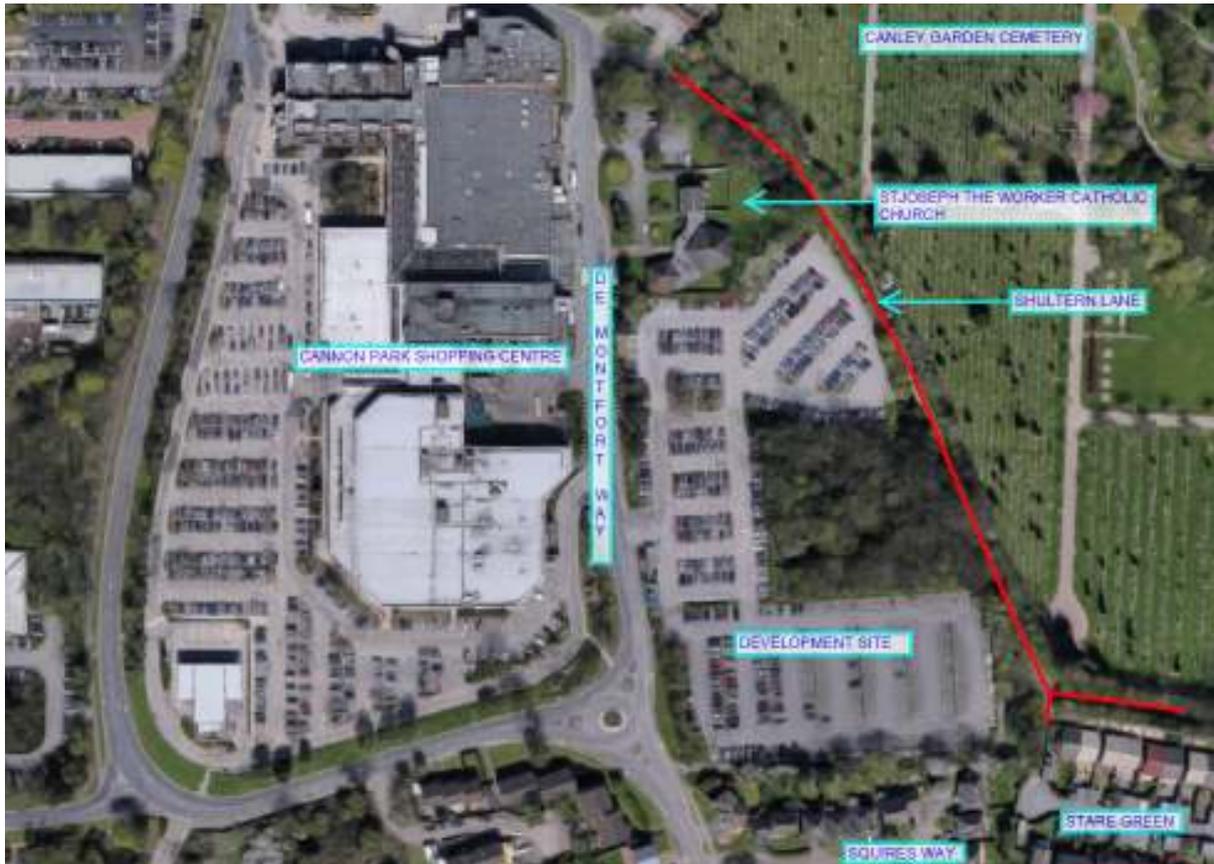
St. Joseph The Worker Catholic Church is located to the north of the site.

Canley Garden Cemetery is located to the east of the site with Shultern Lane, a pedestrian footway, between the site and the cemetery, Shultern Lane has Coventry City Council streetlighting along its length.

Dwellings are located to the south and the south east corner of the site.



*'Application Site within red line -extract from ACE map'*



*'Application Site overview' – 'Google Earth'*

### **Sensitive Receptors**

Existing sensitive receptors have been identified in the assessment of the Application Site and surrounding area and are detailed below;

- Occupants of 7Nr. dwellings in Squires Way to the south of the site and 1Nr dwelling in Stare Green to the south west corner of the Application Site
- Church goers etc. of St Joseph The Worker Catholic Church to the north of the Application Site
- Motorists, cyclists and pedestrians using De Montfort Road or Shultern Lane adjacent to the Application Site or with views of it

### **Heritage**

We are unaware of any Historic England Listed Buildings in the vicinity of the Application Site.

## **Ecology**

The Application Site which is currently a surface car park for Cannon Park Shopping Centre is bounded to the north, east and south by trees and there is a spinney on a portion of the site to the east.

Appropriate measures will be taken to protect and retain existing trees and the spinney as far as is reasonably practicable during the construction works, it is intended to substantially retain the spinney as an integral part of the development.

We are not aware of roosting bats in the area.

## **4.2 ILP Environmental Zone**

The Application Site and its surroundings have been identified as an urban setting, it has therefore been categorised as ILP Environmental Zone E4 as set out in ILP Guidance Notes for the Reduction of Obtrusive Light GN01.

## **5 Lighting Requirements and Strategy**

### **5.1 Construction Lighting**

As the construction works necessary will be limited to the confines of the site for the construction of the development, temporary construction lighting will be directed into the site and will be extinguished outside working hours.

During the construction, work during darkness is most likely to occur during the winter months when daylight hours are short therefore artificial lighting will be required during standard working hours. Working hours are likely to be limited to 07.00 to 18.00 Monday to Friday, at present weekend working is not planned.

Task specific lighting to maintain safety may be required and will be variable according to weather conditions, programme and the particular tasks being undertaken.

Lighting will also be present from construction vehicles and plant which often deploy flashing lights and strobes when operating.

### **5.2 Operational Lighting**

#### **Lighting Requirements**

Operational lighting is required to permit safe movement of staff, residents and visitors to the development and security lighting for the development.

The student accommodation surface car parking will generally be illuminated from lighting columns around the perimeter of the car park with LED light sources.

General external circulation around the development will also be provided by wall mounted LED light source luminaires generally mounted at door head height.

The access to the Multi-storey Car Park will generally be illuminated as above.

#### **Lighting Strategy**

##### **Design Objectives**

The key design objective for the Lighting Strategy is for minimal lighting columns, maximum of 4m high, to be installed around the surface car park area to provide the required illumination levels in accordance with the guidance documents referred to earlier.

A number of wall mounted luminaires will be installed to compliment the car park lighting and provide safe movement for persons around the development.

Feature lighting is not proposed at this time.

All external luminaires will be controlled via a photo-cell and timeswitch to provide automatic switching as required at agreed times typically dusk and dawn as well as providing a facility to switch off/on or reduce illumination levels between agreed times during the hours of darkness.

- Externally wall mounted luminaires will be selected and carefully positioned to ensure that limitations set for obtrusive lighting for ILP Environmental Zone E4 is not impinged upon i.e. should a curfew time be required as part of the planning conditions automatic controls will be designed into the lighting installation to ensure any such condition is met
- External lighting will be limited to avoid over lighting the premises in relation to the general area brightness
- Light intrusion into the rear windows of residential properties in Squires Way and Stare Green at the south and south eastern corner of the Application Site will be limited by the use of luminaires with good optics providing sharp cut-off angles
- Localised low level lighting will be mounted on the wall of the premises and the luminaires will have lighting control shield/cowls etc. as necessary to reduce light overspill as far as is reasonably practicable
- Access/egress doors will have external lighting immediately in the area of the door to comply with external threshold lighting illumination levels for both general and emergency lighting
- There is no proposal at this time to install feature lighting to façade of the development therefore, the only light spill being generated will be the limited spill from student bedrooms and common rooms internal lighting which will only occur when curtains/blinds are not closed therefore the actual light spill will be of little nuisance and for limited periods.
- Where it is identified that careful use of upward light i.e. wall mounted feature lighting, ground recessed luminaires and/or festive lighting is required to enhance the development, we are not aware of any requirement at this time, every care will be taken as part of the design process to minimise any upward waste light by the proper application of suitably directional luminaires and if necessary the installation of light controlling attachments

### **Design Objective**

Where reasonably practicable lighting will not be installed, be directed away, or controlled, from all of the sensitive receptors i.e. windows of residential properties in Squires Way and Stare Green to prevent obtrusive light, glare or intrusion, adversely affecting them.

There are no other sensitive receptors in the area of the development.

### **Minimising Light Break-Out**

Generally light break-out from the development will be controlled by the use of curtains, screens, blinds etc., with the exception of a portion of the ground floor comprising the Main Entrance.

The main entrance is approximately half way along the site boundary on De Montfort Way and any light spillage from it will have little or no impact on the surrounding area.

As can be seen from the images below light break-out/overspill is not being controlled at present.



*'View towards Squire Way and Stare Green from existing car park – looking towards the south/south east corner of the site' - 'Google Street View'*



*'View towards St Joseph The Worker Catholic Church' from the existing car park – looking towards the north of the site' - 'Google Street View'*



*'View towards the existing car park entrance/exit on De Montfort Way from the existing car park – looking towards the west of the site' - 'Google Street View'*

### **Proposed Car Park Lighting**

The proposed car park lighting will primarily comprise of a number 21 watt, 4000°k, LED lanterns on 4m lighting columns, 1Nr. Lantern per column with illumination levels based on the recommendations of The Society of Light and Lighting (SLL) Code for Lighting.



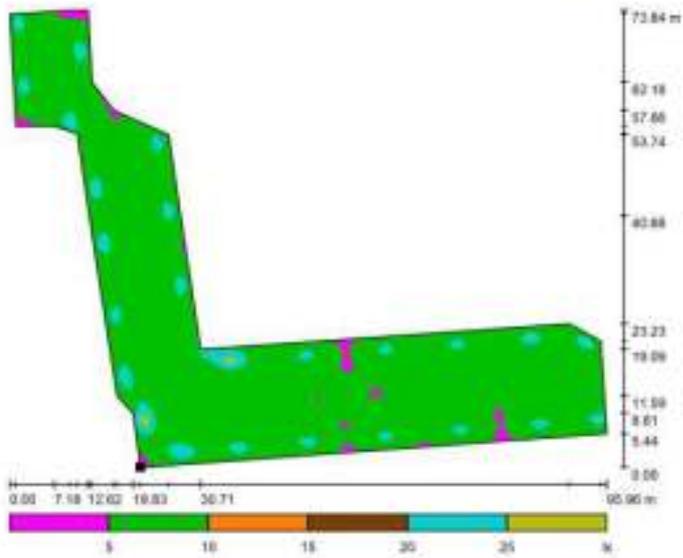
*'Image of the type of external column mounted lantern proposed, post-top lanterns will be mounted on a 4m galvanised lighting column and set at a 5° tilt to reduce glare and lighting overspill'*

The following images provide an indication of the proposed surface car parking lighting installation, illumination levels and overspill are based on our lighting calculations undertaken using DIALux software based on the post-top lantern above:



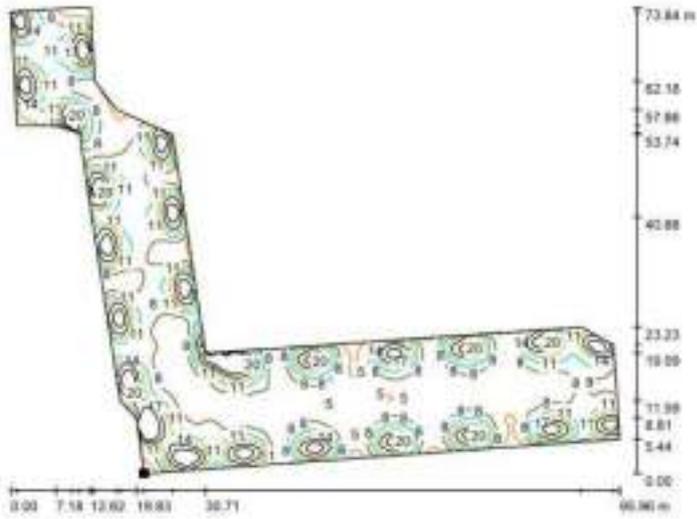
*'Image above indicates proposed location of 4m lighting columns to illuminate the surface car parking area and pathways to the main entrance to the Student Accommodation'*

Exterior Scene 1 / Calculation Surface 1 / Greyscale (E, Perpendicular)



*'Image above indicates illumination levels using the DIALux colours facility to provide an indication of the illumination levels, average illumination level and uniformity, the calculation area indicated is for the surface car park area within the Application Site up to the entrance of the Student Accommodation'*

Exterior Scene 1 / Calculation Surface 1 / Isolines (E, Perpendicular)



Position of surface in external scene:  
Marked point:  
(95.681 m, 104.736 m, 0.000 m)



Values in Lux, Scale 1 : 667

Grid: 128 x 128 Points

$E_{min}$  [lx]  
11

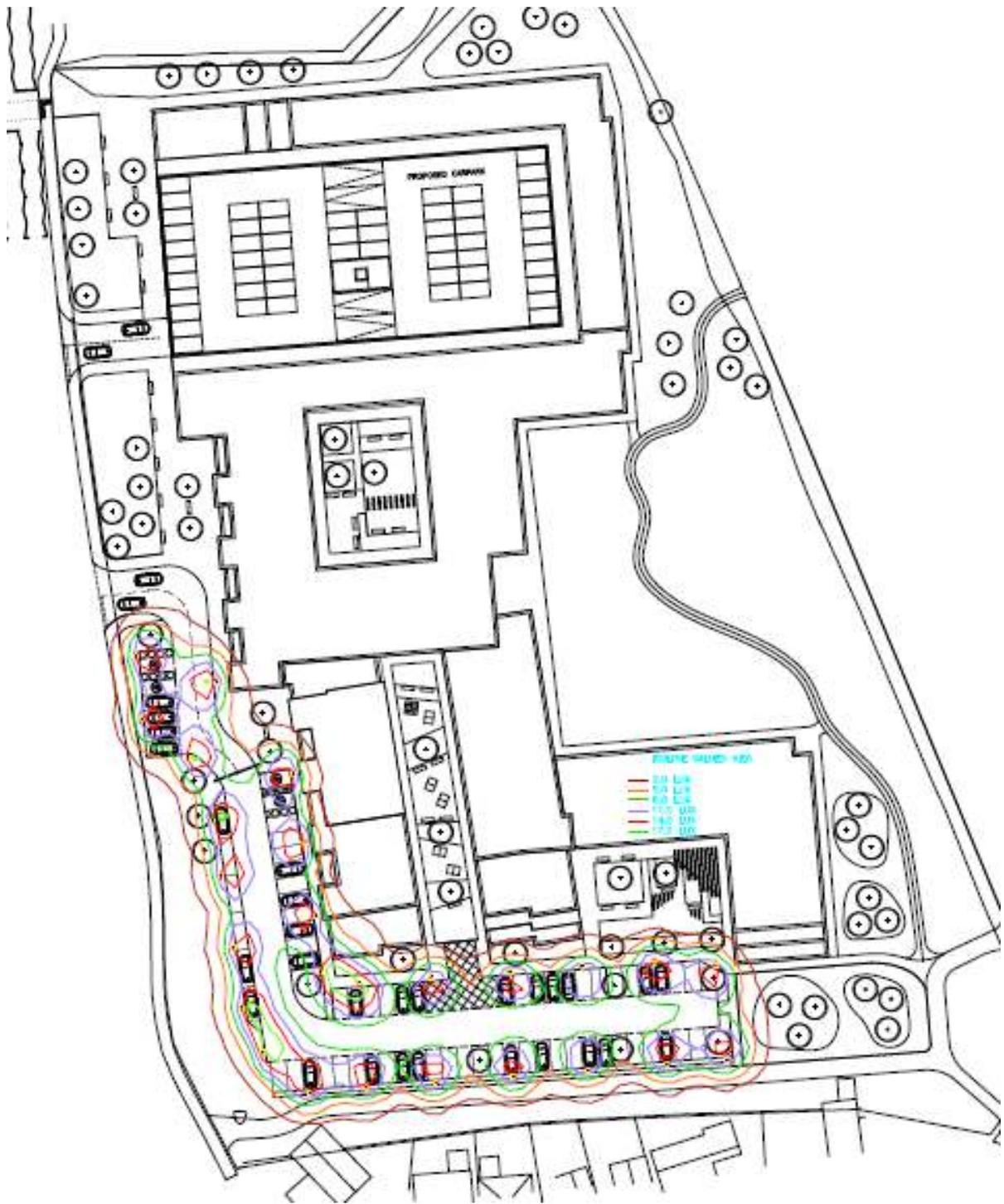
$E_{mean}$  [lx]  
2.76

$E_{max}$  [lx]  
26

u0  
0.253

$E_{min} / E_{max}$   
0.067

*'Image above indicates illumination contour lines including beyond the site boundary, the results do not take into account the trees around the perimeter of the site and especially in relation to the dwellings on Squires Way and Stare Green where it is highly likely that very little overspill from the car park lighting will be visible in their back gardens, image below provides a more detailed analysis for this area'*



*'Image above indicates illumination isolines showing lux levels, it is noted that without taking into account the shading afforded by the trees bounding the southern and south east corner of the site that it is anticipated that illumination overspill would likely be a maximum of 2lux along the lane between the site and the dwellings backing onto it, additional shading from the trees on the boundary of the site will practically eliminate this overspill'*

## **6 Potential Effects and Mitigation**

### **6.1 Introduction**

This section assesses the potential effects of construction phase lighting, the operational phase lighting strategy proposed for the development and on the sensitive receptors.

It sets out measures to mitigate any potential effects from construction lighting identified, and measures to mitigate any potential effects from operational lighting.

### **6.2 Construction Lighting**

Generally, construction lighting tends to lead to more obtrusive lighting than operational lighting because of its temporary nature, and the type of lighting equipment used.

For ease of deployment and use, construction lighting tends to be mobile, and focus on providing the widest coverage of light from the fewest possible units in order to minimise time spent maintaining and installing the equipment. This, along with the fact that it is often poorly directed or installed, can result in temporary effects of glare, light intrusion and sky glow if good practice measures are not employed.

When the new development is built the construction works will predominantly entail the internal fit-out of the premises therefore there will be a limited requirement for temporary construction lighting, which will generally only be utilised whilst the external construction works take place.

The Programme of Works is to be finalised however, at present it is envisaged that the commencement on site will be May 2019 with completion in August 2021 and it is anticipated that any potential effects from obtrusive light associated with construction phase lighting can be mitigated through the employment of appropriate mitigation measures set out later in this report.

### **6.3 Operational Lighting**

#### **6.3.1 Existing Local Residents**

Existing local residents in close proximity to the Application Site have been identified in Squires Way and Stare Green.

We are of the opinion that there will be no increase in sky glow discernible from either Squires Way or Stare Green as the proposed new lighting will have limited upward light which will be highly unlikely to contribute to the existing obtrusive light in the form of sky glow.



*'View towards Squire Way (right hand side of picture) and Stare Green (left hand corner of picture) from existing car park' - 'Google Street View'*

#### **6.4 Motorists, Cyclists and Pedestrians**

De Montfort Road runs along the western boundary of the Application Site and is used by motorists, cyclists and pedestrians and these users can be sensitive to glare effects from obtrusive light.

Little, if any, effect from intrusion or glare anticipated from the proposed development on users of this road is expected.

A low level of sky glow may be discernible however, the increase, if any, will be minimal and in our opinion less than the glow caused by the present lighting and proposed lighting levels will be within the limits of ILP Environmental Zone E4.

Effects of obtrusive light from the proposed development on motorists, cyclists, and pedestrians are therefore considered to be negligible.

#### **6.5 Ecological Receptors**

We are unaware of any evidence of roosting bats in the vicinity of the Application Site and are also unaware of any bats having been recorded using the existing buildings in the immediate area of the site.

As above in our opinion the proposed external lighting installation for the development will be less intrusive than the glare and sky glow caused by the present lighting installation.

#### **6.6 Future Residents of the Development**

Measures will be included within the Lighting Strategy to avoid and/or reduce the potential effects on future residents of the development.

It is anticipated that the measures included within the lighting design will ensure there are no effects of obtrusive light in the form of sky glow on future residents, or from intrusion or glare pre-curfew, if applicable.

## 6.7 Mitigation Measures

### 6.7.1 Construction

Following construction of the development shell and core remaining works will predominantly entail the internal fit-out of the premises therefore, there will be a limited requirement for temporary construction lighting, which will only be used whilst the external construction works take place.

General design objectives that will be used to ensure that obtrusive light associated with construction of the proposed development does not adversely affect any receptors identified earlier are summarised below:

- Use appropriately designed luminaires for the task at hand, use louvres and shields to prevent undesirable light break-out
- Lighting will be directed so it does not intrude or spill outside of the immediate working area, lighting will also be directed away from all of the sensitive receptors
- Preference will be given to several, lower lighting units rather than tall, wide beam lighting units to illuminate large areas to limit light intrusion, glare and sky glow
- Lighting illumination levels will be reduced or lighting will be switched off when not required for working/safety purposes, security lighting will be kept at the minimum level required for visual and security protection
- The use of infra-red floodlighting and CCTV systems will be used for security to reduce the need for visible lighting outside working hours

### 6.7.2 Operation

The general design principles that will be incorporated into the Lighting Strategy in order to mitigate adverse effects of obtrusive light will include:

- Orientation - luminaires will be angled so that no light is released above the horizontal. This will be achieved by careful consideration and selection of suitable luminaires, positioned at a height that is great enough to allow light to be directed downwards
- Placement - lighting will, as far as is reasonably practicable, be located away from sensitive receptors
- Reflectance - any high intensity lighting, LED sources proposed, will be installed onto buildings or columns and directed to the area where the light is required, rather than facing a building façade which may be reflective and result in sky glow. Building mounted luminaires will be kept to an operational minimum
- The Lighting Strategy will meet any pre-curfew limitations of ILP Environmental Zone E4
- Substantial retention of the existing spinney, trees and shrubs, as far as reasonably practical, will substantially reduce glare and any overspill identified in the lighting illumination calculations detailed above

## 7 Conclusion

The lighting assessment has identified the baseline conditions of the current Application Site including details of buildings/structures and potential sources of existing artificial lighting.

In the context of the existing lighting conditions, it established that the Application Site and its surroundings can be categorised within ILP Environmental Zone E4.

Potential sensitive receptors that may be affected by obtrusive light have been identified and include existing residents, residents and guests of the development, ecological receptors, Historic Buildings listings, users of roads, pavements and lanes.

Due to the change of use from a car park to student accommodation with a 60 car surface car park and associated reduction in the extent, height and type of external lighting proposed we are of the opinion that lighting overspill, glare and sky will be substantially less than is currently experienced.

On the basis of this assessment, illumination calculations undertaken and recorded above and subject to the incorporation of the recommendations set out in this report as well as compliance with any planning conditions including curfews, it is considered that obtrusive lighting from the proposed lighting strategy will not pose a constraint to the proposed development.