



Oaklands College & Land south of Sandpit Lane, St Albans

Lighting Impact Assessment

October 2025





Oaklands College, St Albans

Lighting Impact Assessment

On behalf of

**Taylor
Wimpey**

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1 Introduction

1.1 Background

- 1.1.1 Stantec has been appointed by Taylor Wimpey (referred to herein as ‘the Applicant’) to complete a Lighting Impact Assessment to support a hybrid planning application for new mixed-used development and new education facilities at Oaklands College and on land located south of Sandpit Lane, St Albans (referred to herein as ‘the Site’).
- 1.1.2 The Site comprises of two areas which have been combined to deliver the comprehensive masterplan:
- Land referred to by the Council as “Site B4 East St Albans” and referred to as Oaklands Blossom” by the Applicant; and
 - The Oaklands College and its associated facilities and sports pitches, referred to as “Oaklands College”.

1.2 Aims and Objectives

- 1.2.1 This report provides an assessment of the potential effect from obtrusive light that may arise from the artificial lighting associated with the construction and operation of the Proposed Development.
- 1.2.2 The key aims and objectives of this Lighting Assessment are to:
- Identify national and local planning policy, guidance and standards as relevant to artificial lighting for the Proposed Development;
 - Determine the existing lighting conditions within the Site and wider study area;
 - Establish the minimum exterior artificial lighting levels required to construct and operate the Proposed Development safely and securely;
 - Assess the potential effects from the Proposed Development’s artificial lighting on light sensitive receptors; and
 - Establish mitigation measures to minimise obtrusive light from the Proposed Development with due regard to levels established by industry guidance.

1.3 Report Structure

- 1.3.1 The structure of the Lighting Assessment report is set out below:
- **Section 2: The Site and Proposed Development** – Sets out the Site in context and the Proposed Development;
 - **Section 3: Legislation, Policy and Guidance** – Sets out legislation, planning policy and guidance relevant to obtrusive light;
 - **Section 4: Methodology** – Details the methodology of the Lighting Assessment;
 - **Section 5: Baseline Lighting Conditions** – Outlines the existing baseline lighting conditions at the Site, including any light sensitive receptors within and surrounding the Site;

- **Section 6: Lighting Requirements** – Outlines the anticipated lighting requirements for the Proposed Development;
- **Section 7: Assessment** – Qualitatively identifies any potential effects on sensitive receptors near the Site;
- **Section 8: Mitigation** – Details measures to mitigate any potential impacts on light sensitive receptors; and
- **Section 9: Conclusions** – Identifies any residual effects and provides a set of conclusions.

2 The Site and Proposed Development

2.1 The Site and Surroundings

The Site

- 2.1.1 The Site lies within Oaklands College ownership and is located to the east of St Albans City, approximately 3km from the city centre.
- 2.1.2 The areas contained within the redline boundary amount to 44.63 hectares (ha) for the College Site, and 21.79ha for Oaklands Blossom.
- 2.1.3 The Site is surrounded by the following:
- Predominantly residential development (including Oaklands Grange) and Beaumont School and Oakwood Primary School playing fields to the west;
 - Hatfield Road (A1057) and residential and commercial development to the south;
 - Sandpit Lane and residential development to the north (Jersey Farm / Marshalswick); and
 - Open fields, Oaklands Wood, the Butterwick Brook (also referred to as Boggymead Springs), St Albans RFC and Harvesters FC sports ground, and residential development fronting Oaklands Lane to the east.
- 2.1.4 In most areas, woodland and vegetation line the boundary of the area under College ownership, which provides a partial or full visual barrier.
- 2.1.5 A number of leisure routes connect to and / or run through the college grounds, including bridleways, PROWs and cycle routes.
- 2.1.6 Two non-statutory designated ecological sites fall within the college grounds. These are Homewood County Wildlife Site (CWS) and Oaklands Wood CWS, which are located to the south west and eastern parts of the grounds respectively.
- 2.1.7 The entire college grounds are subject to a blanket Tree Preservation Order (TPO). There are no statutorily designated ecological sites, listed buildings or scheduled ancient monuments, within the grounds, and it is not within a conservation area.

Oaklands College

- 2.1.8 The Oaklands College is approx. 55.47 ha, and is currently accessible via three roads, South Drive off Hatfield Road and East Drive off Oaklands Lane, which are both open to vehicular traffic, and North Drive off Sandpit Lane, which is a Public Right of Way (PROW)
- 2.1.9 The College currently consists of numerous education facilities (including an equestrian centre and habitat centre) with associated infrastructure (e.g. parking), and a sports field located on the east side of the college grounds.

Oaklands Blossom

- 2.1.10 Oaklands Blossom is approx. 21.63 ha and currently comprises of arable land. It is accessible by foot from North Drive off Sandpit Lane, and is bounded by trees and hedgerow on the north, west and south sides.

Surrounding Area

- 2.1.11 St Albans City centre and surrounding residential estates can generally be found to the west of the Site. The town of Hatfield is located approx. 4km to the east and consists of primarily residential dwellings with a large industrial estate to its north west.
- 2.1.12 The closest major roads are the A1(M), which approx. 3km to the east, and the North Orbital Road and M25 to the south.
- 2.1.13 There are 3 Grade II listed buildings within 100m of the Site boundary. One is located on Hatfield Road (List Entry No. – 1103024) and the remaining two (List Entry No. 1103023 & 1172829) are located in the residential estate to the south west. There are a number of Grade II listed buildings within 1km of the Site.
- 2.1.14 There are no Sites of Special Scientific Interest (SSSI) within the immediate vicinity of the Site. The closest SSSI is Water End Swallow Holes, which is located approx. 5.5km to the south east.

2.2 Proposed Development

- 2.2.1 The description of development for the 'hybrid' planning application is as follows:
- *Full planning application for the construction of homes (use class C3); new local centre and community facility (use classes E(a to f) and F); a children's home (use class C2); demolition and renovation of existing college buildings; construction of new college buildings (use class F1.); the creation of Active Travel Routes including footpaths for walking, cycling and equestrian activities; removal and planting of trees; along with the laying out of green infrastructure (including publicly accessible open space) and habitat creation; drainage infrastructure, earthworks, new means of access and alterations to existing access points.*
 - *Outline planning application (access only, all other matters reserved) for the construction new homes (use class C3); new extra care home dwellings (use class C2); land for the construction of a new primary school (use class F.1); demolition and renovation of existing college buildings; construction of new college buildings (use class F1.); the construction of new sports facilities and pitches; the creation of Active Travel Routes including footpaths for walking, cycling and equestrian activities; removal and planting of trees; new energy centre; new recycling facilities; new car parking facilities; along with the laying out of green infrastructure and habitat creation; drainage infrastructure, earthworks, pedestrian and cycle routes, alterations to existing access points.*
 - *The phasing of the development is indicative allowing different phases to commence at different times and independently (severable) from each other. The outline phases will be the subject of parameter plans and design codes".*

3 Legislation, Policy and Guidance

3.1 Introduction

- 3.1.1 This section sets out the legislation, policy and guidance that is relevant to the assessment of obtrusive light in relation to the Site. The legislation, policy and guidance has been taken into consideration during the Lighting Assessment process.

3.2 Legislation

Clean Neighbourhoods and Environment Act

- 3.2.1 The Clean Neighbourhoods and Environment Act 2005 (CNEA) amended Section 79 of the Environmental Protection Act 1990 by extending the statutory nuisance regime to include light nuisance, by stating the following:

“...artificial light emitted from premises so as to be prejudicial to health or a nuisance...”

“Subsection (1)(fb) does not apply to artificial light emitted from - (a) an airport; (b) harbour premises; (c) railway premises, not being relevant separate railway premises; (d) tramway premises; (e) a bus station and any associated facilities; (f) a public service vehicle operating centre; (g) a goods vehicle operating centre; (h) a lighthouse; (i) a prison.”

- 3.2.2 Therefore, since 6th April 2006, artificial light can be considered to be a statutory nuisance unless it is from exempt premises. It should be noted that road lighting is not exempt from the CNEA, although they are unlikely to qualify as a statutory nuisance as they are not strictly located on a premises.
- 3.2.3 Guidance produced by the Department of Environment, Food and Rural Affairs (DEFRA) in April 2006, on Section 101 to 103 of the CNEA, extends the duty on local authorities to ensure their areas are checked periodically for existing sources of statutory nuisances.
- 3.2.4 If a light nuisance is considered by a local authority to exist, the local authority must serve a notice on the person responsible requiring, the abatement of the nuisance, and/or restricting or prohibiting its recurrence.
- 3.2.5 Section 103 extends the defence of ‘best practical means’ to those statutory nuisances where light is emitted from industrial, trade or business premises and also from relevant outdoor sports facilities.

3.3 National Policy

National Planning Policy Framework

- 3.3.1 The National Planning Policy Framework (NPPF) was revised on the 12th December 2024. This supersedes the existing policy within the previous NPPF (March, 2012 and July 2021). The revised NPPF includes a number of references to consider the effects of artificial lighting.

Paragraph 185 of the NPPF states:

“Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.” (Page 53).

Planning Practice Guidance

3.3.2 The Government’s Planning Practice Guidance (PPG; published in 2014 and updated in 2021 and 2023) web-based resource presents specific guidance on light pollution (obtrusive light) presented in Paragraph: 001 – 006 that have been considered throughout the assessment, as set out in **Table 3.1** below.

Table 3.1: Planning Practice Guidance and Report Reference Table

PPG Guidance	How the guidance has been considered within this assessment
Paragraph 1: What light pollution considerations does planning need to address? (Reference ID: 31-001-20191101)	There is potential for light from the Proposed Development to be obtrusive to people and wildlife or detract from the enjoyment of the night sky. Therefore, obtrusive light from the Proposed Development has been considered further within this assessment.
Paragraph 2: What factors can be considered when assessing whether a development proposal might have implications for light pollution? (Reference ID: 31-002-20191101)	This assessment considers where, when and how the light shines as the Proposed Development has the potential to adversely affect the use or enjoyment of nearby buildings or open spaces.
Paragraph 3: What factors are relevant when considering where light shines? (Reference ID: 31-003-20191101)	This report considers the potential for light intrusion effecting receptors outside the Site boundary which can lead to annoyance to people, compromise existing dark landscapes and affect natural systems (if relevant to the sites location).
Paragraph 4: What factors are relevant when considering when light shines? (Reference ID: 31-004-20191101)	This report considers the potential for lighting including when it may be required (Section 6 sets out the anticipated Lighting Requirements).
Paragraph 5: What factors are relevant when considering how much the light shines? (Reference ID: 31-005-20191101)	This report considers the minimum requirements to construct and operate the Proposed Development safely (Section 6 Lighting Requirements). The Environmental Zone of the Site is established to ensure there is an appropriate level of lighting for the ambient lighting conditions. A framework of mitigation has been established so the light source and its spectral attributes would be considered further during the technical design process.
Paragraph 6: What factors are relevant when considering possible ecological impacts of lighting? (Reference ID: 31-006-20191101).	This report specifically considers the effects obtrusive lighting may have on ecological receptors.

PPG Guidance	How the guidance has been considered within this assessment
Paragraph 7: What other information is available that could inform approaches to lighting and help reduce light pollution? (Reference ID: 31-007-20191101)	Considered in Section 3.5.

3.4 Local Policy

St Albans City & District Council Local Plan Review 1994

- 3.4.1 The St Albans City & District Local Plan sets out how the area will develop. The Plan is used to guide development, investment and improvements throughout the borough.
- 3.4.2 Whilst this version of the Local Plan remains in use as the adopted development framework,, it is currently in the process of being superseded by the emerging local plan (see section 3.4.4)
- 3.4.3 The following policies within the Local Plan refer to Lighting and are relevant to the Proposed Development –

Policy 80 – Floodlighting

Planning applications or application for listed building consent for floodlighting will be granted where any of the following apply:

- i) *the visual impact of floodlighting columns, the intensity of lighting, or glare, would detract from the character or amenity of:*
 - a) *residential properties*
 - b) *rural areas; or*
 - c) *listed buildings and conservation areas;*
- ii) *the provision of floodlighting would enable an undue intensification or extension of the use of a sports or similar facility to the detriment of the amenity of a residential area or the character or a rural area;*
- iii) *the presence of lighting would harm the ecology of an area.*

Where appropriate, planning conditions will be imposed to lessen the impact of floodlighting. Conditions may include restrictions of the hours of operation, retraction of lighting columns when not in use, baffles to reduce spillage of light or glare, landscaping to screen structures or light from public view and the colouring of columns or structures to blend in with their surroundings.

St Albans City & District Council Draft Local Plan 2041 Regulation 19 Publication

- 3.4.4 The St Albans City & District Draft Local Plan 2041 Regulation 19 Publication sets out how the area will develop through to 2041. The Plan is used to guide development, investment and improvements throughout the borough.

- 3.4.5 The following policies within the Draft Local Plan refer to Lighting and are relevant to the Proposed Development –

HW2 - Light Pollution

Development must be designed to minimise or prevent any detrimental impact of external lighting on local amenity and safety, biodiversity, heritage assets, roads and woodlands and rivers.

This includes new residential, employment, retail development, as well as sporting and entertainment venues and new roads and their associated infrastructure. This should be achieved by careful consideration of the lighting used in terms of its level of luminosity, siting, direction of the lighting beam, and hours of operation. The effects of glare, light spill, excessive light and reflected light (skyglow) should be minimised through good design, type of lighting, appropriate equipment, timing of use and potentially, landscaping. Proposals for lighting within different Environmental Zones will be assessed accordingly.

Redevelopment or refurbishment of existing buildings and infrastructure that are subject to planning approval should seek to minimise the impact of light pollution.

3.5 Guidance

Obtrusive Light

The Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light, 2011 (ILP GN01)

- 3.5.1 This guidance provides advice on lighting including the recommendation to local planning authorities to specify Environmental Zones for exterior lighting based on the existing external ambient lighting levels in the area. These documents also provide design guidance including maximum obtrusive (lighting pollution) lighting level limits for each environmental zone – focusing on reflected light and glare in particular.

ILP Professional Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments, 2013 (ILP PLG04)

- 3.5.2 This guidance outlines good practice in lighting design and provides practical guidance on the production and assessment of lighting impacts within new developments. The guide covers guidance on undertaking lighting surveys, taking photographs and measurements at night and what to cover in a Lighting Assessment Report.

ILP Guidance Note 08: Guidance Note on Bats and Artificial Lighting in the UK (2023) (ILP GN08)

- 3.5.3 Bats and Artificial Lighting in the UK provides guidance on general principles of lighting to mitigate adverse effects on areas where bats are known to be present and / or commuting to feeding areas. The document sets out advice for bat workers and lighting professionals to ensure that both parties work together to achieve the most effective solution in delivering an appropriate artificial lighting solution whilst reducing the adverse effects on bats. This is a joint publication with the Bat Conservation Trust.

ILP Guidance Note 09: Guidance on Domestic Exterior Lighting: Getting it Right, 2019 (ILP GN09)

- 3.5.4 This guidance advises on how best to install domestic exterior lighting to ensure it serves the required purpose and provides the correct level of illumination.

ILP Professional Lighting Guide 05: The Brightness of Illuminated Advertisements (2013)

- 3.5.5 PLG05 provides guidance on the planning, assessment and maintenance of all forms of illuminated advertisements.

3.6 Standards and Design Guides

- 3.6.1 The **BS EN 12464-2:2014 Light and lighting - Lighting of work places Part 2: Outdoor work** document outlines requirements for lighting outdoor work places, focusing primarily on visual comfort and performance.

- 3.6.2 **BS EN 13201-2:2015 Road lighting - Performance requirements (Revised February 2020)** defines performance requirements which are specified as lighting classes for road lighting aiming at the visual needs of road users, and it considers environmental aspects of road lighting.

- 3.6.3 **ILP Professional Lighting Guide 23 – Lighting for Cycling Infrastructure (2020) (ILP PLG23)** provides a comprehensive review of current lighting standards and guidance applicable to lighting infrastructure. This document includes guidance for cycle tracks where surfaces are shared with pedestrians and cycle lanes forming either part of the carriageway

sharing the space with motorised vehicles or sharing the footway with pedestrians. The document also discusses the need for lighting, environmental and ecology impacts and explains how appropriate lighting levels should be determined including facilities such as storage and parking facilities.

- 3.6.4 **BS EN 5489-1:2020 Design of road lighting. Lighting of roads and public amenity areas: BS 5489-1** is a revision of the British Standard for road lighting design. It provides guidance and recommendations that are intended to support the BS EN 13201 series. This document provides recommendations on the general principles of road lighting including aesthetic and technical aspects, operation and maintenance, means of minimising energy consumption and limiting the impact on the environment. The guidance provides recommendations for the design of lighting for urban centres, public amenity areas and smart cities.
- 3.6.5 The **Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 04 (2023)** provides general and specific lighting design criteria for Sports lighting. The guide covers many technical aspects which are likely to be of interest to designers. It presents lighting solution to basic visual problems and individual characteristics of outdoor lighting applications.
- 3.6.6 The **Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 05 (2011) (under review)** presents general and specific lighting design criteria for educational premises. The guide covers many technical aspects which are likely to be of interest to designers. It presents lighting solutions to basic visual problems and individual characteristics of educational lighting applications.
- 3.6.7 The **Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 06 (2016)** 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. It presents lighting solutions to basic visual problems and individual characteristics of outdoor lighting applications.
- 3.6.8 **The Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 21 (2021)** outlines the causes and consequences of obtrusive light and how good design can minimise these effects on human health and for the wider nocturnal environment.

4 Methodology

4.1 Introduction

- 4.1.1 This section provides an outline of the methods and procedures that were followed when undertaking the Lighting Assessment including how the baseline lighting conditions were determined, and the assessment process that was undertaken. The methodology developed has due regard for the process detailed within ILP GN01 and ILP PLG04 (see **Section 3** for further information).

4.2 Key Terms

Artificial Lighting at Night (ALAN)

- 4.2.1 Artificial Lighting at Night (ALAN) is used to describe lighting sources that do not occur naturally and are the result of human intervention. This primality relates to light from electric sources but can also include fire and manipulation of natural light through optics as a method of creation (only occurring with human intervention) and the spectral qualities as very rarely do 'artificial' sources accurately match the spectral characteristics of natural light sources.
- 4.2.2 "Natural" light sources can be considered as sunlight, moonlight (sunlight reflected from the moon), starlight, meteorological instances (lightning as temporary in nature and Aurora), Geothermal (volcanic), and bioluminescence of certain species. Moonlight as the primary natural light source at night is capable of providing up to ~0.3lux under ideal full moon conditions, however, is typically significantly less. Starlight is considered as negligible. Understanding the contributions of natural light sources is important in establishing baseline lighting conditions.

Lighting Pollution and Obtrusive Light

- 4.2.3 The terms light pollution and obtrusive light are often used interchangeably however can be considered as distinct, with obtrusive light falling within the broader definition of light pollution.
- 4.2.4 The United Nations Economic Commission for Europe (UNECE) defined air pollution as:
- 4.2.5 *"The introduction by man[humans], directly or indirectly, of substances or energy into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment..."*
- 4.2.6 It is recognised that any form of ALAN, regardless of how well controlled has the capacity to disrupt the 'natural' daily cycle of light and dark, with associated effects to ecosystems, amenities and legitimate uses of the environment. The effects of individual lighting installations may be minimal and barely perceivable in isolation however cumulatively can be seen as resulting in far greater effects.
- 4.2.7 Obtrusive Light can be determined by the definition of "obtrusive" and is considered to occur when the magnitude of light pollution generated becomes "noticeable or prominent in an unwelcome or intrusive way". This definition can be assessed both objectively (quantitatively) and subjectively (qualitatively).
- 4.2.8 Whilst lighting installations may not result in obtrusive light it is important to acknowledge that they will likely result in light pollution as an inevitable by-product of illuminating an area or feature and lighting schemes should seek to minimise the quantity of light pollution regardless of if obtrusive light thresholds are neared and require consideration.

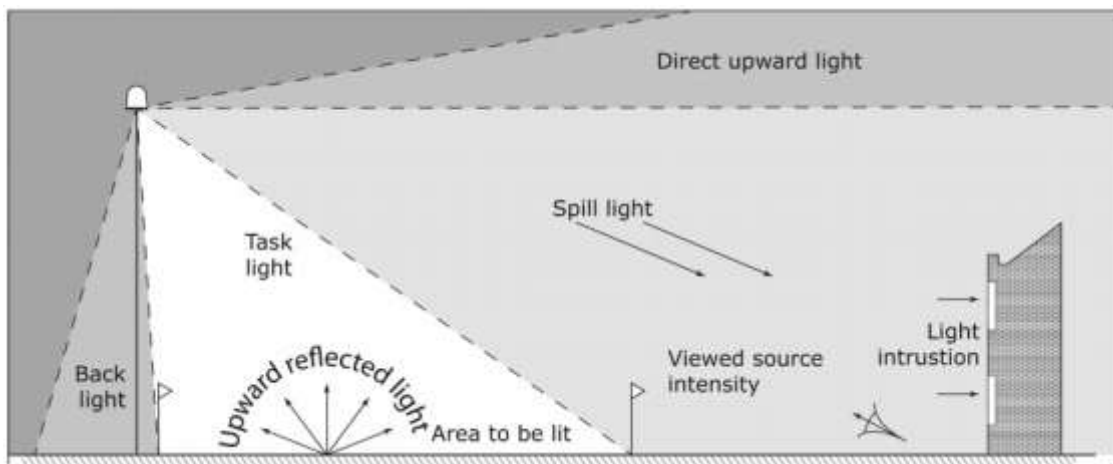


Figure 4.1: Diagrammatic Representation of Types of Obtrusive Light (ILP, 2021)

4.3 Baseline Conditions and Selection of Receptors

Overview

- 4.3.1 The process of establishing the baseline conditions and identifying receptors for study is partially cyclic with both elements influencing the scope of the other and this process has been undertaken for this assessment.

Receptors

- 4.3.2 According to the guidelines set out in the ILP PLG04, receptors are specific elements affected by a development. In terms of lighting, this primarily includes visual effects on residents or individuals but can also include animals, plants or built heritage.
- 4.3.3 The ILP PLG04 recommends considering sensitive designated areas in assessing the lighting conditions, including whether the Proposed Development is in or near:
- A World Heritage Site:
 - Dark Sky Core or Buffer Zones:
 - National Park:
 - Area of Outstanding National Beauty (AONB).
 - Site of Special Scientific Interest (SSSI).
 - Ramsar Site.
 - Conservation Areas; or
 - Vulnerable Wildlife Habitats e.g. insects, reptiles, bats).
- 4.3.4 The lighting assessment primarily focuses on existing receptors affected by the Proposed Scheme however can include future receptors either as external receptors on cumulative developments or created receptors as part of the development where either one portion of the development may influence another, or external light sources may exert influence on the Proposed Development.

- 4.3.5 Receptors have been refined throughout the assessment process, with those likely to be affected by the Proposed Development carried forward to the assessment.

Desk Based Study

- 4.3.6 An initial desk-based study has been undertaken to establish the geographical scope of the assessment and identify potential receptors for further study.
- 4.3.7 The following sources of publicly available information were reviewed:
- Ordnance Survey mapping and aerial photography (2021) (Accessed June 2025);
 - Google Street View (Accessed June 2025); and
 - DEFRA Multi-Agency Geographic Information for the Countryside (MAGIC) Map Application (2021) (Accessed June 2025).
- 4.3.8 The desk-based review provided an indication of the existing lighting conditions and potential light sensitive receptors in and surrounding the Site. However, in order to have a definitive understanding of the existing lighting conditions of the Site, a survey was undertaken, the methodology of which is explained further in the following sections.

Site Survey

- 4.3.9 To establish the existing lighting conditions of the Site, a day and night survey was undertaken.
- 4.3.10 Two site walkovers were undertaken, one during the day and one during the night for comparison. The Site was visited during the day of the 9th July 2025 to determine the location and orientation of viewpoints, and the location of luminaires in advance of the night-time walkover. The Site was also studied to establish any important elements affecting lighting including screening, topography, buildings / structures and any other potential sources of light.
- 4.3.11 The night-time survey was undertaken between 22:00 – 23:55 on the 9th July 2025. The moon phase at the time of the survey was recorded as a Waxing Gibbous. The weather conditions were clear.

Environmental Lighting Zone

- 4.3.12 ILP GN01 and ILP PLG04 detail Environmental Lighting Zones based on CIE150. These are based on the existing character and external ambient lighting levels at a given site or receptor. For the purpose of this report the phrase Environmental Lighting Zone (ELZ) has been used to reduce potential confusion with any other zoning occurring applicable to environmental considerations.
- 4.3.13 The ELZ characterises the Site and surrounding areas with classifications determining the obtrusive light limitations at the Proposed Development (emitter) and Sensitive Receptors (on or outside of the Site). Where the Site and receptors have varying Environmental Lighting Zones then thresholds applicable ELZ at the location of the respective receptor are applied.

4.3.14 The ELZ is established as part of the baseline lighting conditions.

Table 4.1: Environmental Lighting Zones

Environmental Zone	Surrounding*1	Lighting Environment	Examples
E0	Protected	Dark	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places.
E1	Natural	Intrinsically dark	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness	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.

*1 is understood as the adjacent area(s) rather than immediate context.

4.4 Obtrusive Light Criteria

4.4.1 In the absence of any additional local, site specific or project legislation, policies or guidance thresholds published within ILP GN01 will be applied and used to judge the magnitude and significance of changes to lighting conditions resulting from the project. Where values can be expected to or are calculated to exceed these thresholds then it is reasonable to judge the lighting installation as generating obtrusive light. Whilst maximums are set for these criteria either as a whole or based on the Environmental Lighting Zone, lighting is contextual and values below the thresholds can also be considered obtrusive (See also discussion on Clean Neighbourhoods and Environment Act within **Section 3**).

4.4.2 Thresholds for key light pollution metrics are shown within **Table 4.2 and 4.3**.

Table 4.2: Collated Obtrusive Light Criteria, adapted from ILP GN01 / CIE 150

Environmental Lighting Zone	Sky Glow Maximum values of upward light ratio (ULR) [URL/%] (1)	Light Intrusion Maximum values of vertical illuminance on properties Illuminance in the vertical plane (Ev) [Lux]		Glare Luminaire Intensity I [candelas]		Maximum permitted values of average surface Luminance(cd/m ²) (2)	
		Pre-Curfew	Post Curfew	Pre-Curfew	Post Curfew	Building façade luminance	Sign luminance
E0	0	n/a	n/a	0	0	<0.1	<0.1
E1	0	2	<0.1*	2500	0	<0.1	50
E2	2.5	5	1	7500	500	5	400

E3	5.0	10	2	10,000	1,000	10	800
E4	15	25	5	25,000	2,500	25	1,000

Definitions

ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux for that goes directly into the sky.

Ev = Vertical Illuminance in Lux and is measured flat on the glazing at the center of the window

L = Luminance in Candelas per Square Meter Cd/m²

Curfew = The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by the local planning authority.

(1) This does not take into account the effect of light reflected upwards from ground that also contributes to sky glow. This is the traditional method to limit sky glow and is suitable to compare different single luminaires or the cumulative results of a scheme.

(2) The values apply to both pre- and post-curfew, except that in zones 0 and 1 the values shall be zero post curfew. The values for signs do not apply to signs for traffic control purposes.

* If the installation is for public (road) lighting then this may be up to 1 lx.

Table 4.3: ILP Obtrusive Light Limitation for Exterior Lighting Installations – Road Users

Obtrusive Lighting Limitation for external Lighting Installations – Road Users		
Road Classification (1)	Threshold Increment (TI)	Veiling Luminance (LV)
No road lighting	15% based on adaptation luminance of 0.1 cd/m ²	0.04
ME6/ ME5	15% based on adaptation luminance of 1 cd/m ²	0.25
ME4 / ME3	15% based on adaptation luminance of 2 cd/m ²	0.40
ME2 / ME1	15% based on adaptation luminance of 5 cd/m ²	0.84

(1) = Road Classifications as given in (British Standards European Norm) BS EN 13201 - 2: 2003 Road lighting Performance requirements. Limits apply where

users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and for viewing directions in path of travel. For a more detailed description and methods for determining, calculating and measuring the above parameters see CIE Publication 150:2003

TI = Threshold Increment is a measure of the loss of visibility caused by the disability glare from the obtrusive light installation

Lv = Veiling Luminance is a measure of the adaptation luminance caused by the disability glare from the obtrusive light installation.

Limitations of Sky Glow

- 4.4.3 The primary metric for establishing upward light is as a percentage of the total luminous flux for the luminaire or scheme directly emitted above the horizontal. This does not include indirect (reflected) light from illuminated surfaces.
- 4.4.4 ILP GN01 list the criteria as “Maximum values of upward light ratio (ULR) of luminaires”. This implies this is considered on a luminaire-by-luminaire basis, with the commentary going on to state “Some lighting schemes will require the deliberate and careful use of upward light... to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.”
- 4.4.5 In the event that direct deliberate and careful use of upward light is required then the definition of ULOR α from CIE150 can be considered which considers the “proportion of total luminous flux of all lamps considered in a luminaire or installation which is emitted above the horizontal plane, passing through the luminaires in the installed position” (where α is the installed position). It is understood that the obstructions of fixed objects being illuminated can be factored into the calculation.
- 4.4.6 Whilst maximum ULRs are given for an Environmental Lighting Zone this should not be considered as clear permission to emit upward light. Schemes should be conscious of luminaire selections with upward light as an informed, considered and deliberate application.
- 4.4.7 The Upward Flux Ratio method includes consideration of indirect light, however, is typically only applied to highly sensitive areas or in the proximity of significant optical observatories.

Limitations of Illuminance and Surrounding Premises

- 4.4.8 The published acceptable values on the vertical plane are typically most applicable to residential properties where spill light has the potential to disrupt the occupants, particularly in sleeping accommodation. Values are established based on expected conditions within the environmental lighting zone. Alternate values may be acceptable depending on the use of the property and health and safety assessment.
- 4.4.9 Illuminance readings should be typically taken on the outside face at the centre of a window. Thresholds are cumulative and should consider existing light sources. Where access to private property or the elevation of a given window is not practical then readings along the accessible boundary of a property or the Site are used as reference and to inform the likely the conditions at façades.

Limitations of Bright Luminaires in the Field of View

- 4.4.10 This metric is intended for locations with extended viewing durations and as part of the quality of a given view and not for passing observation. At outline stage it is possible to consider this factor qualitatively, based on expected prominent light sources. At detailed stage the calculations are based on the relationship between the distance of the viewer and the size and intensity of observed light source.

Limitations of the Effects on Transport Systems

- 4.4.11 Requires calculation when extreme contrasts or atypical lighting installations are applied within the vicinity of highways networks.

4.5 Establishing Expected Lighting Conditions Within the Proposed Development

4.5.1 At outline stage there is typically insufficient levels of detail to allow for selection, locating and calculating of lighting layouts. The approaches to lighting the space are discussed narratively.

4.6 Assessment

4.6.1 ILP PLG04 permits a direct assessment of impacts and effects against a 7-point scale tracking major to minor beneficial, neutral and minor to major adverse respectively. This considers the sensitivity of receptors and magnitude of change as part of the assessment without breaking these out as separate stages. ILP PLG04 criteria consider the assessment as a whole without reference to the three distinct factors identified as related to lighting. **Table 4.4** is adapted from PLG04 to identify criteria and considerations against these factors. For beneficial effects overarching criteria is given with the narrative assessment expanding upon the significance of the benefit. For adverse effects, criteria are expanded upon for the major, moderate and minor significances to support the narrative assessments.

4.6.2 The assessment is based on expected lighting conditions informed by the Site Layout Plan.

4.6.3 Unless otherwise stated or requested within Local Policies or Supplementary Planning Documents (SPDs) the criteria and thresholds listed within ILP GN01 are used as reference points for assessment.

4.6.4 The Assessment has been made based on professional qualitative and quantitative opinion using the baseline data gathered and discussed alongside the provided Site Layout plans.

Table 4.4: Criteria (adapted from ILP PLG 04 Guidance on Undertaking Environmental Lighting Impact Assessment (2013))

Nature	Level	Description
Positive	Major/ substantial beneficial effects	Significant improvement in night environment and/or reductions in glare, light intrusion and sky glow etc
	Moderate beneficial effects	Noticeable improvement in night environment and/or reductions in glare, light intrusion and sky glow etc
	Minor beneficial effects	Slight improvement in night environment and/or reductions in glare, light intrusion and sky glow
Neutral	None/ negligible	No significant effect or overall effects balancing out
Negative	Minor adverse effects	Slight increase in visibility of site, glare, light intrusion and sky glow etc
	Moderate adverse effects	Noticeable increase in visibility of site, glare, light intrusion and sky glow etc
	Major adverse effects	Significant problems with increase in visibility of site, glare, light intrusion and sky glow etc

4.7 Mitigation

4.7.1 Where the potential for adverse effects is identified, strategies and methods for mitigating these are proposed.

- 4.7.2 The extent and nature of mitigation proposed is proportionate to the level of adverse effects recorded under the expected lighting conditions.
- 4.7.3 Mitigation is also used to discuss further over and above considerations that whilst not changing the assessment conclusions could be understood to further reduce impact and minimise light pollution.

4.8 Residual Effects

- 4.8.1 Where mitigation is applied then the impact and effects after mitigation has been applied are considered. Residual effects are only considered where mitigation is required and expected to change the levels of impact and effect.

5 Baseline Conditions

5.1 Introduction

- 5.1.1 This section provides a general overview of the baseline conditions for the Site and its surroundings. The baseline of individual receptors is discussed alongside the assessment within **Table 7.1**.
- 5.1.2 The baseline lighting conditions have been informed by a desk-based study and survey of the Site and the surrounding area.

5.2 The Site

- 5.2.1 The Oaklands College campus was not visited during the survey; however, it can reasonably be assumed that existing light sources on site are associated with wall-mounted luminaires, high-level floodlighting for car parks and open areas, and dedicated sports pitch lighting.
- 5.2.2 The land allocated for Oaklands Blossom is currently unlit, with no artificial light sources present.

5.3 The Surrounding Area

- 5.3.1 There are a number of light sources adjacent to the Site; the light sources bordering the Site are as follows:
- Streetlighting is generally present on most of the roads that bound the Site. These lights are a mixture of flat regular LEDs and pole top lanterns with an exposed light source. They are approximately 6-10m in height.
 - Many of the residential dwellings that border the Site utilise some form of domestic lighting. These fittings range from cylindrical downlights, floodlights (which have been tilted upwards) or wall sconces.
 - The commercial / industrial estate to the south west utilise a mixture of floodlighting and column mounted luminaires for illumination. It was noted during the survey that a number of these floodlights have been left on during the hours of darkness, presumably for security purposes.
- 5.3.2 Streetlighting is generally present on many of the roads within St Albans. These lights are a mixture of flat regular LEDs and pole top lanterns with an exposed light source. They are approximately 6-10m in height.
- 5.3.3 The residential dwellings within 1km of the Site typically utilise some form of domestic lighting. These fittings range from cylindrical downlights, floodlights (which have been tilted upwards) or wall sconces.
- 5.3.4 Lighting typically associate with town centres is present within St Albans, particularly in high-traffic areas such as the train station. This includes typical urban lighting features such as street lighting columns, illuminated signage, bollard lighting, and building-mounted luminaires, all contributing to elevated ambient light levels in these locations.
- 5.3.5 Similar lighting characteristics can also be found in Hatfield to the east, particularly around the industrial estate on the north west side and the town centre, where street lighting, illuminated signage, and building-mounted fixtures contribute to elevated ambient light levels.

5.3.6 St Albans is located approx. 20 miles north of central London, which is a heavily urbanised area that experiences high levels of light pollution due to dense development and extensive artificial lighting.

Figure 5.1: VIIRS Light Pollution Map: Site in relation to St Albans and surrounding area

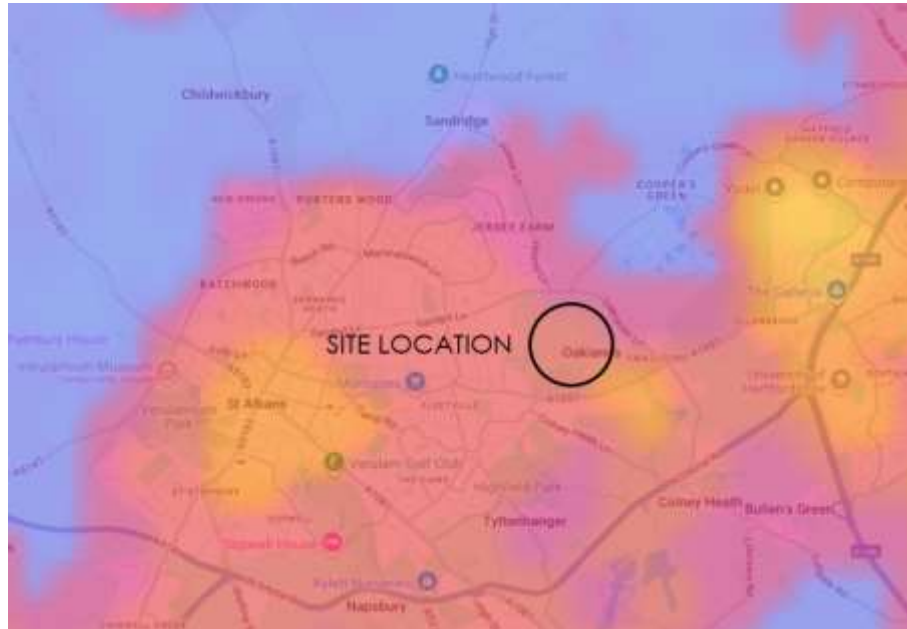
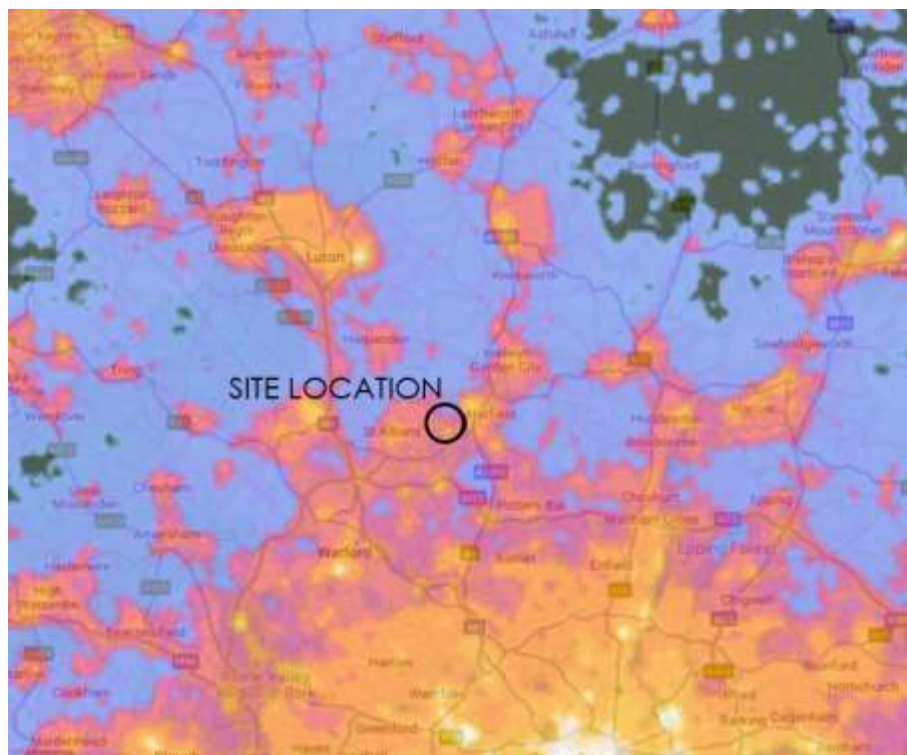


Figure 5.2: VIIRS Lighting Pollution Map: Site in relation to extended area



5.4 Environmental Lighting Zone

- 5.4.1 The Site is considered to fall within an E3 “Suburban” Environmental Lighting Zone by reference to **Table 4.1 and Table 4.2** within the Institution of Lighting Professionals’ Guidance Notes for the Reduction of Obtrusive Light (2021) (ILP GN01). This is consistent with the descriptive text “*Well inhabited rural and urban settlements, small town centres of suburban locations*”, and reflects the visibility and proximity of residential and commercial buildings surrounding the Site, as described above.

5.5 Established Receptors

- 5.5.1 The sensitive designated areas recommended by the ILP PLG04 (as detailed in Section 4.3.2) were considered in relation to the Site. The associated considerations are summarised in **Table 5.1**

Table 5.1: Considerations for PLG04 Sensitive Areas

Sensitive Areas listed in PLG04	Considerations for this assessment
World Heritage Site	There are no World Heritage sites within the vicinity of the Site. This has been scoped out of the assessment.
Dark Sky Core or Buffer Zones	There are no Dark Sky areas within 100km of the vicinity of the Site. This has been scoped out of the assessment
National Park Area	There are no National Parks within 100km of the vicinity of the Site. This has been scoped out of the assessment.
Outstanding Natural Beauty (AONB)	There are no AONBs within the immediate vicinity of the Site. There are 3No AONBs within 100km of the Site, the Chilterns (60km), Surrey Hills (70km) and North Wessex Downs (55km). Given these distances, it is unlikely the AONB will be affected by any new lighting introduced as part of the Proposed Development. Therefore, these have been scoped out of the assessment.
Sites of Specific Scientific Interest (SSSI)	There are two SSSIs within approx. 5km of the Site. Colney Heath SSSI is located ~3.5km to the east. Nomansland Common SSSI is located ~4.5km to the north. Given the distance of these SSSIs to the Site, and the barriers separating the two, these have been scoped out of the assessment.
Ramsar Sites	There are no Ramsar Sites within 10km of the Site. The nearest is the Lee Valley Ramsar Site, which is ~30km south east of the Site.

Sensitive Areas listed in PLG04	Considerations for this assessment
	This has been scoped out of the assessment.
Conservation Areas	<p>The following designated Conservation Areas can be found within 10km of the Site –</p> <ul style="list-style-type: none"> • Sandridge – (~2km north) • St Albans City Centre (~3km west) • Colney Heath (~5km east) • Wheathampstead (~6km north west) • London Colney (~6km south) • Harpenden (~7km north west) <p>Given the distance between the Site and the listed Conservation Areas, as well as the existing light sources and visual barriers (buildings, trees, vegetation etc), and new lighting is unlikely to adversely impact these areas.</p> <p>Therefore, these areas have been scoped out of the assessment.</p>
Listed Buildings & Scheduled Monuments	<p>There are 3 Grade II listed buildings within 100m of the Site boundary.</p> <p>One is located on Hatfield Road (List Entry No. – 1103024) and the remaining two (List Entry No. 1103023 & 1172829) are located in the residential estate to the south west.</p> <p>There are a number of Grade II listed buildings within 1km of the Site.</p> <p>Given the distance between these buildings and the Site, as well as the dense woodland / vegetation between the two, this has been scoped out of the assessment.</p>
Vulnerable Wildlife Habitats (e.g. insects, reptiles, bats)	<p>The initial findings of the protected species surveys indicate that the site supports nine species of foraging and commuting bats. These have been recorded around the boundary vegetation and woodland edges.</p>

5.5.2 Receptors have been identified based on the desk-based study as shown within **Table 5.2**

Table 5.2: Receptors and Description of Baseline Conditions

Receptor Type	Identified receptor	Location to the Site	Baseline Condition
Residential Amenity	Residential properties along Hatfield Road	Adjacent to the south side of the ownership boundary	<p>There are a number of residential dwellings located along this road, ranging from one to three storeys in height, which bounds the south side of the ownership boundary.</p> <p>It is anticipated that a number of these properties would emit some degree of illumination, as there are wall mounted luminaires present, which range from small floodlights to wall mounted fittings with exposed light sources.</p> <p>Streetlighting is present along this road, which are positioned intermittently on both sides of the road. These luminaires were observed to remain illuminated throughout the hours of darkness.</p> <p>Sky glow from St Albans and the surrounding area is anticipated to be partially visible from this location.</p> <p>The Oaklands College grounds are currently lit so there is the potential for light spill and/or sky glow to originate from this location. The land allocated for Oaklands Blossom is currently unlit, so no light pollution is expected to originate from this location.</p>
	Residential properties along Oaklands Lane	Adjacent to the east side of the ownership boundary	<p>There are a number of residential dwellings along this road, ranging from one to three storeys in height, which bounds the east side of the ownership boundary.</p> <p>It is anticipated that a number of these properties would emit some degree of illumination, as there are wall mounted luminaires present, which range from small floodlights to wall mounted fittings with exposed light sources.</p> <p>Streetlighting is present along the southern section of this road, which have been positioned so that they are facing towards the Site. The northern section of this road, leading up to the Oaklands Lane / Sandpit Lane roundabout, is unlit. These luminaires were observed to remain illuminated throughout the hours of darkness.</p>

Receptor Type	Identified receptor	Location to the Site	Baseline Condition
			<p>Sky glow from St Albans and the surrounding area is anticipated to be partially visible from this location.</p> <p>The Oaklands College grounds are currently lit so there is the potential for light spill and/or sky glow to originate from this location. The land allocated for Oaklands Blossom is currently unlit, so no light pollution is expected to originate from this location.</p>
	Residential properties along Sandpit Lane	Adjacent to the north side of the ownership boundary	<p>There are a number of residential dwellings along this road, ranging from one to two storeys in height, which bounds the east side of the ownership boundary.</p> <p>It is anticipated that a number of these properties would emit some degree of illumination, as there are wall mounted luminaires present, which range from small floodlights to wall mounted fittings with exposed light sources.</p> <p>Streetlighting is present along this road, however it should be noted that they are more prominent towards the roundabouts at either end of the road. In some sections of the road, the streetlighting is partially obstructed by the trees and vegetation which line the road boundary. These luminaires were observed to remain illuminated throughout the hours of darkness.</p> <p>Sky glow from St Albans and the surrounding area is anticipated to be partially visible from this location.</p> <p>The Oaklands College grounds are currently lit so there is the potential for sky glow to originate from this location. The land allocated for Oaklands Blossom is currently unlit, so no light pollution is expected to originate from this location.</p>
	Residential properties within Oaklands Grange	Adjacent to the west side of the site of Oaklands Blossom	<p>There are a number of residential dwellings along this road, ranging from one to three storeys in height, which bounds the west side of the site of Oaklands Blossom.</p> <p>It is anticipated that a number of these properties would emit some degree of illumination, as there are wall mounted luminaires present, which range from small floodlights to wall mounted fittings with exposed light sources.</p>

Receptor Type	Identified receptor	Location to the Site	Baseline Condition
			<p>Streetlighting is present along the roads within this estate. These appear to be pole-top mounted luminaires, with a lantern head and downward directed optic to minimise upward light spill. These luminaires were observed to remain illuminated throughout the hours of darkness.</p> <p>Sky glow from St Albans and the surrounding area is anticipated to be partially visible from this location.</p> <p>The Oaklands College grounds are currently lit so there is the potential for sky glow to originate from this location. The land allocated for Oaklands Blossom is currently unlit, so no light pollution is expected to originate from this location</p>
	Residential properties within estate south west of Oaklands College	Approx. 270m south west of the Oaklands College Grounds	<p>There are a number of residential dwellings within this area, ranging from one to two storeys in height.</p> <p>It is anticipated that a number of these properties would emit some degree of illumination, as there are wall mounted luminaires present, which range from small floodlights to wall mounted fittings with exposed light sources.</p> <p>Streetlighting is present along the roads within this estate. These appear to be sodium lanterns with an outward-projecting lens. These luminaires were observed to remain illuminated throughout the hours of darkness.</p> <p>Sky glow from St Albans and the surrounding area is anticipated to be partially visible from this location.</p> <p>The Oaklands College grounds are currently lit so there is the potential for sky glow to originate from this location. The land allocated for Oaklands Blossom is currently unlit, so no light pollution is expected to originate from this location.</p>
Transport Safety	Adjacent Road Network	Roads within 1km of the Site	Existing roads around the Site are primarily lit by streetlighting, with supplementary lighting originating from façade lighting from adjacent buildings

Receptor Type	Identified receptor	Location to the Site	Baseline Condition
Biodiversity	Bats & Other Wildlife	On Site	<p>At the time of writing the report, the protected species surveys we're still ongoing.</p> <p>Initial findings indicated that the site supports nine species of foraging and commuting bats. The boundary vegetation and woodland edges, particularly Home Wood, are used for roosting, foraging and commuting.</p>

6 Lighting Requirements and Proposals

6.1 Introduction

6.1.1 This section summarises the lighting requirements associated with the construction and operation of the Proposed Development and provides an overview of the likely artificial light sources associated with each land use once the Proposed Development is built.

6.2 Construction Lighting

6.2.1 The construction phase referred to throughout this assessment includes the demolition of the existing buildings, structures and site apparatus, which forms part of the Proposed Development.

6.2.2 Development of a detailed construction lighting scheme is not feasible at this stage. Consideration of construction lighting is included as part of the framework Construction Environmental Management Plan (CEMP)

6.2.3 Lighting is required for the safe undertaking of tasks, alongside facilitating safe access to the Site, welfare facilities and parking areas. Fixed lighting is anticipated to be limited during construction to the residential and car parking areas of the development.

6.2.4 The extent and duration of illumination should be minimised as far as practicable, lighting of areas not currently and all-night illumination of storage and compounds should be avoided.

6.2.5 The principles identified within **Table 6.1** will be applied and expanded upon in the design and location of temporary construction lighting.

Table 6.1: Principles of Construction Lighting

Management and Supervision	
Construction task lighting will be limited to agreed working hours for the development.	A nominated person within each construction organisation to conduct reviews of proposals for construction lighting installations and verify consistency with the CEMP and minimisation of Obtrusive light. Inspection the lighting installation should be undertaken on initiation of new lighting sources and at appropriate intervals thereafter. Appropriate records of temporary scheme approval and inspection should be retained as part of the CEMP.
Lighting will be operational only for the duration of each task and switched off when no longer required.	
Long Term Installations / Site Compounds, Offices and Welfare Buildings	
Luminaires on fixed/long term features to use with dark – sky considerate luminaires, avoiding tilt angles that expose the light source or contribute to upward light.	Visual screening, such as hoardings can be applied to surrounds of compounds to contain light within those locations. Where practical luminaires should be mounted below the upper height of the screening so light sources are not visible from external to the compound;
Warmer colour temperature of 3000K to be used whenever practicable.	
Use low light or infrared flood lighting with CCTV where appropriate.	Minimise the external application of linear battens or bulkheads with clear, ribbed or opal polycarbonate

Security and access lighting will be controlled through photocell and presence detection wherever practical.	diffusers. Whilst providing general illumination the wide distribution of these luminaires emits a significant percentage of their output as upward light, particularly when mounted on vertical surfaces. Use within structures or on underside of canopies/scaffolding may yield source visibility and some upward light but this is greatly reduced compared to their application along the side of paths or hoardings;
For vehicle circulation areas where pedestrian movement is not present consideration of unlit routes with passive (retroreflective) markers indicating routes.	
Temporary Task Lighting	
Lighting to only be operational only for the duration of each task and switched off when no longer required.	Temporary shielding and screening applied between task areas and sensitive receptors;
Portable or temporary task lighting to be appropriate scale and mounting height and distance from task, avoiding extreme tilt angles of luminaires. The use of a greater number of lower output luminaires correctly positioned is considered preferable to a smaller number of high output luminaires covering an expansive area.	Subject to phasing of the highways re-alignment and opening of road sections there is a potential for temporary streetlight from portable towers to be in place. Designs for these should be verified for contrast and glare where the requirement for temporary streetlighting is identified.

6.3 Operational Lighting

General Requirements

- 6.3.1 Operational lighting is required throughout the Proposed Development to provide the minimum level of lighting to complete activities safely, to prevent crime, and to meet highway safety standards.
- 6.3.2 Lighting should be consistent with, or better than, the obtrusive lighting threshold for the E3 ELZ. Whilst the defining of the ELZ establishes maximum values for various criteria, these should not be considered as explicit permission to generate light pollution up to these thresholds, and the Proposed Development should seek to avoid the minimise light pollution to each opportunity.
- 6.3.3 This section provides an overview of the lighting requirements that are likely to emerge in relation to the Proposed Development.
- 6.3.4 As a general point that applies to all land uses, external lighting will be modern energy efficient LED lighting. External lighting will be connected to a dedicated distribution board and will have centralised photocell and time switch control such that external lighting will be activated at low ambient lighting and switched off during daylight hours.
- 6.3.5 The lighting design should be prepared with due regard to Bat Conservation Trust and ILP Guidance Note 08/23: Bats and Artificial Lighting in the UK 2023.
- 6.3.6 Exterior lighting should be 3000K or less, preferably 2700K. Cool white, 3200K and greater shall be avoided.
- 6.3.7 Free-standing luminaires (luminaires which are not attached to a building or structure, such as columns or bollards) should be installed so that they are pointing towards the Site. If possible, these luminaires should be installed as far from the Site boundaries as practical to minimise the potential for back light spill to adversely impact local receptors.

Oaklands College

- 6.3.8 The Proposed Development will deliver new educational facilities to the campus. Lighting for these new facilities is expected to follow the requirements within BS EN12464-2 and CIBSE Lighting Guide 5, Lighting for Education.
- 6.3.9 Luminaires used across the school sites should be cut-off, avoiding upward light, particularly for building mounted bulkheads which should be mounted at heights to allow downward light and facial recognition without large ambient luminous surfaces.
- 6.3.10 New external sport pitches and tracks will be delivered as part of the Proposed Development, and are expected to require illumination. These will be lit based on the appropriate lighting classes set out in CIBSE Lighting Guide 04, Sports Lighting. Control systems and variable illuminance levels should be considered to set illuminance levels according to sport occurring at a given time, avoiding over illuminance.
- 6.3.11 Across the college site, lighting should be reduced to the minimum required for security and safe access outside of opening hours. The use of dual level presence detection should be considered.

Oaklands Blossom

- 6.3.12 For individual private dwellings, external lighting at front and side doors can be expected, subject to the property's relationship to the street and any streetlighting present. Where external entrance lighting is provided, luminaires should be photocell and motion controlled, such that they are only active when approached during the hours of darkness. Selection of luminaires shall consider the sensitivity and orientation of motion detector to reduce the instances of false triggering. External residential luminaires where provided shall be dark-skies compliant with no direct upward light, bare lamps and or lit diffusers in the vertical plane shall be avoided.
- 6.3.13 Exterior lighting to rear gardens is likely to be determined by individual occupants in the long term. At the outset, it is advised that the developer provides adequate switched external lighting with no upward light or distinctly visible light sources. While occupants may choose to amend over time, the provision of well-considered external lighting reduces the likelihood of poorly applied occupant installations.
- 6.3.14 For entrances to multiple dwellings, external lighting linked to photocell with two levels of output such that the lower level is active from dusk to dawn with higher illumination triggered on presence detection is recommended. The same considerations as private dwellings will be required in luminaire selection and mounting locations. It is also expected that external lighting will be required for communal areas, footpaths, and bin stores.
- 6.3.15 Covenants on privately owned properties can be used as a method of long-term mitigation against poor quality and obtrusive light being installed by residents. The inclusion of a suitably worded covenant regarding avoidance of upward and obtrusive light, including colour temperature specifications of warm white allows for enforcement if required in the future. This can be accompanied by information within the homeowners information pack reminding residents of the nature of the surrounding environment and encouraging responsibility towards that. This may be particularly applicable for dwellings at the periphery of the green infrastructure.
- 6.3.16 Luminaires used on the proposed Local Centre should be cut-off, avoiding upward light, particularly for building mounted bulkheads which should be mounted at heights to allow downward light and facial recognition without large ambient luminous surfaces.

- 6.3.17 Outside of the operating hours for the Local Centre, lighting should either be turned off or reduced to minimum levels required for security and safe access. Lighting controls in the form of presence detection should be considered.

Highways

Street Lighting

- 6.3.18 Column luminaires will be provided across the highways within the Proposed Development. Lighting designs will be undertaken as part of reserved matters / discharge of conditions.
- 6.3.19 Lighting will be designed to BS EN 5489-1:2020 and BS EN 13201-1:2015 requirements, seeking to use the minimum lighting standards to avoid over lighting. For adopted highways, lighting should also be designed to local authority standards.
- 6.3.20 To minimise light spill outside of the highway, it is recommended that spill shields should be implemented.
- 6.3.21 Residential amenity will be considered in the siting of streetlighting, with due regard given to the potential for light intrusion into the upper windows of residential properties.

Footpaths and Cycleways

- 6.3.22 Where cycleways and footpaths are adjacent or integrated within the highways these are expected to form part of the highways scheme.
- 6.3.23 Where footpaths and cycleways are separate from the highway then the guidance of ILP PLG23 and standard set out in BS 5489-1:2020 will be applied. Where proposed cycle routes will serve schools and commuters, it is recommended that the cycle paths are lit in order to allow users to orientate themselves, identify other users, detect hazards, and discourage crime.

Car Parking

- 6.3.24 New parking provision is proposed across both the college and housing site as part of the overall development strategy. These can be expected to require illumination to allow for the safe access and movement of vehicles. The lighting levels should be provided in accordance with the lighting requirements for enclosed car parks as set out in BS 5489-1:2020 and BS EN 12464-1:2021.
- 6.3.25 Adaptive and responsive lighting should be considered such that illumination levels within a zone are held at a minimum lit level when parking areas are not being accessed and raise to operational levels on detection of movement, returning after a set period of inactivity.
- 6.3.26 Luminaires should be designed to be considerate of light spilling out of the structure, for example the incorporation of recessed lights (as recommended in ILP GN08). Physical screening of light spill should also be considered, for example, by the use of facades.

Parks and Green Space

- 6.3.27 Ideally parks and green spaces within the Proposed Development should be unlit other than where required for primary active travel corridors and circulation routes. Consideration should be given to the availability of alternate lit routes with minimal inconvenience to users in the decision to illuminate or not illuminate.
- 6.3.28 Where lighting is required for access within parks and green spaces, motion-activated low level bollard lighting is recommended. These should be strategically placed along the circulation routes as part of wayfinding and placemaking.

6.3.29 Ideally, public open spaces and recreation areas should be unlit other than where required for primary active travel corridors and circulation routes. If other access routes are available within the illuminated highways network, then green spaces should be unlit.

6.3.30 Uplighting of trees within the public open spaces should be avoided.

Emergency Lighting

6.3.31 In the event of an emergency, lighting will be required to illuminate to safely guide the occupants from the buildings from both areas of the Site to the designated fire assembly points.

6.3.32 The external lighting above emergency exits will have an integrated emergency battery to ensure continued illumination during emergency situations. Alternatively, a standalone emergency luminaire will be used, which will remain off during normal operations.

7 Potential Effects

7.1 Introduction

- 7.1.1 In the absence of a detailed and calculated design, a qualitative assessment has been made based on the assumption that the recommended approach will be implemented as discussed within **Section 6**.
- 7.1.2 The qualitative assessment considers effects of obtrusive light on sensitive receptors, effects have been classified as relating to health, visual, or safety:
- **Health** effects on residential receptors typically relate to light intrusion.
 - Light intrusion is light which affects areas beyond those which are supposed to be lit by a particular source and which, depending on the nature of the receptor affected, has the potential to cause nuisance and disturbance.
 - **Visual** effects on receptors typically relate to sky glow and glare.
 - Sky glow is the general illumination of the night sky above conurbations and any areas where there are large amounts of artificial light. It comprises aspects of reflected light from illuminated surfaces, direct upward light from lighting installations and intrusion light, which is light which falls outside the specific area to be lit.
 - Glare is the brightness of a light source when viewed against a dark background. Most often experienced when the light source itself (i.e. the bulb or tube) is directly visible and is not covered by a shield, cowl or directed by a suitable lens / reflector arrangement
- 7.1.3 Safety effects on transport receptors typically relate to glare. Misdirected lighting orientated onto nearby transport routes can cause glare and has the potential to dazzle drivers and cyclists
- 7.1.4 Ecology receptors have also been considered, as recommended ILP PLG04. To see assessments of lighting impacts on Ecology, please see the **Ecological Impact Assessment**.

7.2 Construction Lighting

- 7.2.1 Based on the scale and quantity of the Proposed Development, construction will occur over multiple phases and an extended duration. Given the construction periods it is likely that portions of the Site will be completed and occupied whilst construction work is ongoing elsewhere.
- 7.2.2 Construction impacts are considered temporary and are detailed for each receptor within **Table 7.1**.

7.3 Operational Lighting

- 7.3.1 Broadly speaking the introduction of lighting associated with a development into previously unlit land is adverse from a visual and biodiversity perspective. The extent of adverse effect is then based on magnitude of the change and lit quality of the Proposed Development.
- 7.3.2 The, expected changes resulting from the Proposed Development and resulting impacts on sensitive receptors are discussed in **Table 7.1**.

Table 7.1: Assessment of Identified Receptors, Construction and Operation

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
Residential Amenity	Residential Properties along Hatfield Road	Adjacent to the south side of the ownership boundary	<p>Health – There is the potential for light intrusion from construction lighting, particularly from construction vehicles, to impact residents with a direct or partial view of the Site. However, given the measures outlined in Table 6.1 and the temporary nature of this phase, this effect is considered to be minor adverse.</p> <p>Visual – The existing trees that line the boundary provide a visual barrier to this receptor. However, there is potential for glare to effect these receptors. This will include lighting from within the Site and from construction vehicles travelling to and from site. However, given the measures outlined in Table 6.1, a minor adverse impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during construction (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is likely to be already visible from the properties and lighting within St Albans</p> <p>The effect from sky glow from the construction lighting is negligible due to best</p>	<p>Health – Due to the distance between the Site and the trees and vegetation separating the two, light intrusion is unlikely to impact this receptor. This, along with the mitigation measures outlined in Table 6.1, will result in the potential for light intrusion from operational lighting to be negligible.</p> <p>Visual -. Due to the separation between the Site and this receptor, combined with the presence of boundary trees and vegetation, views of the Site from this location will be largely screened. Therefore, direct views of the Proposed Development are limited, and a negligible effect is expected as a result of glare from operational lighting.</p> <p>As best practice measures are expected to be undertaken during operation (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is already visible from this receptor from the direction of St Albans and London.</p> <p>The effect from sky glow from the Proposed Developments operational lighting is negligible due to best practice measures undertaken and the existing sky glow from surrounding properties.</p>

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
	Residential properties along Oaklands Lane	Adjacent to the east side of the ownership boundary	<p>practice measures being undertaken and the existing sky glow from the surrounding area</p> <p>Health – There is the potential for light intrusion from construction lighting, particularly from construction vehicles, to impact residents with a direct or partial view of the Site. However, given the measures outlined in Table 6.1 and the temporary nature of this phase, this effect is considered to be minor adverse.</p> <p>Visual – The existing trees that line the boundary provide a visual barrier to this receptor. However, there is potential for glare to effect these receptors. This will include lighting from within the Site and from construction vehicles travelling to and from site. However, given the measures outlined in Table 6.1, a minor adverse impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during construction (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is likely to be already visible from the properties and lighting within St Albans</p>	<p>Health – Due to the distance between the Site and the trees and vegetation separating the two, light intrusion is unlikely to impact this receptor. This, along with the mitigation measures outlined in Table 6.1, will result in the potential for light intrusion from operational lighting to be negligible.</p> <p>Visual -. Due to the separation between the Site and this receptor, combined with the presence of boundary trees and vegetation, views of the Site from this location will be largely screened. Therefore, direct views of the Proposed Development are limited, and a negligible effect is expected as a result of glare from operational lighting.</p> <p>As best practice measures are expected to be undertaken during operation (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is already visible from this receptor from the direction of St Albans and London.</p> <p>The effect from sky glow from the Proposed Developments operational lighting is negligible due to best practice measures</p>

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
	Residential properties along Sandpit Lane	Adjacent to the north side of the ownership boundary	<p>The effect from sky glow from the construction lighting is negligible due to best practice measures being undertaken and the existing sky glow from the surrounding area</p> <p>Health – There is the potential for light intrusion from construction lighting, particularly from construction vehicles, to impact residents with a direct or partial view of the Site. However, given the measures outlined in Table 6.1 and the temporary nature of this phase, this effect is considered to be minor adverse.</p> <p>Visual – The existing trees that line the boundary provide a visual barrier to this receptor. However, there is potential for glare to effect these receptors. This will include lighting from within the Site and from construction vehicles travelling to and from site. However, given the measures outlined in Table 6.1, a minor adverse impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during construction (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is likely to be already visible from the properties and lighting within St Albans</p>	<p>undertaken and the existing sky glow from surrounding properties.</p> <p>Health - There is the potential for light intrusion from operational lighting from Oaklands Blossom to impact this receptor. However, it is expected new planting will supplement the existing along this boundary, which will act as a natural barrier.</p> <p>This receptor is a considerable distance from Oaklands College, so it is unlikely light intrusion will reach / impact this area. Therefore, this effect is expected to be negligible.</p> <p>Visual – New planting will be placed along the northern boundary to supplement the existing, which will act as a visual barrier for this receptor. This, along with the measures outline in Table 6.1, means a negligible effect is expected. a result of glare from operational lighting.</p> <p>As best practice measures are expected to be undertaken during operation (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground.</p>

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
			<p>The effect from sky glow from the construction lighting is negligible due to best practice measures being undertaken and the existing sky glow from the surrounding area</p>	<p>Sky glow is already visible from this receptor from the direction of St Albans and London.</p> <p>The effect from sky glow from the Proposed Developments operational lighting is negligible due to best practice measures undertaken and the existing sky glow from surrounding properties.</p>
	Residential properties within Oaklands Grange	Adjacent to the west side of the site of Oaklands Blossom	<p>Health – There is the potential for light intrusion from construction lighting, particularly from construction vehicles, to impact residents with a direct or partial view of the Site. However, given the measures outlined in Table 6.1 and the temporary nature of this phase, this effect is considered to be minor adverse.</p> <p>Visual – There is minimal screening between this receptor and the Site of Oaklands Blossom, so there is potential for this receptor to be impacted by glare. This will include lighting from within the Site and from construction vehicles travelling to and from site. However, given the measures outlined in Table 6.1, a minor adverse impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during construction (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is likely to be already</p>	<p>Health - There is the potential for light intrusion from operational lighting from Oaklands Blossom to impact this receptor. However, it is expected new planting will supplement the existing along this boundary, which will act as a natural barrier.</p> <p>This receptor is a considerable distance from Oaklands College, so it is unlikely light intrusion will reach / impact this area. Therefore, this effect is expected to be negligible.</p> <p>As best practice measures are expected to be undertaken during operation (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is already visible from this receptor from the direction of St Albans and London.</p> <p>The effect from sky glow from the Proposed Developments operational lighting is negligible due to best practice measures</p>

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
			<p>visible from the properties and lighting within St Albans</p> <p>The effect from sky glow from the construction lighting is negligible due to best practice measures being undertaken and the existing sky glow from the surrounding area</p>	<p>undertaken and the existing sky glow from surrounding properties.</p>
	<p>Residential properties within estate south west of Oaklands College</p>	<p>Approx. 270m south west of the Oaklands College Grounds</p>	<p>Health – The existing woodland between this receptor and the Site is expected to be retained. This, along with the measures outlined in Table 6.1 and the temporary nature of this phase, this effect is considered to be negligible.</p> <p>Visual – The existing woodland between this receptor and the Site, which is expected to be retained, will provide natural screening against glare. This, along with the measures outlined in Table 6.1, means that a negligible impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during construction (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is likely to be already visible from the properties and lighting within St Albans</p> <p>The effect from sky glow from the construction lighting is negligible due to best</p>	<p>Health - The existing woodland between this receptor is expected to be retained. This, along with the measures outlined in Table 6.1, means that the effect is considered to be negligible.</p> <p>Visual – With the existing woodland between the Site and this receptor expected to be retained, a negligible impact from glare is expected.</p> <p>As best practice measures are expected to be undertaken during operation (outlined in Section 6), upward lighting is not expected within the site. However, a level of sky glow may be visible via reflected light off the ground. Sky glow is already visible from this receptor from the direction of St Albans and London.</p> <p>The effect from sky glow from the Proposed Developments operational lighting is negligible due to best practice measures undertaken and the existing sky glow from surrounding properties.</p>

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
			practice measures being undertaken and the existing sky glow from the surrounding area	
Transport Safety	Adjacent Road Network	Roads within 1km of the Site	Health and Safety – Given the close proximity of the Site to the roads, a level of glare and light spill is expected. However, it is expected that the CEMP will provide some sort of screening / barrier between the Site and the roads which will reduce / negate obtrusive lighting during the construction phase. Therefore, the effect is expected to be minor adverse .	Health and Safety – New planting will be placed along the boundaries of the Site. This, alongside the best practice lighting controls for the wall lighting and streetlighting outlined in Section 6 , will result in a negligible impact.
Biodiversity	Bats and other wildlife	Onsite	Initial protected species surveys have identified a number of bat species that use the woodland boundaries for foraging and commuting. Temporary screening should be installed where appropriate, and that the measures in Section 6 shall be followed to avoid continual excessive increases in illuminance onto potential habitats within the vicinity. However, short duration and temporary increase in illuminance from vehicles or specific planned tasks may occur.	A lighting strategy will be prepared and submitted with due regard to Bat Conservation Trust and ILP Guidance Note 08/23: Bats and Artificial Lighting in the UK 2023. Detailed lighting calculations will be required at future design stages to demonstrate <1 lux light spill to the retained bat habitats.
Dark Skies and District Ambience	General Comment.	N/A	The Site is considered to fall within an E3 "Suburban" ELZ which reflects the close proximity and visibility of prominent light sources to the Site and the current Site usage. However, due to the proximity of the Site to more densely populated urban areas and significant areas of light pollution, negligible impacts from sky glow is expected. The Proposed Development will see an increase in the extent of lit development in this area and based on the extent of lit development the likely total flux of upward light may increase.	

Receptor Type	Identified receptor	Location to the Site	Construction Phase Assessment	Operation Phase Assessment
			<p>However, the Proposed Development will be committed to a responsible application of light that avoids direct upward light wherever practicable. Overall, within the context of the existing lighting in the Site and surrounding area, the Proposed Development is anticipated to have a negligible effect on sky glow and district ambience.</p>	

8 Mitigation and Monitoring

8.1 Mitigation

- 8.1.1 Based on the expected lighting conditions and the embedded external lighting mitigation and best practice set out in **Section 6.2** and **Section 6.3**, no significant adverse impacts are anticipated. No further site-specific mitigation is therefore deemed necessary. It is anticipated that the embedded mitigation identified in this report will be secured to the planning permission through a suitably qualified planning condition.

8.2 Post Completion Monitoring

- 8.2.1 It is recommended that at key locations located near sensitive receptors are validated with a post installation surveys to confirm both design illuminance levels and values at identified receptors. If the Proposed Development is implemented in phases, then this should be considered across each of those phases such that the cumulative effects of design can be considered with calculated values added to those measured from previous phases.

9 Summary and Conclusions

- 9.1.1 This lighting assessment has been undertaken with due regard for the methods detailed within ILP PLG04 and the information contained within ILP GN01.
- 9.1.2 The assessment is based upon an understanding of the baseline conditions established through desk-based study. The Site is considered to fall within an E3 “Suburban” Environmental Lighting Zone.
- 9.1.3 As detailed in **Chapter 6**, it is expected that lighting will be required for the following:
- General Requirements;
 - Oaklands College;
 - Oaklands Blossom;
 - Highways;
 - Car Park;
 - Parks and Green Spaces; and
 - Emergency Lighting
- 9.1.4 With the implementation of the mitigation measures set out in **Section 6**, which incorporates the good practice, lighting controls and lower colour temperature and considered orientations, the impact of the Proposed Development is considered **negligible to minor adverse** for all receptors.
- 9.1.5 At future design stages of the Proposed Development details will be available to allow the preparation of a lighting design that will follow the lighting strategy and requirements set out in this report. The lighting design of the Proposed Development will include a luminaire schedule and plan; a modelled prediction of lighting levels and obtrusive light (including horizontal and vertical isolines) at sensitive receptors to confirm the requirements of the lighting strategy have been achieved.

Appendix A Illustrative Masterplan

