



· LIGHTING DESIGN · ELECTRICAL · SMART CITIES ·
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LEAFIELD INDUSTRIAL ESTATE, CORSHAM

LIGHTING TECHNICAL REPORT

DFL-UK

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EXECUTIVE SUMMARY

This Technical Report proposes good practice and outlines a suitable approach for the proposed lighting of the proposed outdoor padel courts at Leaffield Industrial Estate, Corsham.

The purpose of using artificial lighting is to provide a safe and recognised level of lighting for the use of the padel courts at limited times during the hours of darkness, whilst ensuring that any potential impacts on human amenity, ecology and the environment are minimised.

It has been identified that the Application Site is set within a suburban location (E3).

The proposed lighting has been assessed in accordance with BS EN 12193:2018 and follows relevant guidance from the Institution of Lighting Professionals (ILP) and the Lawn Tennis Association (LTA).

The relevant local planning authority is Wiltshire Council with details of local policies regarding lighting found in the Wiltshire Core Strategy, Adopted January 2015, namely Core Policy 51.

A baseline illuminance survey was conducted on 12/01/2026 and the report can be found in supporting documentation: **4076-DFL-ELG-XX-SU-EO-13001**. The baseline illuminance survey finds that Leaffield Industrial Estate is a well-lit area with column lighting, bulkhead lighting and floodlighting throughout the estate.

Photometric data has been used within the lighting calculations to establish the control of light and how selected luminaires will minimise light spill within the Application Site. Through careful design, the proposed lighting ensures compliance with the obtrusive light limits for an E3 Environmental Zone from GN01:2021, ensuring that the identified **Potential Human Amenity Receptors will not experience negative effects** from the installation of artificial lighting at the Application Site.

Guidance has been taken from ILP GN08:2023 to assess the impact of the proposed lighting on **Corsham Railway Cutting**, a Site of Special Scientific Interest identified as a Potentially Sensitive Ecological Receptor. It is confirmed that the **effects of lighting on this area will be negligible** as the levels do not exceed 0.001 Lux at this location due to its proximity from the Application Site.

This Technical Report therefore concludes that the proposed lighting achieves compliance with all relevant legislation, national and local policies, British Standards, and industry guidance.

1. INTRODUCTION

1.1. General

- 1.1.1. This Lighting Technical Report has been written by DFL (Designs for Lighting Ltd¹), a lighting design consultancy specialising in Lighting Impact Assessments, obtrusive light mitigation, and detailed lighting design.
- 1.1.2. The Lighting Strategy within this Technical Report is intended to set out a minimally obtrusive approach to the lighting, whilst ensuring it is necessary and considers the sensitivity of nearby human, environmental and ecological receptors.
- 1.1.3. Lighting associated with the Proposed Development will comply with relevant British Standards and Institution of Lighting Professionals (ILP) guidance to ensure obtrusive light is minimised in accordance with best practice.
- 1.1.4. This report outlines the following:
- Relevant obtrusive light policies in direct relation to the Proposed Development;
 - Relevant National and Local Policies;
 - Relevant Guidance from ILP and Lawn Tennis Association (LTA);
 - A Desktop Assessment of the Application Site;
 - Why the Proposed Development requires artificial lighting;
 - A summary of the baseline illuminance survey results;
 - Details as to how lighting will be implemented for the Proposed Development;
 - A Technical Assessment; and
 - Concluding how the proposed lighting will comply with relevant policies, British Standards and industry guidance.
- 1.1.5. Through careful design and mitigation, this Technical Report ensures the lighting installation at the Proposed Development will be in accordance with British Standards, Guidance and Local Policy.

¹ <https://www.dfl-uk.com/about/>

2. LEGISLATIVE FRAMEWORKS AND NATIONAL POLICIES

2.1. Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 2.1.1. Since 2005, artificial light has been incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states: ²

“The following matters constitute “statutory nuisances” for the purposes of this Part, that is to say— [...]

[...] artificial ³light emitted from premises so as to be prejudicial to health or a nuisance;

[...]and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint”.

2.2. National Planning Policy Framework 2024 (Published 2025)

- 2.2.1. The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how they are expected to be applied and provides a framework for local plans. With regard to light pollution, the NPPF was updated in February 2025 and states that the following elements are to be considered⁴:

“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:

- > mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- > identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- > limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”*

² <https://www.legislation.gov.uk/ukpga/1990/43/part/III/crossheading/statutory-nuisances-england-and-wales> Section 79, paragraph 1,

³ 2005 Section 102 relating to section 79, Indent reference (fb)

⁴ Paragraph 198 NPPF 2024 page 57

2.3. Planning Practice Guidance

2.3.1. Guidance for assessing the effects of proposed artificial lighting is outlined in the planning practice guidance (PPG). The guidance states:⁵

“Does an existing lighting installation make the proposed location for a development unsuitable, or suitable only with appropriate mitigation? For example, this might be because:

- *the artificial light has a significant effect on the locality; and/or*
- *users of the Proposed Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*

Where necessary, development proposed in the vicinity of existing activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme, reflecting the agent of change principle. Additional guidance on applying this principle is set out in the planning practice guidance on noise.

- *Will a new development, or a proposed change to an existing site, be likely to materially alter light levels in the environment around the site and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?*
- *Will the impact of new lighting conflict with the needs of specialist facilities requiring low levels of surrounding light (such as observatories, airports and general aviation facilities)? Impacts on other activities that rely on low levels of light such as astronomy may also be a consideration but will need to be considered in terms of both their severity and alongside the wider benefits of the development.*
- *Is the development in or near a protected area of dark sky or an intrinsically dark landscape where new lighting would be conspicuously out of keeping with local nocturnal light levels, making it desirable to minimise or avoid new lighting?*
- *Would new lighting have any safety impacts, for example in creating a hazard for road users?*
- *Is a proposal likely to have a significant impact on a protected site or species? This could be a particular concern where forms of artificial light with a potentially high impact on wildlife and ecosystems (e.g. white or ultraviolet light) are being proposed close to protected sites, sensitive wildlife receptors or areas, including where the light is likely to shine on water where bats feed.*
- *Does the Proposed Development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies? (As it may change natural light, creating polarised light pollution that can affect wildlife behaviour.)”*

⁵ <https://www.gov.uk/guidance/light-pollution>, Paragraph 002 Ref ID: 31-002-20191101 revision 01 11 2019

3. LOCAL POLICIES

3.1. Wiltshire Council, Wiltshire Core Strategy, Adopted January 2015.

- 3.1.1. The relevant Local Planning Authority (LPA) for the Proposed Development is the Wiltshire Council with policies detailed within Wiltshire Core Strategy, Adopted January 2015 applying to the lighting associated with the Proposed Development.

The applicable policies are:

“Core Policy 51

Development should protect, conserve and where possible enhance landscape character and must not have a harmful impact upon landscape character, while any negative impacts must be mitigated as far as possible through sensitive design and landscape measures. Proposals should be informed by and sympathetic to the distinctive character areas identified in the relevant Landscape Character Assessment(s) and any other relevant assessments and studies. In particular, proposals will need to demonstrate that the following aspects of landscape character have been conserved and where possible enhanced through sensitive design, landscape mitigation and enhancement measures:

vii. Tranquillity and the need to protect against intrusion from light pollution, noise, and motion.”

3.2. Wiltshire Council, Bat Special Areas of Conservation.

- 3.2.1. Wiltshire Council provide planning guidance for assessing development proposals in the landscapes surrounding Wiltshire’s most sensitive bat roosting sites which are protected by European wildlife legislation.

“Where a development proposal falls within one of the Core Areas and could potentially affect one or more Sensitive Features, potential impacts should be considered at an early stage in order to inform site selection, scheme design, project timescales and budgets and to ensure the timely delivery of development objectives. Broad impacts to be considered at an early stage include:

Lighting – artificial lighting close to potential roosting, foraging and commuting features.”

4. BRITISH STANDARDS

4.1. BS EN 12193:2018 – Light and Lighting – Sports Lighting.

- 4.1.1. This British and European standard specifies lighting for indoor and outdoor sports events; the document covers most sports events practised within Europe. The document considers the application of artificial lighting, control methodology, uniformity, glare restrictions, illuminance and colour properties for optimal performance.

5. GUIDANCE

5.1. Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals GN01:2021)

- 5.1.1. This Lighting Technical Report has been developed in accordance with industry guidance aimed at minimising the risk of obtrusive light, which often results from poorly designed or installed external lighting. It draws specifically on the most relevant sections of GN01:2021, which provides best practice recommendations for reducing obtrusive light across a wide range of outdoor lighting applications

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

Table 1: Environmental Zone Descriptions

Environmental Zones	Sky Glow ULR ⁶ (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre- Curfew	Post-Curfew ⁷	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	0 (1 ⁸)	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2: Obtrusive Light Criteria

⁶ ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

⁷ Curfew refers to a time when the local planning authority has agreed that the lighting installation should be switched off; this typically refers to 23h00 – 07h00

⁸ If the installation is for public (road) lighting, then this may be up to 1 lx

5.2. GN08:2023 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals.

- 5.2.1. This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios. However, it is not meant to replace site-specific ecological and lighting assessments, which states the following.

"It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light adverse behaviour (Stone, 2012)."

"A warm white light source (2700 Kelvin or lower) should be adopted to reduce blue light component."

"A buffer zone subdivided to into smaller zones of increasing illuminance limit further away from the Supporting Habitat would ensure light levels (illuminance - measured in lux) do not exceed certain defined limits. This has the effect of a gradual decrease in lighting from the developed zone, rather than a distinct cut-off, which may provide useable area for the project which also limits lighting impacts on less sensitive species, or less well-used habitat." (see Figure 1)."

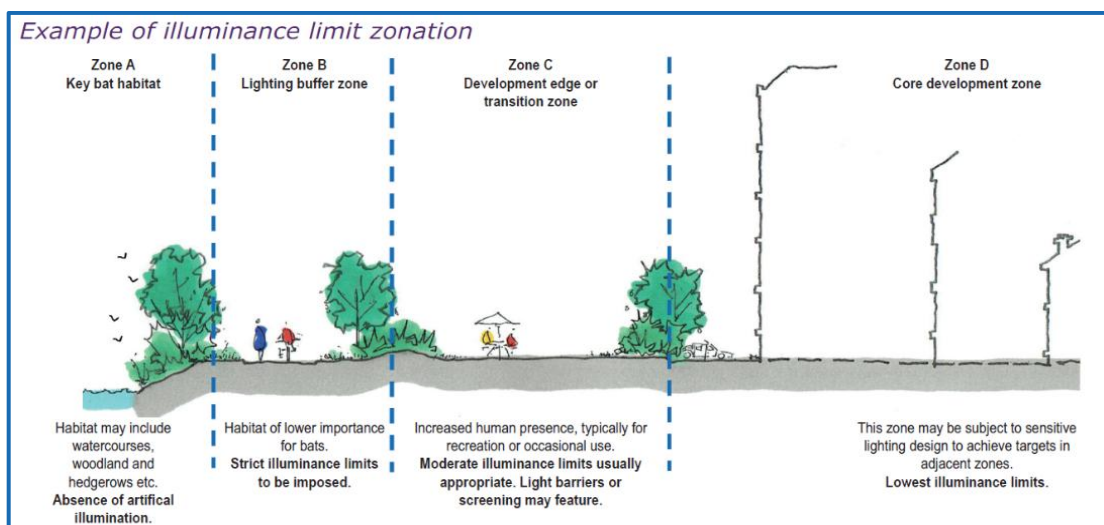


Figure 1: Example of Lighting Zonation Near Sensitive Boundaries & Known Ecological Habitat

5.3. LTA Padel Court Data Sheet 9

5.3.1. The Lawn Tennis Association (LTA) Padel Court Data Sheet provides practical guidance for the design, construction, and installation of padel courts in the UK. It sets out key technical requirements to ensure courts meet safety, performance, and quality standards, including dimensions, surface types, lighting methods, and structural specifications. The document helps developers, clubs, and contractors understand what's needed for compliance with British and European standards, including appropriate floodlighting options, clear height requirements, and considerations for future upgrades or covered courts. In short, it acts as a technical reference to ensure padel courts are built consistently, safely, and to a professional standard.

5.3.2. The data sheet states the following in relation to lighting on pages 10 and 11.

"Padel courts can be floodlit by two methods.

Method 1 involves the use of integrated or extended fence posts as part of the surrounding fence enclosure with a top bracket to mount either one or two low wattage light fittings. The extended fence posts usually being inset by 4.0m from the back of the court into the side elevations.

Method 2 involves the use of stand alone floodlight columns outside of the padel court enclosure to mount floodlight fittings.

The choice between the two methods depends on the number of padel courts to be lit and the complexities of the site i.e. are there houses in close proximity which may require superior fittings to control lux level spillage and reduce potential glare.

All light fittings are required to be manufactured to British and European standards with the associated CE marking. The padel court may be delivered as a 'package kit' from the manufacturer and therefore all the electrical components shall be detailed with a suitable lighting design prior to placing any order for the works.

All light fittings shall be installed to create a minimum 6m high clear space above the padel court playing area.

Padel court lighting designs will be produced using dedicated software by competent persons (consultants or manufacturers) with relevant experience in this regard.

While the minimum levels are stated above a 10% over performance should be taken into consideration when undertaking the initial design i.e. (0.9 maintenance factor).

⁹ Datasheet obtained from www.lta.org.uk/4ad2a4/siteassets/play/padel/file/lta-padel-court-guidance.pdf [last visited 13/11/25 at 18:28]

6. DESKTOP STUDY

6.1. Site Description and Context

- 6.1.1. A desktop assessment was completed to understand the Application Site's position within the current lit environment.
- 6.1.2. The Application Site is the land adjacent to Padel People, Corsham located within Leafield Industrial Estate. Leafield Industrial Estate is in the southwest of England, within the county of Wiltshire.
- 6.1.3. An indicative boundary of the Application Site is shown in **Figure 2**.

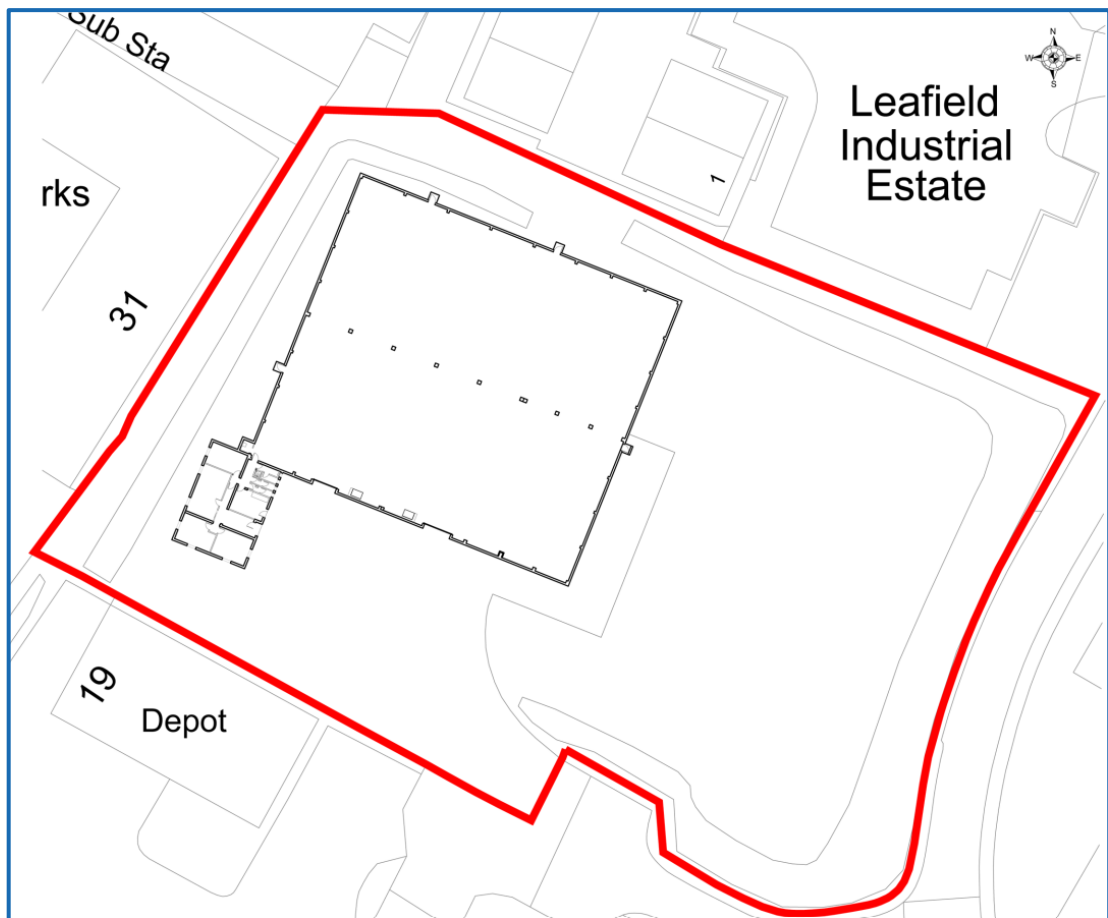


Figure 2: The Application Site Location and Boundary

6.1.4. The Proposed Development is for the erection of 3 outdoor padel courts. The proposed site layout plan is shown in **Figure 3**.

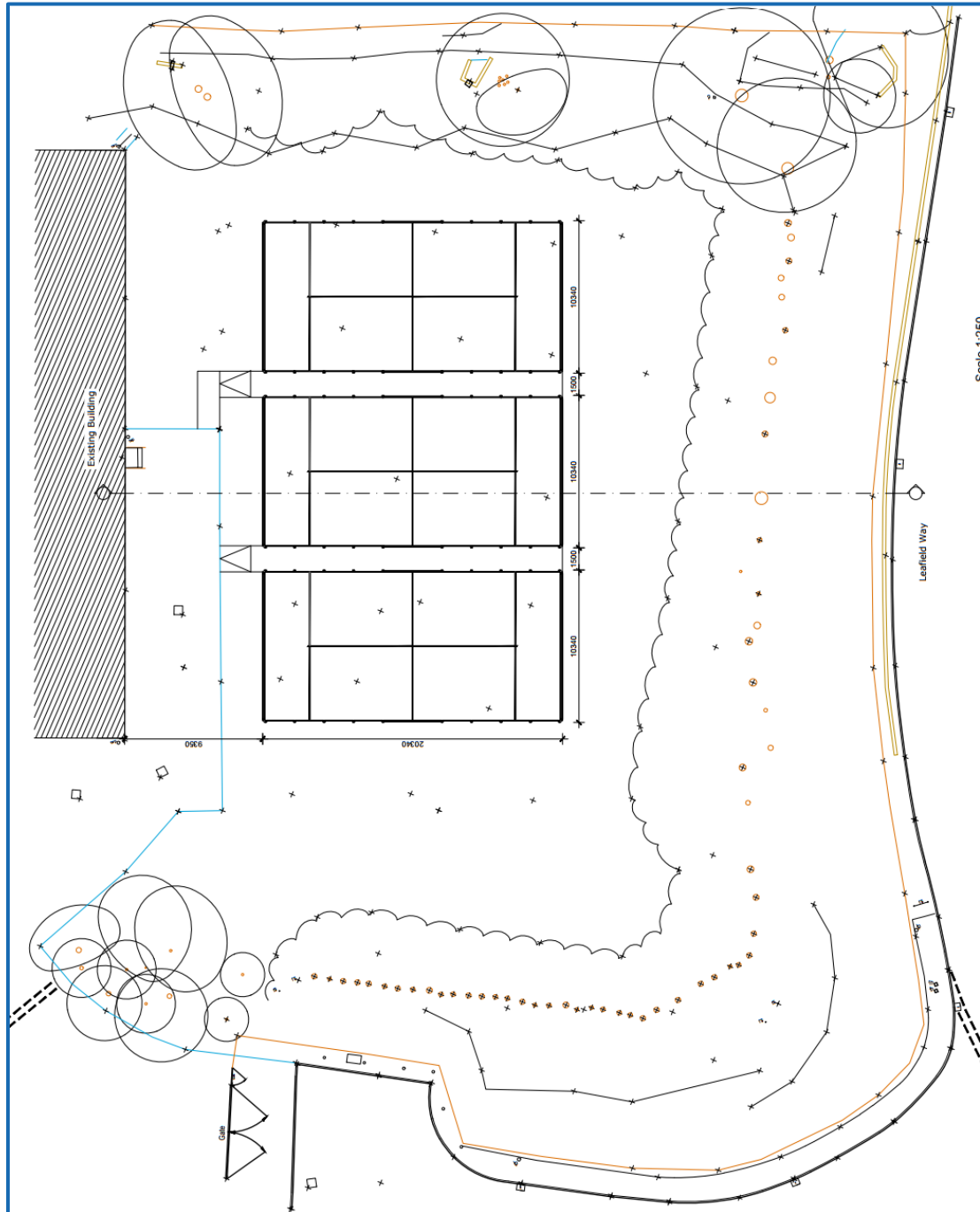


Figure 3: Proposed Development Site Layout Plan

6.2. Designated Sensitive Site

6.2.1. The Application Site is within 2 km¹⁰ proximity of Sites of Scientific Interest (SSSI), Special Areas of Conservations (SAC), Ancient Woodlands and a National Landscape. These are shown in **Figure 4** and referend to as:

- Corsham Railway Cutting (SSSI) 375m north of the Application Site
- Kingsmoor Wood (Ancient Woodland) 1550m southwest of the Application Site
- Cotswolds (National Landscape) 1830m west of the Application Site
- Bath & Bradford on Avon Bats (SAC) 1835m west of the Application Site
- Box Mine (SAC) 1835m west of the Application Site

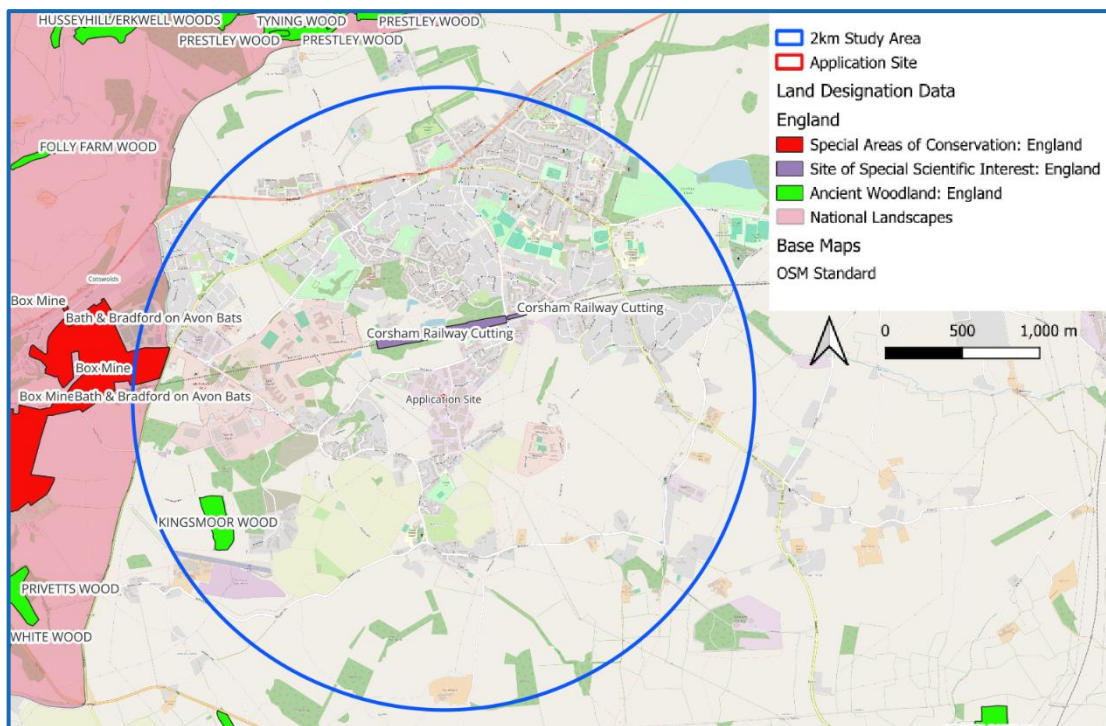


Figure 4: Site Designations

¹⁰ Based on empirical thresholds from visual impact studies, tall slender structures in open landscapes are typically prominent up to about 2 km, still relatively prominent between 2 and 5 km, and beyond this distance their prominence declines significantly, based on statements within *Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes* study (U.S. BLM-sponsored)

6.3. Environmental Zone Classification

6.3.1. The environmental zone criteria detailed within **Table 1** and **Table 2** informs the basis of this Lighting Technical Report. The Application Site is assessed as being located within an E3 environmental zone due to its suburban location.

Zone	Surrounding	Examples	Limitations		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E3	Suburban	Well inhabited rural and urban settlements, small town centres or suburban locations.	10	2	5%

Table 3: Limitations of Identified Environmental Zone.

7. BASELINE LIGHTING SURVEY SUMMARY

7.1. General

- 7.1.1. A baseline illuminance survey was conducted on 12/01/2026 of the Application Site and the wider industrial estate by two qualified lighting professionals from Designs for Lighting Ltd (DFL), using calibrated Konica Minolta T-10A illuminance measurement equipment and DSLR camera for nighttime photography.
- 7.1.2. The illuminance readings taken at the Application Site during the baseline survey as full survey report can be found in **Appendix 3 – Baseline Lighting Survey Report**.
- 7.1.3. Horizontal and vertical illuminance measurements were recorded across 26 survey locations. The results recorded indicate that the Application Site is well-lit industrial area, consisting of column lighting for roadways, and bulkhead or floodlighting for industrial units.
- 7.1.4. Within the Application Site there is currently existing floodlighting which provided results consistent with a well-lit area. The floodlight is shown in **Figure 5**.

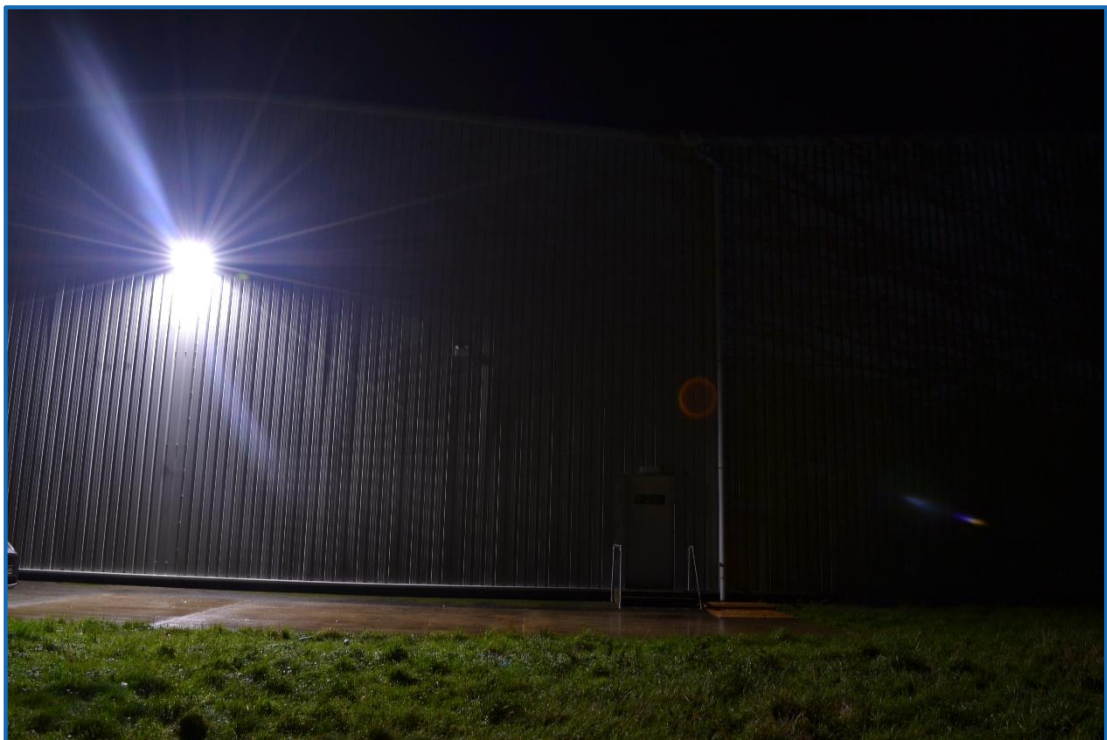


Figure 5: Floodlight illuminating Application Site

- 7.1.5. The car park for the Application Site, shown in **Figure 6**, demonstrated high levels of baseline illuminance due to the 3 high level wall mounted floodlights. Across the 32 readings taken in the car park, the average illuminance recorded was 9.45 Lux.



Figure 6: Survey Photo of Application Site Car Park

- 7.1.6. Evidence of existing street lighting and floodlighting on Leafield Way and in the adjacent industrial units is shown in **Figure 7**.



Figure 7: Survey Photo of Access Road to Application Site from Leafield Way

- 7.1.7. Leaffield Way, shown in **Figure 8** is well lit and demonstrates baseline horizontal illuminance levels of 3.51 Lux to 15.52 Lux. The road is lit with 5-6m columns with roadway luminaires demonstrating a warm white colour temperature likely 3000K and car park lighting emitting a bright white colour temperature, likely 4000K.



Figure 8: Survey Photo of Column Lighting along Leaffield Way

7.2. Conclusion

- 7.2.1. In conclusion, the results of the survey demonstrate that the Application Site and its surrounding context are already characterised by a well-lit environment.
- 7.2.2. Horizontal illuminance levels recorded across the site ranged from very low background levels to significantly elevated values where luminaires were in proximity, indicating a varied but established lighting environment. Therefore, the existing lighting forms an integral part of the night-time character of the area.
- 7.2.3. This baseline information provides a robust foundation against which the proposed lighting scheme can be assessed, ensuring that future lighting proposals are considered within the context of the existing illuminated environment and managed appropriately to minimise adverse effects.

8. IDENTIFIED RECEPTORS

8.1. Ecological

8.1.1. It has been assumed based on the available topographic view, that Corsham Railway Cutting to the north of the Application Site is likely to be ecologically sensitive due to its status as a Site of Special Scientific Interest (SSSI). The visual location of this area can be seen in **Appendix 4 – Sensitive Receptors**. Therefore, this Lighting Technical Report has been written in accordance with GN08:2023.

8.1.2. A description of the Potentially Sensitive Ecological Receptor can be seen in **Table 4**.

Receptor Type	Receptor No. (Appendix 4 – Sensitive Receptors)	Description
Ecology	PSER 001	Corsham Railway Cutting (SSSI) and associated woodlands north of the Application Site.

Table 4: Potentially Sensitive Ecological Receptors (PSER)

8.2. Human Amenity

8.2.1. Due to the Application Site's location within an industrial estate, there are no residential dwellings within approximately 200m of the Application Site.

8.2.2. However, to the northwest, northeast, south and southeast of the Application Site, Potential Human Amenity Receptors (PHAR) have been identified as shown in **Appendix 4 – Sensitive Receptors**. Therefore, this Technical Report has been written in accordance with GN01:2021 (**Table 2**).

8.2.3. A description of the Potential Human Amenity Receptors can be seen in **Table 5**.

Receptor Type	Receptor No. (Appendix 3)	Description
Human Amenity	PHAR 001	Residential dwellings at Curlcroft Road, northwest of the Application Site.
Human Amenity	PHAR 002	Residential dwellings at Portland Rise, northeast of the Application Site.
Human Amenity	PHAR 003	Residential dwellings at Elley Green, southeast of the Application Site.
Human Amenity	PHAR 004	Residential dwellings along Fleetwood Close and Pool Green, south of the Application Site.

Table 5: Potentially Human Amenity Receptors (PHAR)

9. LIGHTING STRATEGY

9.1. Summary

- 9.1.1. The Proposed Development will require lighting for the safe use of the padel courts at limited times during the hours of darkness. Lighting will be fit for purpose and sensitive to nearby receptors.
- 9.1.2. The following criteria seeks to ensure that the lighting is not outside of the obtrusive light limits for the environmental zone in which the Application Site is located, is sensitive to the area, and provides a recognised standard level of lighting for all areas requiring illumination. Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the buildings and upwards towards the sky.
- 9.1.3. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 9.1.4. Luminaires will be used with integral LEDs and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.
- 9.1.5. All lighting, unless otherwise stated, is to be ≤ 5700 Kelvin.
- 9.1.6. Lighting will be required in the following task areas:
 - > Padel Courts

9.2. Padel Courts

- 9.2.1. The padel courts will be illuminated in accordance with BS EN 12193:2018 for safety purposes. The lowest practical lighting levels are proposed within this Lighting Strategy.
- 9.2.2. Performance requirements for the padel courts are outlined in **Figure 9**.
- 9.2.3. Following a risk assessment, the lighting class will remain as recommended in BS EN 12193:2018.

Outdoor			Reference area		Number of grid points	
			Length m	Width m	Length	Width
Tennis	PA		30	15	13	7
	TA		36	18	15	7
Padel ^a		PA	20	10	13	7
Class	Horizontal illuminance		Horizontal illuminance TA		R_G	R_a
	$E_{hor Ave lx}$	U_{2hor}	$E_{hor Ave lx}$	U_{2hor}		
I	500	0,70	75 % PA	75 % PA	50	70
II	300	0,70	75 % PA	75 % PA	50	60
III	200	0,60	75 % PA	75 % PA	55	60

^a A safety zone around both entrances of width 2 m, height 4 m and extending 4m from the centre to both sides is to be kept clear of any obstacles.

Figure 9: Performance Requirements from BS 12193:2018

Area	Class	BS EN 12193:2018 Requirements		MF used
		Eav Lux	Uniformity	
Padel Courts	II	300 Lux	0.70	0.9

Table 6: Design Parameters BS EN 12193:2018

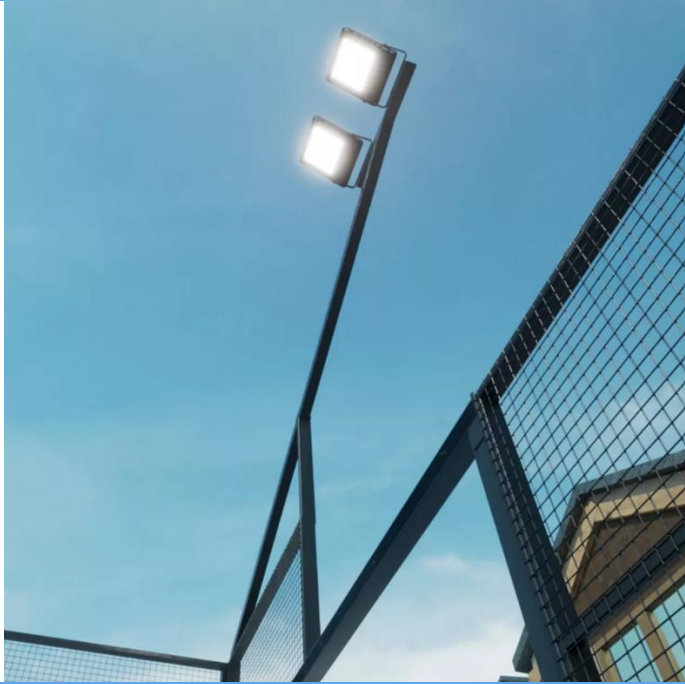
Equipment Specification	
Application Area	Padel Courts
Correlated Colour Temperature (Kelvin)	≤5700K
Lumen Output (lm)	≤26000lm
Height (m)	≤6m
Mounting Arrangement	Bracket on post
Luminaire Tilt (°)	0°
Upward Light Output Ratio (ULOR) (%) E3 < 5%	0%
Luminaire Manufacturer	FILUX (Or Similar Approved)
Luminaire family	F2144-200W-5700K (Or Similar Approved)
Example Luminaire Image	
Controls	Switching off after 10:30pm, back on from 6am

Table 7: Luminaire Performance Requirements

10. TECHNICAL ASSESSMENT

10.1. Overview

10.1.1. The Light Spill Diagram shown in **Appendix 1 – Light Spill Diagram** and **Appendix 2 – Vertical Light Spill Calculations** demonstrates that the Light Spill Levels associated with the proposed lighting would comply with the obtrusive light guidance set out in ILP GN01:2021, at sensitive receptors.

10.1.2. To ensure the worst-case scenario has been modelled, the highest potential light levels have been modelled / presented in the light spill diagram, with the project maintenance factors set at $MF = 1.0^{11}$. This demonstrates the light levels at their highest (initial light levels at the start of luminaire life).

10.2. Summary of Results

10.2.1. The proposed lighting within the task area(s) is compliant to the relevant policies, standards and guidance.

10.2.2. Where ecological receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in **Appendix 2 – Vertical Light Spill Calculations**. The light levels based on the modelling do not exceed 0.4 Lux, keeping the light levels within the guidance given within GN08:2023.

10.2.3. In line with Section 4.56 of GN08:2023, the vertical grids will be mounted at a height of 1.5 metres above the ground level to simulate the likely flight path of a light sensitive bat.

Receptor No	GN08:2023 Requirements	Maximum Vertical Illuminance (Lux)
PSER 001	0.40 Lux	0.001 Lux

Table 8: PSER Results Table, Maximum Illuminance.

10.2.4. Where human receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in **Appendix 2 – Vertical Light Spill Calculations**.

10.2.5. The light levels based on the modelling do not exceed 2 Lux, keeping the light levels within the guidance given within GN01:2021 for an area identified as an E3 environment.

¹¹ <https://www.dfl-uk.com/knowledge-hub/faqs/>

Receptor No	GN01:2021 requirements		Maximum Vertical Illuminance (Lux)
	Pre-curfew	Post-curfew	
PHAR 001	10 Lux	2 Lux	0.009 Lux
PHAR 002	10 Lux	2 Lux	0.004 Lux
PHAR 003	10 Lux	2 Lux	0.002 Lux
PHAR 004	10 Lux	2 Lux	0.001 Lux

Table 9: PHAR Results Table, Maximum Illuminance

10.3. Mitigation Methods

- 10.3.1. Careful design ensures the lighting has been minimised onto sensitive receptors in accordance with standards and guidance.
- 10.3.2. Through the use of the control methods detailed in **Section 9**, the amount of light in the affected Application Area is to be restricted to the amount of time required for the use of the padel courts.
- 10.3.3. The detailed design is to be completed by a competent person or persons in accordance with the details within this Technical Report.
- 10.3.4. Mitigation methods are detailed in **Table 10**.

Mitigation	Method	note
Minimising Upward Light	Choosing luminaire optics which offer no greater than 5% ULOR as per GN01:2021.	The optics selected for the padel court offer 0% ULOR.
Mounting Heights	Restriction of mounting heights for all luminaires as outlined within the Lighting Strategy.	Mounting of all luminaires has been set to ≤6m in line with LTA Guidance.
Switching	Turning off luminaires when the padel court facilities are not in use.	Switching is to be used to turn the luminaires off after curfew between 10:30pm through to 6am which will also reduce the hours of light spill.

Table 10: Mitigation Methods

10.4. Technical Assessment

- 10.4.1. Luminaires mounted horizontally with a 0% ULOR have been used to ensure that light is only directed downwards to illuminate the padel courts effectively without causing unnecessary upward light spill to minimise the brightening of the night sky.
- 10.4.2. LED optics are to be used throughout the Proposed Development for the increased efficiency and sustainability. LED optics will provide better illumination for the padel courts in comparison to conventional halogen floodlighting.
- 10.4.3. The floodlights are to be mounted at 6m for the purpose of providing a clear space above the padel court playing area, as required by the LTA guidance.
- 10.4.4. Under the Class II padel court lighting guidelines from BS EN 12193:2018 a uniformity factor of 0.70 is required which has been achieved by the proposed lighting. Achieving a uniformity factor of >0.70 creates a well-lit playing court without dark spots or inconsistencies outside of the allowed specification within British Standards and LTA guidance.
- 10.4.5. Based on the lighting design outlined within the Lighting Strategy, the results of the proposed lighting without blocking and shading effects are 0.001 Lux for the identified ecological receptor, as shown in **Table 8**.
- 10.4.6. The proposed lighting is consistent with lighting already existing in the wider area, with floodlights used within the industrial estate for security and wayfinding purposes.
- 10.4.7. The baseline lighting survey provides context of the existing lighting surrounding the Application Site and demonstrates that this industrial estate is already well lit. Therefore, the Potential Human Amenity Receptors are likely to not be sensitive to a change in lighting.
- 10.4.8. The levels of light intrusion modelled do not exceed 0.009 Lux at residential receptors. Although this is significantly below the 2 Lux post-curfew limit of an E3 environmental zone as established in GN01:2021, the natural blocking elements of industrial units, trees and hedgerows have not been modelled within this calculation but will provide some additional shielding of the padel court lighting when it is in use. The residential receptors are also greater than 200m from the Application Site and are therefore not likely to be sensitive to a change in lighting levels.

11. CONCLUSION

11.1. General

- 11.1.1. Lighting associated with the Proposed Development shall be designed in accordance with the Lighting Strategy for the Application Site outlined in **Section 9**.
- 11.1.2. This Lighting Technical Report has been written in accordance with the relevant British Standards, industry guidance and local policies to ensure it is unlikely to give rise to obtrusive light with the potential to affect sensitive receptors.
- 11.1.3. Through the application of this Lighting Technical Report sensitive receptors will not be adversely affected by obtrusive light, as shown in **Appendix 1 – Light Spill Diagram** and **Appendix 2 – Vertical Light Spill Calculations**.
- 11.1.4. The Application Site is located within proximity to Wiltshire's Bat Special Areas of Conservation. However, the proposed lighting associated with the Application Site is suitable for the location having been assessed as a well-lit industrial area, and therefore the existing lighting is consistent with the assessment of an E3 environmental zone.
- 11.1.5. The setting of the Application Site within an industrial estate ensures that Policy 51 from Wiltshire Council's Core Strategy, Adopted January 2015 has been adhered to as the implementation of lighting will be added to an already well-lit environment which is on throughout the nighttime hours. Therefore, the proposed lighting will not be detrimental to any landscapes or character of light sensitive areas.
- 11.1.6. Furthermore, the lighting of the padel courts will be turned off when not in use, specifically after curfew from 10:30pm until 6am, which will reduce the reduce and hours of light spill of the development. By restricting the hours of use this will protect local amenity from light intrusion by only using lighting at times when the padel courts are in use.
- 11.1.7. The proposed lighting is significantly below the 2 Lux post-curfew limits of an E3 environmental zone, and therefore the proposed lighting will not cause excessive light intrusion into nearby residential homes as the lighting calculations provide evidence that lighting levels will not exceed 0.009 Lux at residential receptors.
- 11.1.8. The proposed lighting is significantly below the 0.40 Lux threshold at the ecologically sensitive receptor (Corsham Railway Cutting), as established in GN08:2023. Therefore, as the lighting design is within the limits at the identified sensitive receptor and as such is compliant with this guidance from GN08:2023.
- 11.1.9. Through careful design and mitigation, this Lighting Technical Report has ensured that the lighting for the Proposed Development will be in accordance with British Standards, Guidance and Local Policy (Wiltshire Council Local Plan, Adopted January 2015).

APPENDIX 1 – LIGHT SPILL DIAGRAM

See accompanying document: 4076-DFL-ELG-XX-LD-EO-13001

APPENDIX 2 – VERTICAL LIGHT SPILL CALCULATIONS

See accompanying document: 4076-DFL-ELG-XX-CA-EO-13001

APPENDIX 3 – BASELINE LIGHTING SURVEY REPORT

See accompanying document: 4076-DFL-ELG-XX-SU-EO-13001

APPENDIX 4 – SENSITIVE RECEPTORS

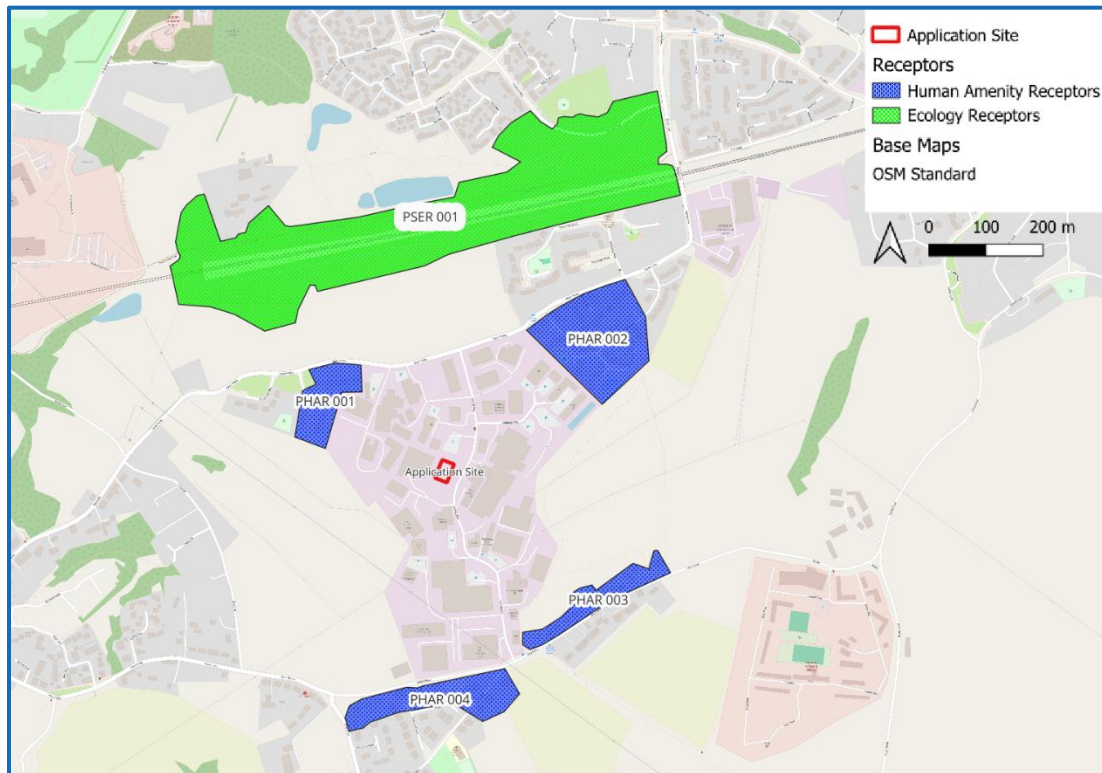


Figure 10: Sensitive Receptors

TECHNICAL DESCRIPTIONS, DEFINITIONS AND ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed *Abbreviation used by DFL LI and P.*

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term. *Abbreviation used by DFL LI and P.*

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation. *Abbreviation used by DFL LI and P.*

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption. *Spill light which because of quantitative, directional or spectral attributes in a given context gives rise to annoyance, discomfort, distraction or reduction in the ability to see essential information.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars. *The increase in diffuse illuminance of the night sky above that produced by natural sources such as the moon and visible star.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important. *Lighting of vertical surfaces such as walls, windows, statues, sculptures and people's faces.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light, *similar to the light from older incandescent lamps. (Tcp)The temperature of the Planckian radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions, measured in absolute temperature on the kelvin (K) scale.* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface. *The SI derived unit of illuminance, measuring luminous flux per unit area (1 lux = 1 lumen/m²).* CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Lumens: measure how bright a light appears to our eyes. The SI derived unit of luminous flux; a measure of the total quantity of visible light emitted by a source or received by a surface (unit: lumen). CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings. *Glare: condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or by extreme contrasts.* BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.1.8

Luminous intensity: is light brightness or how intense the light source is. Light intensity is how intense a light source is emitted or received in a particular direction, this is measured in candelas and is termed as luminous intensity I_v <of a source, in a given direction> quotient of the luminous flux, $d\Phi_v$, leaving the source and propagated in the element of solid angle $d\Omega$ containing the given direction, by the element of solid angle (unit: $cd = lm \cdot sr^{-1}$). BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.2.

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted. Base unit of luminous intensity in the International System of Units (SI); the luminous power per unit solid angle emitted by a point light source in a particular direction. CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface. The overall uniformity shall be calculated as the ratio of the lowest luminance, occurring at any grid point in the field of calculation, to the average luminance. BS EN 13201-3-2015, Calculation of Performance Section 8.3.

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object. L_v <in a given direction, at a given point of a real or imaginary surface> quantity defined by the formula (unit: $cd \cdot m^{-2} = lm \cdot m^{-2} \cdot sr^{-1}$) BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.3.

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area. E_v (unit: $lx = lm \cdot m^{-2}$) 1. <at a point of a surface> quotient of the luminous flux $d\Phi_v$ incident on an element of the surface containing the point, by the area dA of that element 2. <at a point of a surface> equivalent definition: integral, taken over the hemisphere visible from the given point, of the expression. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.10.

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light. apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes, except the lamps themselves, all the parts necessary for fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.3

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output. $RULO$ <of a luminaire> ratio of the upward luminous flux of the luminaire, measured under specified practical conditions with its own lamp(s) and equipment, to the sum of the individual luminous fluxes of the same lamp(s) when operated outside the luminaire with the same equipment, under specified conditions BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.12.

Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and "wear and tear". DEPRECATED: light loss factor ratio of illuminance produced by the lighting installation after a certain period to the illuminance produced by the installation when new Note 1 to entry: The term depreciation factor has been formerly used to designate the reciprocal of the above ratio. Note 2 to entry: The maintenance factor takes into account light losses caused by dirt accumulation on luminaires and room surfaces (in interiors) or other relevant surfaces (in exteriors, where appropriate), and the decrease of the luminous flux of lamps. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.5.18.

Tilt: is how much the luminaire is lifted based on the fitting facing flat to the ground.

Outreach: how far away the fitting is from the column/wall its mounted on to the light source.

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